Technical Appendix: Sampling Methodologies
and Estimation Methods Applied
to the Survey of Monroe County Residents

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Come as you are
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The
Nature
Conservancy
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Preface

This document was prepared to provide detailed documentation on how various measurements were derived as reported for residents of Monroe County in "A Socioeconomic Analysis of the Recreation Activities of Monroe County Residents in the Florida Keys/Key West" (Leeworthy and Wiley 1997). As a technical appendix, this document is intended for researchers that want to do further analyses with the resident data and for researchers that may want to replicate the study in the future.

Chapter 1 provides details on the sampling methodologies, methods for estimating the total number of residents who participated in any outdoor recreation activity, and sample weighting. Chapter 2 provides details on the results of analyses conducted to determine the existence of nonresponse bias in the mailback survey. The corrections for nonresponse bias are included in the sample weighting explained in Chapter 1. Chapter 3 documents the methods used to estimate participation rates and the total number of participants in each activity by region. Chapter 3 also documents how intensity of use was estimated for a select list of 39 activities by region. Intensity of use was defined in terms of the number of separate days of activity.

All project data and documentation will be distributed on CD-ROM. To obtain copies contact:

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Chapter 1. Sampling Methodologies, Estimation Methods, and Sample Weighting

Survey Sampling Methods

This survey of Monroe County residents used a combination telephone and mailback set of samples. The telephone sample was selected using the random digit dialing method. During the July 8, 1996 to November 21, 1996 period, 4,455 calls were made to eligible households. About 66 percent completed the telephone survey (2,936 households) (see Exhibit 1). To be eligible for the survey, a person had to be a permanent resident of Monroe County and had to be at least 16 years of age. Only people living in households were eligible. According to the U.S. Bureau of the Census's 1994 Current Population Survey, 98 percent of Monroe County's population lived in households, while the other two percent lived in group quarters. Among those age 16 or older, the respondent in a household was selected for the interview using the "birthday rule". The "birthday rule" selects the person in the household that last celebrated their birthday.

The telephone survey gathered information on whether the respondent participated in any outdoor recreation activities in either the Florida Keys or Everglades National Park during the past 12 months. The response to this question was used to select the sub-sample eligible to receive a mail back survey questionnaire. The telephone survey also included a socioeconomic profile of all residents, age 16 or older, (See Figure 1.1). The socioeconomic profile provided for the comparison of the telephone sample with U.S. Census Bureau data for Monroe County.

The mail back portion of the survey was conducted between August 8, 1996 and December 19, 1996. Three follow-up efforts (two post card reminders and a full survey package) were conducted. The mail follow-up included information on recreation activity participation in 66 activities and intensity of use (days of activity) for 37 activities in four regions of the Florida Keys. In addition, detailed information was obtained on spending for outdoor recreation activities in Monroe County while on their "last trip or outing", importance and satisfaction ratings for 25 natural resource attributes, facilities, and services, and for 16 questions used to construct the "environmental concern index".

The follow-up mail survey was sent to only those that did any outdoor recreation activities in the Florida Keys and/or Everglades National Park during the past 12 months (82.29% of those completing the telephone survey or 2,416 house-holds) and that agreed to partici-pate in the mail survey and pro-vided their name and address (82.86% of those that participated in outdoor recreation activities or 2,001 households). Respondents were sent a questionnaire (see Exhibit 2), a map showing the four regions of the Florida Keys (see Exhibit 3), and an activity list with the 66 recreation activities (see Exhibit 4). About 32 percent or 632 households returned the mail back questionnaires.

Figure A.1.1. Monroe County Residents Survey

Telephone Survey N=2936	Mailback Survey N=632
Population: All Monroe County Households Sample: 2,936 Monroe County Households • Participation in any outdoor recreation activites in either the Florida Keys or Everglades National Park during the past 12 months • Participation in any outdoor recreation activities in Florida Keys During the past 12 months • Participation in any outdoor recreation activities in Everglades National Park during the past 12 months • Participation in any activities in Florida Bay portion of Everglades National Park during the past 12 months • Profile of Residents (age, race/ethnicity, sex, household income, zip code of residence, employment status, education level, household size, years lived in Monroe County, work outside Monroe County, access to waterfront property, own a boat) • Ratings of Quality of life in Monroe County • Primary reason for locating in Monroe County	Population: All Monroe County Residents that participated in any outdoor recreation activities in the Florida Keys during the past 12 months Sample: 632 Monroe County Residents that participated in outdoor recreation activities in the Florida Keys during the past 12 months and returned the mailback survey • Participation in 66 activities in four regions of the Florida Keys • Intensity of use (days of activity) for 37 activities in four regions of the Florida Keys • Expenditures on outdoor recreation in Monroe County • Importance and satisfaction ratings of facilities and natural resource attributes in Florida Keys • Environmental Concern Index

Sample Weighting

Because variables collected in the telephone survey were needed in the analysis of the mailback data (e.g. socioeconomic variables), the two datasets were merged into one. The weighting strategy used for this dataset is complicated because there are several points at which bias could be introduced. There are three stages of weights in this strategy and three categories for which these weights were calculated (activity participation, expenditures and importance/satisfaction).

Stage 1. Only 66 percent of the eligible households completed the telephone survey. Most telephone sur-veys get participation rates around 70 percent, but this has been declining in recent years due to the rise of the use of answering machines to screen calls. Relatively low response rates do not necessarily mean that non-response bias exists, but it does increase the probability that the problem exists. To address this issue, the U.S. Bureau of Census's 1990 Census and 1994 Current Population Survey (CPS) were compared with the 1996 FSU Survey profiles for sex, age, race/ethnicity, education, household income, and household size. There were significant differences between the Census data and the FSU Survey, especially for race/ethnicity, education and household income. Residents with higher education levels and household income had higher response rates. "Blacks not Hispanic" and "Hispanic" residents had lower response rates.

Several methods were explored for adjusting the survey data. The method that yielded profiles from the telephone survey most similar to the Census data was that developed using the sample weight for education level only. This weight is called WTFAC1 and it is the same for the analysis of activity participation, expendi-tures and importance/satisfaction. Table A.1.1 shows the socioeconomic profile of the residents of Monroe County and profiles from the FSU Survey, both unweighted and weighted with the two methods investigated.

After sample weighting, the Hispanic population still appears to be under represented. However, much of this might be accounted for in the "Other Category" for race/ethnicity. In reviewing the Census data for Monroe County, it was discovered that all those that responded to the other category in the 1990 Census also said they were of Hispanic descent.

Non-response Bias. The telephone survey yielded a sample that was significantly different from the general population of Monroe County for several socioeconomic factors. If these factors also are related to question response, then the potential for non response bias exists. Table A.1.2 presents a comparative profile of those that did and did not participate in outdoor recreation activities in the Florida Keys. There are significant differences for sex, age, race/ethnicity, education, household income, employment status, and years lived in Monroe County. This suggests the possibility of non response bias (for a complete discussion of non-re-sponse bias analysis, see Chapter 2). The telephone sample was adjusted to minimize non-response bias by sample weighting. The impact of non response bias can be seen by comparing estimates of the participation rate with and without sample weighting. Without sample weighting, the estimate of the percent of Monroe County residents that participated in outdoor recreation in the Florida Keys was 82 percent versus the with sample weighting estimate of 77 percent.

Stage 2. As mentioned earlier, survey non-response could occur in several separate stages. First, once a respondent was identified as eligible for the mail survey, i.e. they participated in outdoor recreation activities, they were then asked if they would participate in the mail survey. A "no" response here indicates a non respondent to the mail survey. In the second stage, those that agreed to participate in the mail survey may not, even after three follow-up attempts, have returned a completed mail back questionnaire. This later group would also be coded as a non respondent to the mail survey. Finally, even if the respondent did return the mailback questionnaire, they may not have provided useful data for all three sections. If the respondent did not provide adequate answers to any of these three sections they were coded as non-respondents for the purposes of that particular analysis.

The second stage of the weighting process is slightly different between the three categories because it is based upon whether the respondent provided adequate answers to the particular sections. For example, an individual could have provided activity participation data but failed to fill out the expenditures section, thus making him a respondent in the activities category and a non-respondent in the expenditures category. Due to the potential for non-response bias, a multivariate weighting method was used. The method used equili-brated the response rates for different socioeconomic groups to the response rates of the entire sample. Not

enough observations existed in each socioeconomic category so the categories were collapsed into ten (10) socioeconomic groups, which were formed based on race/ethnicity, age and education. Sample weights were derived by dividing the response rate of the entire sample by the response rates of each individual socioeconomic group. These weights are called WTFAC2A, WTFAC2E and WTFAC2S for the activity participation, expenditures and importance/satisfaction samples, respectivley. Table A.1.3 - A.1.5 shows the ten socioeconomic groups, their corresponding response rates, and the sample weights derived to equilibrate response rates across socioeconomic groups for activity participation, expenditures and importance satisfaction.

The next step was to multiply WTFAC1 by the WTFAC2 series of weights to get WTFAC3A, WTFAC3E and WTFAC3S. To clarify, the data were divided into the three samples corresponding to the three sections of the mailback questionnaire (e.g. activity participation, expnditures and importance/satisfaction). WTFAC3E is the weighting factor used for estimating mean expenditures or mean expenditures per person day. WTFAC3S is the weighting factor used for the importance/satisfaction ratings. WTFAC3A is used in stage three (3) described below.

Stage 3. The last stage in the weighting process only applies to the activity participation analysis. To perform this analysis a sample was created that included those that participated in outdoor recreation activities and were respondents to the activity section of the mailback questionnaire and those that did not participate in outdoor recreation activities. The sample first had to be weighted to equilibrate the overall activity participation rate in this sample to that of the entire sample. This is done by dividing the percentages of participation and non-participation of the sample used for the analysis by that of the entire sample. Table A.1.6 shows that participation percentages and the weight factors used. This weight factor is called WTFAC4A.

The final step is to multiply WTFAC3A and WTFAC4A together to get WTFAC5. This is the weighting factor used in estimating "activity specific" participation rates. For an overall picture of the weighting strategy see Figure A.1.2.

Population of Monroe County

In Leeworthy and Wiley, (1996), estimates of outdoor recreation in 66 detailed outdoor recreation activities are presented. This information was collected as part of the mail survey and information was collected for all members of the household, that is, for residents of all ages. To estimate the total number of participants in any outdoor recreation activity requires an estimate of the total Monroe County population. Since the FSU Survey was limited to households, as well as the fact that the survey asked for participation during the past 12 months (corresponding to the year 1995-96), an estimate of the population living in households during the time period 1995-96 was required. Table A.1.7 reports estimates from both the U.S. Bureau of Census's 1990 Census and the updated estimates for the time period 1995-96.

For the 1995-96 time period, it is estimated that Monroe County had a total population of about 81,000. From the 1994 Current Population Survey, 98 percent of Monroe County's population was estimated to be living in households. This yields an estimate of 79,830 people living in households corresponding to the 1995-96 period of the FSU Survey. This estimate is used in Chapter 2 for developing estimates of the total number of participants in outdoor recreation activities in the Florida Keys.

Figure A.1.2. Weighting Strategy for the Activity Participation, Expenditures and Importance/Satisfaction Sections

Activity Participation	Expenditures	Importance/Satisfaction

WTFAC1

Entire Sample

Equilibrates socioeconomic breakdown of the sample to the population of Monroe County Based on the 1990 Census.

Non-participants 18%
Participants 82 %

WTFAC1

Entire Sample

Equilibrates socioeconomic breakdown of the sample to the population of Monroe County Based on the 1990 Census.

Non-participants 18%
Participants 82 %

WTFAC1

Entire Sample

Equilibrates socioeconomic breakdown of the sample to the population of Monroe County Based on the 1990 Census.

Non-participants 18%
Participants 82 %

WTFAC2A

Sample of those who participated in outdoor recreation activities

Equilibrates the response rate of 10 socioeconomic groups to the response rate of the subsample of all participants

Particpants
Respondents 73.0 %
Nonrespondents (Including those who participated but did not agree to receive a mailback, those who agreed to recieve a mailback and did not return it and those who returned their mailback but did not fill out the activity section. 27.0%

WTFAC2E

Sample of those who participated in outdoor recreation activities

Equilibrates the response rate of 10 socioeconomic groups to the response rate of the subsample of all participants

Particpants
Respondents 72.7 %
Nonrespondents (Including those who participated but did not agree to receive a mailback, those who agreed to receive a mailback and did not return it and those who returned their mailback but did not fill out the Expenses section. 27.3%

WTFAC2S

Sample of those who participated in outdoor recreation activities

Equilibrates the response rate of 10 socioeconomic groups to the response rate of the subsample of all participants

Particpants
Respondents 71.3 %
Nonrespondents (Including those who participated but did not agree to receive a mailback, those who agreed to receive a mailback and did not return it and those who returned their mailback but did not fill out the importance/satisfaction section. 28.7%

WTFAC3A=WTFAC2A*WTFAC1

WTFAC3E=WTFAC2E*WTFAC1

WTFAC3S=WTFAC2S*WTFAC1

WTFAC4A

Sample of participants who respondented and non participants

Equilibrates ratio of participants to non-participants in sample of participants who responded and the entire sample.

Participants who responded and nonparticipants
Participants who responded 77 %
NonParticipants 23%

WTFAC5A=WTFAC4A*WTFAC3A

Table A.1.1. Socioeconomic Profile of Residents of Monroe County

Characteristic	1990 Census	1996 FSU Survey (unweighted)	1996 FSU Survey (weighted) [2]	1996 FSU Survey (weighted) [3]
SEX				
Male	52.74	50.4	52.2	50.1
Female	47.26	49.6	47.8	49.9
AGE				
16-24	11.18	9.4	15.6	12.7
25-44	41.61	43.3	38.2	40.4
25-64	28.26	33.8	25.1	31.3
65+	18.95	13.6	21.1	15.6
RACE/ETHNICITY				
White Not Hispanic	81.62	85.6	76.4	82.0
Black Not Hispanic	4.99	3.6	7.5	5.2
Hispanic	12.28	7.5	15.0	9.1
Amer. Indian, Eskimo, Aleut	0.30	0.8	0.3	0.9
Asian/Pacific Islander	0.76	0.7	0.8	0.7
Other	0.05	1.8	0.0	1.9
EDUCATION				
8th grade or less	7.22	1.9	9.1	7.1
9th - 11th grade	13.38	6.9	15.5	13.5
High school graduate	29.75	27.3	29.3	29.8
13 - 15 years	30.69	29.1	29	30.7
College graduate	12.53	24.6	11.5	12.5
Graduate school	6.43	10.1	5.6	6.4
HOUSEHOLD INCOME				
Less than $5,000	5.11	3.2	6.5	5.3
$5,000 - $9,999	6.96	3.6	5.3	4.7
$10,000 - $14,999	9.49	6.0	7.7	7.0
$15,000 - $19,999	10.11	6.9	7.9	7.7
$20,000 - $24,999	9.92	9.0	10.1	9.7
$25,000 - $29,999	9.43	10.5	10.9	11.2
$30,000 - $39,999	15.30	14.5	13.8	14.2
$40,000 - $49,999	10.13	12.7	11.3	11.6
$50,000 - $59,999	7.16	10.9	9.1	9.7
$60,000 - $100,000	10.02	14.7	11.5	12.6
Greater than $100,000	6.36	7.9	5.8	6.3
HOUSEHOLD SIZE (mean)	2.24	2.39	2.47	2.45
Work Outside Monroe	6.64	7.6	5.8	6.6

1. U.S. Bureau of the Census 1994 Current Population Survey (CPS)
2. Weighted for sex, age, race/ethnicity and education (see text).
3. Weighted for education (WTFAC1). <u>This is the weight used in the analysis</u> (see text).

Table A.1.2. Comparative Profiles of Participants and Nonparticipants in Recreation

Characteristic	Participated in Recreation in Keys	
	No	Yes
SEX		
Male	39.0	52.7
Female	61.0	47.3
AGE (age 16 and older)		
16-24	12.2	13.2
25-44	21.2	46.8
45-64	29.6	31.3
65+	36.9	8.7
Mean	53.8	42.1
Median	54.0	42.0
RACE/ETHNICITY		
White Not Hispanic	68.3	86.9
Black Not Hispanic	12.5	2.6
Hispanic	15.3	7.0
Amer. Indian, Eskimo, Aleut	0.4	0.9
Asian/Pacific Islander	1.4	0.5
Other	2.2	2.1
EDUCATION		
8th grade of less	20.9	3.0
9th - 11th grade	20.8	11.1
High school graduate	31.8	28.0
13 - 15 years	17.0	36.1
College graduate	6.8	14.6
Graduate school	2.7	7.2
HOUSEHOLD INCOME		
Less than $5,000	14.6	2.4
$5,000 - $9,999	10.5	2.8
$10,000 - $14,999	15.2	5.0
$15,000 - $19,999	11.1	6.9
$20,000 - $24,999	9.9	9.9
$25,000 - $29,999	11.4	11.3
$30,000 - $39,999	9.8	15.1
$40,000 - $49,999	6.4	13.9
$50,000 - $59,999	3.8	11.0
$60,000 - $100,000	4.6	14.8
Greater than $100,000	2.7	7.1
HOUSEHOLD SIZE (mean)	2.2	2.5
Work Outside Monroe	3.1	7.5
EMPLOYMENT STATUS		
Unemployed	10.8	6.1
Employed - full-time	35.0	66.0
Employed - part-time	8.7	6.8
Retired	35.5	12.4
Student	3.6	4.2
Homemaker	4.1	2.4
Self-employed	0.9	1.4
Disabled	1.5	0.7
YEARS LIVED IN MONROE		
Less than 1 year	3.5	5.5
1 to 5 years	15.0	29.5
6 to 10 years	13.0	19.2
11 to 20 years	21.9	26.1
21 to 40 years	22.7	15.8
41 +	23.8	4.0
ACCESS TO WATERFRONT FROM RESIDENCE	49.2	58.6
OWN A BOAT	16.1	51.9

Table A.1.3. Derivation of Sample Weights to Equilibrate Response Rates by Socioeocnomic
              Group for the Activity Section

Socioeconomic Group	Response (%)		Sample Weights (WTFAC2)	
	No	Yes	No	Yes
Age 16-44 White <11 Years of Education	84.51	15.49	0.863803	1.743060
Age 16-25 White 11-15 Years of Education	84.06	15.94	0.868427	1.693852
Age 16-44 White 16+ Years of Education	67.70	32.30	1.078287	0.835913
All Ages Black All Levels of Education	90.64	9.36	0.805384	2.884615
All Ages Hispanic All Levels of Education	83.83	16.17	0.870810	1.669759
All Ages "Other" Race/Ethnicity All levels of Education	75.66	24.34	0.964843	1.109285
Age 25-44 White 11-15 Years of Education	72.99	27.01	1.000137	0.999630
Age 45-64 White <15 Years of Education	67.48	32.52	1.081802	0.830258
Age 45-64 White >16 Years of Education	60.00	40.00	1.216667	0.675000
Age >65 White All Levels of Education	73.22	26.78	0.996995	1.008215

Table A.1.4. Derivation of Sample Weights to Equilibrate Response Rates by Socioeocnomic
            Group for the Expenditures Section

Socioeconomic Group	Response (%)		Sample Weights (WTFAC2)	
	No	Yes	No	Yes
Age 16-44 White <11 Years of Education	85.92	14.08	0.845554	1.942472
Age 16-25 White 11-15 Years of Education	82.84	17.16	0.876992	1.593823
Age 16-44 White 16+ Years of Education	67.98	32.02	1.068697	0.854154
All Ages Black All Levels of Education	88.41	11.59	0.821740	2.359793
All Ages Hispanic All Levels of Education	83.81	16.19	0.866842	1.689314
All Ages "Other" Race/Ethnicity All levels of Education	73.04	26.96	0.994660	1.014466
Age 25-44 White 11-15 Years of Education	72.39	27.61	1.003592	0.990583
Age 45-64 White <15 Years of Education	66.93	33.07	1.085462	0.827034
Age 45-64 White >16 Years of Education	61.37	38.63	1.183803	0.707999
Age >65 White All Levels of Education	71.87	28.13	1.010853	0.972272

Table A.1.5. Derivation of Sample Weights to Equilibrate Response Rates by Socioeocnomic
Group for the Importance/Satisfaction Section

Socioeconomic Group	Response (%)		Sample Weights (WTFAC2)	
	No	Yes	No	Yes
Age 16-44 White <11 Years of Education	85.92	14.08	0.829609	2.039773
Age 16-25 White 11-15 Years of Education	82.84	17.16	0.860454	1.673660
Age 16-44 White 16+ Years of Education	67.42	32.58	1.057253	0.881522
All Ages Black All Levels of Education	86.18	13.82	0.827106	2.078148
All Ages Hispanic All Levels of Education	82.99	17.01	0.858899	1.688419
All Ages "Other" Race/Ethnicity All levels of Education	73.04	26.96	0.975904	1.065282
Age 25-44 White 11-15 Years of Education	71.80	28.20	0.992758	1.018440
Age 45-64 White <15 Years of Education	65.17	34.83	1.093755	0.824577
Age 45-64 White >16 Years of Education	57.90	42.10	1.231088	0.682185
Age >65 White All Levels of Education	66.98	33.02	1.064198	0.869776

Table A.1.6. Derivation of Sample Weights to Equilibrate the Participation
Rate to that of the Entire Sample

Participation	Sample used for Anlysis[1]	Entire Sample	Sample Weights (WTFAC4)
Participated	51.60	23.00	0.445736
Did not Participate	48.40	77.00	1.590909

1. This is the sample of those who responded to the activity participation portion of
    the mailback questionnaire plus those that did not participate in outdoor
    recreation activities.

Table A.1.7. Population in Households (1990, 1995-96)

	1990 Census	1995-96 Census
Total Population (All Ages)	78,024	81,000 [1]
Number of Households	33,583	35,437
% of Population in Households	96.4	98.0
% of Population in Group Quarters	3.6	2.0
Population in Households	75,215	79,380
Population in Households Age 16 or older	63,384	66,679

1. U.S. Department of Commerce, Bureau of the Census reports
    population estimates for Monroe County of 81,152 as of 7/1/95
    and 80,730 as of 7/1/96. 81,000 is our estimate for 1995-96.

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Chapter 2. Nonresponse Bias Analyses for the Mailback Survey

Chapter 1 described the sampling methodologies used and the sample weighting methods applied to the data. Here the focus is on analyses conducted to address the issue of nonresponse bias resulting from the use of mailback surveys. Nonresponse bias occurs when the group that responds to the mailback survey is different from the population for which you want to estimate certain measurements. The group that responds is different in that they have significantly different responses. For example, respondents to the mailback survey might have higher average expenditures per person per trip for transportation. Applying the higher average to all residents would result in an overestimate of lodging expenditures. This overestimation would be referred to as nonresponse bias.

The approach used here for nonresponse bias had two steps. In step one, survey response rates were related to various socioeconomic factors. The research question is 'Are the residents that responded to the mailback survey any different from those that did not respond?' Step two determines whether there is a relationship between socioeconomic factors and mailback question responses. For nonresponse bias to exist requires not only that respondents to the mailback survey are different but that the same factors related to whether the resident responded to the mailback are also related to mailback question responses. It is shown here that there is some potential for nonresponse bias in all the mailback surveys but that the extent of nonresponse bias would appear to be minimal. The importance/satisfaction section of the mailback had the most potential for nonresponse bias. The sample weighting employed and described in Chapter 1 adjusts for the nonresponse bias by weighting the mailback samples to be representative of the population of all residents. At the end of this Chapter, weighted and unweighted means for selected measurements from each sample are compared to indicate the possible extent of nonresponse bias.

Response Rates and Socioeconomic Factors.

Two approaches were used to evaluate the relationship between socioeconomic factors and response rates to the mailback survey. First, univariate statistics were used to test for differences. Cross-tabulations were run on response rates by age, education level, sex, race/ethnicity of the person interviewed, whether or not the person interviewed owns a boat and household income (see Table A.2.1). Then univariate nonparametric tests were performed on each socioeconomic factor. The Kolmogorov-Smirnov two-sample test was used. This test tests for differences in the distributions of the socioeconomic factors between respondents and nonrespondents. For the activity participation section, the expenditure section and the importance/ satisfaction section, statistically significant differences were found for age, education, whether or not the resident owns a boat and household income (see Tables A.2.2, A.2.7 and A.2.12).

The second approach used was a set of multivariate tests. In this approach all socioeconomic factors are regressed against the response variable (variable that represents whether the person responded to the particular section of the mailback 1= yes 0=no). Tables A.2.3, A.2.8 and A.2.13 defines each of the variables used in the analyses along with the arithmetic means of each variable for the sample used in the analysis. Three equations were estimated: ordinary least squares, probit and logit. The three equations use dummy variables for several of the socioeconomic factors. For household income, those with incomes under $20,000 (INC20K) are in the constant term, and for race/ethnicity, Indian/Asian/Other are in the constant term.

For all three sections of the mailback survey (activity participation, expenditures and importance/satisfaction), the three equations identify the same set of factors as being statistically significant in explaining mailback survey response rates. Age and education of the respondent was positively related meaning that older residents and those residents with more education had higher response rates. Owning a boat was also positively related meaning that residents who own boats had higher response rates. Sex was negatively related meaning that male residents had lower response rates. Residents who did not provide income had lower response rates than residents with annual household income less than $20,000. Residents who had household incomes between $20,000 and $40,000 had higher response rates than those residents with household incomes less than $20,000. The results of the multivariate tests confirm the findings from the univariate tests except for sex which was not significant in the univariate tests.

Question Responses and Socioeconomic Factors.

Step one above showed that there is a relationship between several socioeconomic factors and survey response rates. In this step, it is shown that there is also a relationship between some of these factors and question responses.

Activity Participation. Table A.2.5 shows the definition and sample means for the aggregate activity variables for which relationships were estimated. Simple linear regressions were estimated between these selected aggregate activities and the various socioeconomic factors. Again, because of the use of dummy variables interpretation is with respect to what is in the constant term. For household income, those with incomes under $20,000 (INC20K) are in the constant term, and for race/ethnicity, Indian/Asian/Other are in the constant term.

Younger residents were more likely to participate in snorkeling, as were residents who were better educated, who owned a boat, or who had household incomes between $20,000 and $40,000 or over $60,000 (see Table A.2.6). Black and hispanic residents were less likely to participate in snorkeling.

The same socioeconomic factors were statistically significant in explaining participation in both scuba diving and fishing from a boat. Again, younger residents were more likely to participate in scuba diving and fishing from a boat, as were residents who were better educated, who owned a boat, or who had household incomes between $20,000 and $40,000. Male residents and residents with household incomes over $100,000 were also more likely to participate in scuba diving or fishing from a boat.

The relationship between fishing from shore and the socioeconomic factors in the model were less robust (with a lower adjusted R^2 and a higher F-significance probability). Again younger residents, residents who owned a boat and residents with household incomes between $60,000 and $100,000 were more likely to fish from shore. Given these findings our conclusion is that the potential for nonresponse bias is significant for our estimates on activity participation.

Expenditures. Table A.2.10 shows the definition and sample means for the level of expenditures for which relationships were estimated. Simple linear regressions were estimated between these aggregate expenditures per person per day and the various socioeconomic factors. Again, because of the use of dummy variables interpretation is with respect to what is in the constant term. For household income, those with incomes under $20,000 (INC20K) are in the constant term, and for race/ethnicity, Indian/Asian/Other are in the constant term.

The F-test probability values in these models tells us that the hypothesis that all the coefficients are equal to zero cannot be rejected for all expenditures items except expenditures on other activities (OTHPPDK) (Table A.2.11). In other words, no relationship between socioeconomic factors and any expenditure levels except those on other activities was indicated. For expenditures on other activities, residents who own a boat had lower average expenditures per person per day, holding other factors constant and hispanic residents had higher average expenditures per person per day, holding other factors constant. Given these findings we conclude the potential for nonresponse bias on our estimates of expenditures per person-day is extremely small.

Importance/Satisfaction. Table A.2.15 shows the definition and sample means for selected importance/satisfaction variables for which relationships were estimated. Simple linear regressions were estimated between these selected importance/satisfaction variables and the various socioeconomic factors. Again, because of the use of dummy variables interpretation is with respect to what is in the constant term. For household income, those with incomes under $20,000 (INC20K) are in the constant term, and for race/ethnicity, Indian/Asian/Other are in the constant term.

In these models, there were two variables for which the hypothesis that all the coefficients are equal to zero cannot be rejected: importance rating on clear water (D26) and importance rating on quality of beaches (D44). Again, no relationship between the importance rating on clear water or the quality of beaches and the socioeconomic variables in the model was indicated.

Older residents, female residents and those residents with a higher level of education had were more likely to have higher satisfaction ratings on clear water (D1). Hispanic residents were more likely to have lower satisfaction ratings on clear water. Female residents and residents with a higher level of education were more likely to have higher satisfaction ratings on the opportunity to view large wildlife (D8) and on the quality of beaches (D19) while residents who own a boat were less likely to have high satisfaction ratings on quality of beaches. Residents with a higher education were less likely to have higher importance ratings on the opportunity to view large wildlife, while residents who own a boat are more likely to have a higher importance rating on the opportunity to view large wildlife. Given these findings, we conclude that there is a potential for nonresponse bias in selected importance/satisfaction scores.

Solution to the Problem of Nonresponse Bias

As was mentioned in the introduction to this Chapter and in Chapter 1, the solution chosen for adjusting for nonresponse bias was a multivariate sample weighting method. The details of this sample weighting are described in Chapter 1. Here the possible extent of nonresponse bias is assessed by comparing selected measurements from each mailback survey and comparing weighted and unweighted means. Table A.2.17 shows the questions from each survey, their weighted and unweighted means, and the percent difference between the weighted and unweighted means. This latter measure serves as an indicator of the potential extent of nonresponse bias. Overall, only the activity participation of the mailback would seem to have the potential for significant differences as a result of nonresponse bias. Expenditures would have been underestimated without adjusting for nonresponse bias by sample weighting. For the importance/satisfaction section, there appear to be no significant differences between weighted and unweighted means suggesting very little potential for nonresponse bias even without sample weighting.

Table A.2.1 Response Rates by Socioeconomic Factors: Activity Sample

Socioeconomic Factor	Response Rate	Participant Sample Size	Respondent Sample Size
Age			
16-24	13.08%	214	28
25-44	23.55%	1,121	264
45-64	29.51%	820	242
over 65	20.66%	213	44
Education			
8th grade or less	11.11%	18	2
9th grade - 11th grade	12.21%	131	16
High school graduate	17.25%	603	104
Thirteen to fifteen years	26.18%	741	194
College graduate	26.35%	630	166
Graduate School	36.33%	267	97
Sex			
Male	22.81%	1,267	289
Female	25.80%	1,128	291
Own a boat			
Yes	26.99%	1,267	342
No	21.08%	1,129	238
Race/ethnicity			
American Indian	23.81%	21	5
Asian/Pacific Islander	7.69%	13	1
Black Not Hispanic	7.41%	54	4
White Not Hispanic	25.36%	2,098	532
Hispanic	17.33%	150	26
Other	17.07%	41	7
Household Income			
Under $20,000	16.38%	293	48
$20,000 - $39,999	24.78%	690	171
$40,000 - $59,999	31.45%	512	161
$60,000 - $100,000	31.29%	326	102
Over $100,000	27.27%	176	48

Table A.2.2 Univariate Non-parametric Test of Response Rates and Socioeconomic Factors[1]:
Activity Sample

Socioeconomic Factor	Statistical Significance of KS Test[2]	Significant[3]
Age	0.0001	YES
Education	0.0001	YES
Sex	0.4646	NO
Own a boat	0.0069	YES
Race/ethnicity	0.2360	NO
Household Income	0.0002	YES

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distribution of socioeconomic factors between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socio-economic factor for respondents to the mailback survey was different from those that did not respond at the 99 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.2.3. Variable Definitions for Multivariate Test of Response Rates to the Activity Section and Socioeconomic Factors

Variable	Definition	Mean (N=2,363)[1]
RESPACT	Responded to Activity Section of Mailback 1=yes 0=no	0.2442
AGE	Age of Person Interviewed	43.1329
SEX	Sex of Person Interviewed (1=male)	0.5324
Q12	Highest Level of Education Completed by the Person Interviewed	4.0956
Q8	Dummy Variable 1=Owns a Boat	0.5269
INCMISS	Dummy Variable 1=Household Income Missing	0.1604
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1138
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0351
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0224
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0736
WHITE	Dummy Variable 1=Race/ethnicity is White	0.8764
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0229
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0631

1. Total Sample size was 2,396 but six respondents did not provide their highest education level achieved and 28 respondents did not provide their age, so the means presented here are for the sample of 2,363 used in the multivariate tests.

Table A.2.4. Multivariate Tests of Response Rates to the Activity Section and
              Socioeconomic Variables

Socioeconomic Factor	Ordinary Least Squares	Logit	Probit
Constant	-0.0040025	-2.6405	-1.5269
	(-0.067)	(-7.336) ***	(-7.550) ***
AGE	0.0012543	0.0078301	0.0044312
	(2.029) **	(2.170) **	(2.096) **
SEX	-0.045862	-0.25843	-0.15420
	(-2.617) **	(-2.608) **	(-2.652) **
Q12	0.043402	0.25244	0.14696
	(5.304) ***	(5.339) ***	(5.337) ***
Q8	0.057018	0.31541	0.17880
	(3.207) **	(3.123) **	(3.024) **
INCMISS	-0.11121	-0.77503	-0.43019
	(-4.529) ***	(-4.643) ***	(-4.731) ***
INC40K	0.071056	0.35458	0.21083
	(2.525) **	(2.421) **	(2.376) **
INC60K	0.013506	0.060467	0.037763
	(0.283)	(0.238)	(0.248)
INC100K	0.095277	0.43137	0.26559
	(1.611)	(1.457)	(1.469)
INCGT100	-0.018417	-0.11673	-0.060468
	(-0.533)	(-0.625)	(-0.546)
WHITE	0.026043	0.16473	0.063341
	(0.570)	(0.599)	(0.410)
BLACK	-0.84364	-0.92848	-0.51921
	(-1.157)	(-1.572)	(-1.723)
HISPANIC	-0.027066	-0.1913	-0.14655
	(-0.479)	(-0.548)	(-0.747)
Adjusted R-Square	0.04031	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-liklihood	-1356.4548	-1313.478	-1313.478
Chi-squared Significance	N/A	0.00000	0.00000
N	2363	2363	2363

1. Dependent variable (RESPACT) is a dummy variable indicating whether the person
   responded to the mailback 1=yes 0=no. Mean of the dependent variable is 0.2442.
   T-values are in parentheses under the estimated coefficient for each independent
   variable. * means the coefficient is significant at .10, ** means coefficient is
   significant at .05, and *** means coefficient is significant at .001.

Table A.2.5. Variable Definitions for Tests of Relationship between Activity Participation and Socioeconomic Variables

Variable	Definition	Mean (N=1,145)[1]
SNORK	Dummy Variable 1=Participated in any Snorkeling	0.3249
SCUBA	Dummy Variable 1=Participated in any Scuba Diving	0.1389
BFISH	Dummy Variable 1=Participated in any Boat Fishing	0.2707
ACT14A	Dummy Variable 1=Participated in any Fishing from Shore	0.1022
AGE	Age of Person Interviewed	48.8166
SEX	Sex of Person Interviewed (1=male)	0.4550
Q12	Highest Level of Education Completed by the Person Interviewed	3.9301
Q8	Owns a Boat (1=yes, 2=no)	0.4061
INCMISS	Dummy Variable 1=Household Income Missing	0.1563
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1109
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0297
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0236
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0603
WHITE	Dummy Variable 1=Race/ethnicity is White	0.8288
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0498
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0803

1. Sample size for all participants was 1,168 but missing information for AGE (18 observations) and Q12 (9 observations) resulted in 1,145 observations for estimation.

Table A.2.6. Tests of Relationships between Selected Aggregate Activity Variables
             and Socioeconomic Factors[1]

Independent Variables	Dependent Variables/Models			
	SNORK	SCUBA	BFISH	ACT14A
Constant	0.23390	0.10393	0.047547	0.13137
	(2.945) **	(1.655) *	(0.615)	(2.284) **
AGE	-0.0056907	-0.0037012	-0.0028864	-0.002166
	(-7.878) ***	(-6.482) ***	(-4.106) ***	(-4.140) ***
SEX	0.017296	0.058244	0.086488	0.011207
	(0.701)	(2.985) **	(3.601) ***	(0.627)
Q12	0.065153	0.031425	0.035717	0.011991
	(6.270) ***	(3.826) ***	(3.532) ***	(1.593)
Q8	0.27841	0.14114	0.29102	0.077628
	(10.746) ***	(6.892) ***	(11.544) ***	(4.137) ***
INCMISS	-0.056763	0.013097	-0.045487	-0.02672
	(-1.638)	(0.478)	(-1.349)	(-1.065)
INC40K	0.0985028	0.057901	0.65632	0.013751
	(2.375) **	(1.831) *	(1.686) *	(0.475)
INC60K	0.069704	0.072714	0.049819	-0.47788
	(0.961)	(1.268)	(0.706)	(-0.909)
INC100K	0.13405	-0.033631	0.093704	0.20179
	(1.662) *	(-0.527)	(1.194)	(3.453) ***
INCGT100	0.1107	0.11403	0.13833	-0.049785
	(2.114) **	(2.746) **	(2.706) **	(-1.309)
WHITE	-0.00209	-0.00047943	0.069348	0.00086565
	(-0.034)	(-0.010)	(1.153)	(0.019)
BLACK	-0.15411	-0.05597	-0.028380	-0.031974
	(-1.903) *	(-0.874)	(-0.360)	(-0.545)
HISPANIC	-0.15413	-0.06519	-0.02582	-0.050049
	(-2.096) **	(-1.122)	(-0.361)	(-0.940)
Adjusted R-Square	0.24055	0.12969	0.20116	0.0476
F - significance	0.00000	0.00000	0.00000	0.02634
N	1,145	1,145	1,145	1,145

1. T-values in parentheses under the estimated coefficient. * means statistically significant at .10,
    ** means statistically significant at .05 and *** means statistically significant at .001.

Table A.2.7 Univariate Non-parametric Test of Response Rates to Expenses Section
           of Mailback and Socioeconomic Factors[1]

Socioeconomic Factor	Statistical Significance of KS Test[2]	Significant[3]
Age	0.0001	YES
Education	0.0001	YES
Sex	0.5741	NO
Own a boat	0.0016	YES
Race/ethnicity	0.3273	NO
Household Income	0.0004	YES

1. The test used was the Kolmogorov - Smirnov Two-sample Test which
    tests the differences in the distribution of socioeconomic factors
    between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socio-
    economic factor for respondents to the mailback survey was different
    from those that did not respond at the 99 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90
    percent confidence level.

Table A.2.8. Variable Definitions for Multivariate Test of Response Rates to Expenses Section
            of Mailback and Socioeconomic Factors

Variable	Definition	Mean (N=2,363)[1]
RESPEXP	Responded to Expenses Section of Mailback 1=yes 0=no	0.2455
AGE	Age of Person Interviewed	43.1329
SEX	Sex of Person Interviewed (1=male)	0.5324
Q12	Highest Level of Education Completed by the Person Interviewed	4.0956
Q8	Own's a boat (1=yes 0=no)	0.5269
INCMISS	Dummy Variable 1=Household Income Missing	0.1604
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1138
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0351
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0224
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0736
WHITE	Dummy Variable 1=Race/ethnicity is White	0.8764
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.2290
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0631

1. Total Sample size was 2,396 but six respondents did not provide their highest education level
    achieved and 28 respondents did not provide their age, so the means presented here are for the
    sample of 2,363 used in the multivariate tests.

Table A.2.9. Multivariate Tests of Response Rates to the Expenses Section of the Mailback and Socioeconomic Factors

Socioeconomic Factor	Ordinary Least Squares	Logit	Probit
Constant	0.019831	-2.4896	-1.4443
	(0.333)	(-7.013) ***	(-7.205) ***
AGE	0.0013818	0.0085195	0.0048341
	(2.231) **	(2.370) **	(2.297) **
SEX	-0.045346	-0.25379	-0.14917
	(-2.583) **	(-2.565) **	(-2.569) **
Q12	0.038042	0.22090	0.12950
	(4.640) ***	(4.694) ***	(4.716) ***
Q8	0.063653	0.35194	0.20063
	(3.573) ***	(3.484) ***	(3.392) ***
INCMISS	-0.122274	-0.86428	-0.47661
	(-4.989) ***	(-5.072) ***	(-5.188) ***
INC40K	0.063418	0.31714	0.18839
	(2.249) **	(2.159) **	(2.121) **
INC60K	0.025224	0.11799	0.072610
	(0.527)	(0.469)	(0.480)
INC100K	0.094989	0.42932	0.26085
	(1.603)	(1.453)	(1.439)
INCGT100	0.010975	0.030599	0.025704
	(0.317)	(0.168)	(0.236)
WHITE	0.015422	0.096804	0.022763
	(0.337)	(0.359)	(0.149)
BLACK	-0.075786	-0.74242	-0.40160
	(-1.037)	(-1.364)	(-1.424)
HISPANIC	-0.036945	-0.25531	-0.18140
	(-0.652)	(-0.740)	(-0.933)
Adjusted R-Square	0.03986	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-liklihood	-1360.5956	-1316.857	-1316.857
Chi-squared Significance	N/A	0.00000	0.00000
N	2363	2363	2363

1. Dependent variable (RESPEXP) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is 0.2455. T-values are in parentheses under the estimated coefficient for each independent variable. * means the coefficient is significant at .10, ** means coefficient is significant at .05, and *** means coefficient is significant at .001.

Table A.2.10. Variable Definitions for Tests of Relationship between Expenditures and Socioeconomic Variables

Variable	Definition	Mean (N=466)[1]
LODGPPDK	Expenditures on Lodging Per Person Per Day - Keys	14.7508
FOODPPDK	Expenditures on Food Per Person Per Day - Keys	20.1534
TRANPPDK	Expenditures on Transportation Per Person Per Day - Keys	4.8030
BOATPPDK	Expenditures on Boating Per Person Per Day - Keys	17.2363
FISHPPDK	Expenditures on Fishing Per Person Per Day - Keys	7.8038
DIVPPDK	Expenditures on Diving Per Person Per Day - Keys	1.4046
SIGHPPDK	Expenditures on Sightseeing Per Person Per Day - Keys	3.2987
OTHPPDK	Expenditures on Other Activities Per Person Per Day - Keys	2.4848
MISCPPDK	Expenditures on Miscellaneous Per Person Per Day - Keys	11.9421
SERVPPDK	Expenditures on Services Per Person Per Day - Keys	1.5473
TOTPPDK	Total Expenditures on Lodging Per Person Per Day - Keys	85.425
AGE	Age of Person Interviewed	44.0258
SEX	Sex of Person Interviewed (1=male)	0.4914
Q12	Highest Level of Education Completed by the Person Interviewed	4.3712
Q8	Own a boat (1=yes 0=no)	0.5901
INCMISS	Dummy Variable 1=Household Income Missing	0.0858
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1609
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0429
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0300
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0901
WHITE	Dummy Variable 1=Race/ethnicity is White	0.9185
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0043
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0451

1. Sample size for all participants was 587 but missing information for AGE (2 observations) and Q12 (1 observation), LODGPPDK (84 observations), FOODPPDK (84 observations), TRANPPDK (101 observations), BOATPPDK (84 observations), FISHPPDK (84 observations), DIVPPDK (84 observations), SIGHPPDK (84 observations), OTHPPDK (84 observations), MISCPPDK (84 observations), SERVPPDK (121 observations), TOTPPDK (121 observations) resulted in 466 observations for estimation.

Table A.2.11. Tests of Relationships between Aggregate Expenditures and Socioeconomic Factors[1]

Independent Variables	Dependent Variables/Models					
	LODGPPDK	FOODPPDK	TRANPPDK	BOATPPDK	FISHPPDK	DIVPPPDK
Constant	-33.576	37.167	602108	25.193	3.8010	1.0081
	(-0.438)	(3.153) **	(1.678) *	(1.580)	(0.452)	(0.347)
AGE	-1.1611	-0.17698	-0.022612	-0.12606	0.12583	-0.048673
	(-1.371)	(-1.360)	(-0.554)	(-0.716)	(1.355)	(-1.516)
SEX	28.952	-3.4485	0.18798	3.5406	-0.19489	-1.0808
	(1.359)	(-1.053)	(0.183)	(0.800)	(-0.083)	(-1.338)
Q12	18.514	-3.1699	-0.58462	-1.9372	-1.6389	0.47058
	(1.837)	(-2.048) **	(-1.203)	(-0.925)	(-1.484)	(1.232)
Q8	21.712	0.19200	-1.4379	6.9699	1.8468	-0.80558
	(0.990)	(0.057)	(-1.359)	(1.529)	(0.768)	(-0.969)
INCMISS	-16.648	-10.289	-0.77353	-5.8026	-4.8005	0.32900
	(-0.435)	(-1.751) *	(-0.419)	(-0.730)	(-1.145)	(0.227)
INC40K	-23.782	2.1448	0.50198	-1.6004	-3.0206	-0.27882
	(-0.805)	(0.473)	(0.353)	(-0.261)	(-0.933)	(-0.249)
INC60K	-41.630	3.2951	1.8931	13.355	1.7356	0.13346
	(-0.788)	(0.406)	(0.743)	(1.217)	(0.300)	(0.067)
INC100K	-23.841	25.640	-1.9797	0.44160	-8.1875	-1.7057
	(-0.386)	(2.701) **	(-0.664)	(0.034)	(-1.208)	(-0.728)
INCGT100	-32.376	0.19739	0.85491	15.899	-5.5558	-1.3843
	(-0.854)	(0.034)	(0.468)	(2.019) **	(-1.337)	(-0.963)
WHITE	2.8183	6.3547	2.7883	-0.72554	6.2224	1.5227
	(0.047)	(0.690)	(0.964)	(-0.058)	(0.947)	(0.670)
BLACK	-0.24468	-10.606	1.0940	-17.396	8.5273	10.119
	(0.001)	(-0.405)	(0.133)	(-0.491)	(0.456)	(1.565)
HISPANIC	-9.6009	0.73307	4.8958	-6.9696	10.023	5.1878
	(-0.125)	(0.062)	(1.325)	(-0.438)	(1.194)	(1.787) *
Adjusted R-Square	-0.00958	0.01515	-0.01178	0.00083	-0.00366	0.0095
F - significance[2]	0.81509	0.08941	0.88211	0.41767	0.58976	0.17594
N	466	466	466	466	466	466

1. T-values in parentheses under the estimated coefficient. * means statistically significant at .10,
     ** means statistically significant at .05 and *** means statistically significant at .001.

2. Interpretation: This test tells us that the hypothesis that all the coefficients are equal to zero cannot be rejected for
     all expenditure items except expenditures on other activities (OTHPPDK).

Independent Variables	Dependent Variables/Models				
	SIGHPPDK	OTHPPDK	MISCPPDK	SERVPPDK	TOTPPDK
Constant	-0.40783	2.078	19.010	1.4694	61.954
	(-0.078)	(0.694)	(1.673) *	(0.500)	(0.718)
AGE	0.092141	0.0052080	0.10920	0.0037371	-1.1993
	(1.589)	(0.157)	(0.871)	(0.115)	(-1.258)
SEX	-1.8708	-0.75484	-3.6843	-1.3694	20.277
	(-1.282)_	(-0.907)	(-1.168)	(-1.678) *	(0.846)
Q12	-0.28184	-0.14100	-1.7614	-0.20271	9.2667
	(-0.408)	(-0.358)	(-1.181)	(-0.525)	(0.817)
Q8	-2.9395	-1.9947	-4.8734	0.79649	19.466
	(-1.957) *	(-2.329) **	(-1.500)	(0.948)	(0.789)
INCMISS	-2.4244	-2.1613	-1.1988	-1.2041	-44.973
	(-0.926)	(-91.447)	(-0.212)	(-0.822)	(-1.045)
INC40K	-0.40343	-0.22002	-5.0421	-0.58769	-32.288
	(-0.200)	(-0.191)	(-1.153)	(-0.520)	(-0.972)
INC60K	2.1503	-0.79150	0.34882	2.1325	-17.378
	(0.594)	(-0.384)	(0.045)	(1.054)	(-0.292)
INC100K	-3.4235	-2.7448	-2.1112	3.6667	-14.245
	(-0.809)	(-1.138)	(-0.231)	(1.549)	(-0.205)
INCGT100	2.1681	-0.39590	0.72017	3.8485	-16.024
	(0.835)	(-0.268)	(0.128)	(2.651) **	(-0.376)
WHITE	3.7519	2.4621	1.3393	0.70924	27.243
	(0.914)	(1.052)	(0.151)	(0.309)	(0.404)
BLACK	11.569	4.9616	14.898	0.90228	23.825
	(0.991)	(0.745)	(0.590)	(0.138)	(0.124)
HISPANIC	2.8542	9.5956	2.5311	-0.078630	19.172
	(0.544)	(3.209) **	(0.223)	(-0.027)	(0.222)
Adjusted R-Square	-0.00362	0.02836	-0.00948	0.00973	-0.154
F - significance[2]	0.58806	0.01412	0.81173	0.17151	0.95875
N	466	466	466	466	466

1. T-values in parentheses under the estimated coefficient. * means statistically significant at .10,
     ** means statistically significant at .05 and *** means statistically significant at .001.
2. Interpretation: This test tells us that the hypothesis that all the coefficients are equal to zero cannot be rejected for
     all expenditure items except expenditures on other activities (OTHPPDK).

Table A.2.12 Univariate Non-parametric Test of Response Rates to Importance/Satisfaction
Section of Mailback and Socioeconomic Factors[1]

Socioeconomic Factor	Statistical Significance of KS Test[2]	Significant[3]
Age	0.0001	YES
Education	0.0001	YES
Sex	0.3254	NO
Own a boat	0.0074	YES
Race/ethnicity	0.2811	NO
Household Income	0.0006	YES

1. The test used was the Kolmogorov - Smirnov Two-sample Test which
tests the differences in the distribution of socioeconomic factors
between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socio-
economic factor for respondents to the mailback survey was different
from those that did not respond at the 99 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90
percent confidence level.

Table A.2.13. Variable Definitions for Multivariate Test of Response Rates to Satisfaction/Importance Section of Mailback and Socioeconomic Factors

Variable	Definition	Mean (N=2,363)[1]
RESPSAT	Responded to Satisfaction/Importance Section of Mailback 1=yes 0=no	0.2586
AGE	Age of Person Interviewed	43.1329
SEX	Sex of Person Interviewed (1=male)	0.5324
Q12	Highest Level of Education Completed by the Person Interviewed	4.0956
Q8	Own a boat (1=yes 0=no)	0.5269
INCMISS	Dummy Variable 1=Household Income Missing	0.1604
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1138
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0351
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0224
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0736
WHITE	Dummy Variable 1=Race/ethnicity is White	0.8764
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0229
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0631

1. Total Sample size was 2,396 but six respondents did not provide their highest education level achieved and 28 respondents did not provide their age, so the means presented here are for the sample of 2,363 used in the multivariate tests.

Table A.2.14. Multivariate Tests of Response Rates to the Satisfaction/Importance
Section of the Mailback and Socioeconomic Factors.[1]

Socioeconomic Factor	Ordinary Least Squares	Logit	Probit
Constant	-0.015666	-2.6664	-1.5509
	(-0.259)	(-7.536) ***	(-7.755) ***
AGE	0.0021007	0.012380	0.0071524
	(3.338) ***	(3.513) ***	(3.450) ***
SEX	-0.050857	-0.27728	-0.16586
	(-2.851) **	(-2.846) **	(-2.884) **
Q12	0.040789	0.23017	0.13530
	(4.897) ***	(4.971) ***	(4.972) ***
Q8	0.058266	0.30986	0.17653
	(3.219) **	(3.122) **	(3.016)
INCMISS	-0.12154	-0.81208	-0.45005
	(-4.863) ***	(-4.971) ***	(-5.029) **
INC40K	0.067599	0.32841	0.19740
	(2.360) **	(2.263) **	(2.238) *
INC60K	0.010498	0.045724	0.030332
	(0.216)	(0.182)	(0.200)
INC100K	0.078465	0.34668	0.21528
	(1.303)	(1.171)	(1.192)
INCGT100	-0.00060145	-0.028722	-0.0097051
	(-0.017)	(-0.158)	(-0.073)
WHITE	0.02922	0.17701	0.070457
	(0.628)	(0.656)	(0.462)
BLACK	-0.055163	-0.53407	-0.29822
	(-0.743)	(-1.040)	(-1.092)
HISPANIC	-0.026817	-0.19097	-0.14440
	(-0.466)	(-0.556)	(-0.744)
Adjusted R-Square	0.04254	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-liklihood	-1401.3922	-1350.586	-1350.586
Chi-squared Significance	N/A	0.00000	0.00000
N	2363	2363	2363

1. Dependent variable (RESPSAT) is a dummy variable indicating whether the person
responded to the mailback 1=yes 0=no. Mean of the dependent variable is 0.2586.
T-values are in parentheses under the estimated coefficient for each independent
variable. * means the coefficient is significant at .10, ** means coefficient is
significant at .05, and *** means coefficient is significant at .001.

Table A.2.15. Variable Definitions for Tests of Relationship between Importance/Satisfaction and Socioeconomic Variables

Variable	Definition	Mean (N=439)[1]
D1	Satisfaction Rating Clear Water (scores 1 to 5)	4.5376
D8	Satisfaction Rating Opportunity to View Large Wildlife	3.9499
D19	Satisfaction Rating Quality of Beaches	4.2733
D26	Importance Rating Clear Water	3.4100
D33	Importance Rating Opportunity to View Large Wildlife	3.1503
D44	Importance Rating Quality of Beaches	2.8907
AGE	Age of Person Interviewed	44.9727
SEX	Sex of Person Interviewed (1=male)	0.5103
Q12	Highest Level of Education Completed by the Person Interviewed	4.3622
Q8	Own a boat (1=yes 0=no)	0.5991
INCMISS	Dummy Variable 1=Household Income Missing	0.0866
INC40K	Dummy Variable 1=Household Income $20,000 - $39,999	0.1435
INC60K	Dummy Variable 1=Household Income $40,000 - $59,999	0.0456
INC100K	Dummy Variable 1=Household Income $60,000 - $100,000	0.0433
INCGT100	Dummy Variable 1=Household Income over $100,000	0.0797
WHITE	Dummy Variable 1=Race/ethnicity is White	0.9203
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0068
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0433

1. Total Sample size was 615 but missing information for AGE (3 observations),
   Q12 (1 observation), D1 (29 observations), D8 (42 observations), D19 (32 observations),
   D26 (34 observations), D33 (105 observations) and D44 (84 observations).

Table A.2.16. Tests of Relationships between Selected Importance/Satisfaction Variables and Socioeconomic Factors[1]

Independent Variables	Dependent Variables/Models					
	D1	D8	D19	D26	D33	D44
Constant	4.1282	4.0669	5.1018	4.0289	3.5184	3.2747
	(14.937) ***	(9.708) ***	(14.319) ***	(11.457) ***	(9.441) ***	(8.462) ***
AGE	0.0080126	0.0033289	-0.0033394	-0.0067172	0.00052897	-0.0021908
	(2.756) **	(0.755)	(-0.891)	(-1.816) *	(0.135)	(-0.538)
SEX	-0.14685	-0.32377	-0.24235	0.072354	0.087831	-0.069780
	(-1.985) **	(-2.887) **	(-2.541) **	(0.769)	(0.880)	(-0.674)
Q12	0.12131	0.093607	0.013170	-0.097890	-0.10205	-0.078427
	(3.422) ***	(1.742) *	(0.288) *	(-2.170) **	(-2.135) **	(-1.580)
Q8	-0.036330	-0.16512	-0.37101	-0.074245	0.28500	0.18078
	(-0.468)	(-1.404)	(-3.710) ***	(-0.752)	(2.725) **	(1.664) *
INCMISS	0.00052146	-0.17758	-0.016684	-0.010877	0.25270	0.30519
	(0.004)	(-0.878)	(-0.097)	(-0.064)	(1.404)	(1.633)
INC40K	0.080911	0.15293	0.041436	-0.051540	-0.22781	-0.040263
	(0.752)	(0.937)	(0.299)	(-0.376)	(-1.569)	(-0.267)
INC60K	-0.24448	-0.16937	-0.25219	0.058969	-0.18916	-0.068487
	(-1.371)	(-0.627)	(-1.097)	(0.260)	(-0.787)	(-0.274)
INC100K	-0.12469	-0.037705	0.052850	-0.24394	-0.10783	-0.021578
	(-0.686)	(-0.137)	(0.226)	(-1.055)	(-0.440)	(-0.085)
INCGT100	0.15627	-0.027791	-0.50747	-0.066406	0.15400	0.29257
	(1.121)	(-0.132)	(-2.823) **	(-0.374)	(0.819)	(1.499)
WHITE	-0.39849	-0.41979	-0.35149	0.13304	-0.16380	-0.062071
	(-1.828)	(-1.271)	(-1.251)	0.480)	(-0.557)	(-0.203)
BLACK	-0.34185	-0.20374	-0.54506	0.78765	-0.33688	0.66389
	(-0.700)	(-0.275)	(-0.865)	(1.267)	(-0.511)	(0.970)
HISPANIC	-0.50660	-0.42090	-0.40307	0.26542	0.061158	-0.079346
	(-1.828) *	(-1.002)	(-1.128)	(0.753)	(0.164)	(-0.205)
Adjusted R-Square	0.04822	0.01548	0.06629	0.00888	0.0239	0.00392
F - significance	0.00088	0.09619	0.00004	0.19984	0.03331	0.32247
N	439	439	439	439	439	439

1. T-values in parentheses under the estimated coefficient.   * means statistically significant at .10,
    ** means statistically significant at .05 and *** means statistically significant at .001.

Table A.2.17 A Comparison of Weighted and Unweighted Means for Selected
             Responses from the Mailback Questionnaire

Section/Variable	Weighted Mean	Unweighted Mean	Weighted vs. Unweighted Percent Difference
Activity Participation			
SNORK	0.453018	0.371062	18.09
SCUBA	0.166541	0.136130	18.26
BFISH	0.392390	0.298836	23.84
ACT14A	0.196301	0.161884	17.53
Expenditures			
LODGPPDK	4.594031	5.051203	-9.95
FOODPPDK	27.166546	24.290747	10.59
TRANPPDK	7.309684	6.310223	13.67
BOATPPDK	20.16106	18.186299	9.79
FISHPPDK	9.582437	8.001403	16.50
DIVPPDK	1.531317	1.313341	14.23
SIGHPPDK	3.533575	3.571501	-1.07
OTHPPDK	2.971713	3.094177	-4.12
MISCPPDK	18.31235	15.216945	16.90
SERVPPDK	3.620703	1.547261	57.27
TOTPPDK	98.783416	86.583100	12.35
Importance/Satisfaction			
D1	4.398946	4.518771	-2.72
D8	3.766983	3.830716	-1.69
D19	4.262237	4.233276	0.68
D26	3.499417	3.421687	2.22
D33	3.205729	3.172549	1.04
D44	3.004816	2.902072	3.42

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Chapter 3. Methods of Estimating Activity Participation and Intensity of Use

This Chapter addresses the methods used for estimating activity participation and intensity of use. Participation includes estimates of participation rates (the percent of residents who did an activity) and the number of residents who did the activity. Estimates are made by activity and region. Intensity of use includes estimates of the number of different days of activity. As with participation, estimates are made by activity and region. The results of this estimation are presented in "A Socioeconomic Analysis of the Recreation Activities of Monroe County Residents in the Florida Keys/Key West" (Leeworthy and Wiley, 1997). Here the methods used to derive those estimates are documented and the estimation is extended to cover activities not reported in the socioeconomic analysis.

Activity Participation

The estimates provided in Leeworthy and Wiley, 1997 are of activity participation by residents over the 12 month period, June 1995 - May 1996. Information was first obtained for a randomly chosen person, age 16 or older, in the household the "respondent"). The birthday rule was used to randomly select the respondents, i.e. the person in the household, age 16 or older, that last celebrated their birthday. Information was gathered on the respondent's activity participation and annual number of days of each activity in each region. Second, activity participation was also obtained on all other individuals in the household, i.e. individuals of all ages. So, although there were 582 randomly chosen individuals within 582 households that provided adequate survey responses to the activity section of the mailback, information on activity participation was obtained on 1,126 residents of all ages living in the 582 households.

Participation in 66 activities (see Exhibit 3) in four regions (Upper Keys, Middle Keys, Lower Keys, Key West), (see Exhibit 2 for a map showing the region definitions) for the two seasons was obtained[1]. Two types of participation rates were calculated. The first was the percent of all residents of Monroe County who participated in an activity in a region. This was calculated by summing across all residents, living in the sampled households, who did the activity in the region divided by the sum of all residents living in the sampled households. When this participation rate is multiplied by the number of all residents of Monroe County, an estimate is obtained for the number of residents who did an activity in the region.

The second type of participation rate calculated was the "within region participate rates." These participation rates are the percent of residents who participated in a particular region. These participation rates were calculated by summing the number of sampled residents who did any activity in the region by the sum of sampled residents who visited the region; for example, the answer to the question, *Of all the residents that participated in outdoor recreation in the Upper Keys, what percent participate in snorkeling?*

It is important to note that in deriving the estimates of activity participation rates that sample weights were used to ensure that the sample of residents of all ages were representative of the population of residents. Chapter 1 discussed the derivation of these activity sample weights.

Estimates for activity participation by region for the complete list of 66 activities can be found in the appendix of "A Socioeconomic Analysis of the Recreation Activities of Monroe County Residents in the Florida Keys/Key West" (Leeworthy and Wiley, 1997). Also, presented in this report were participation rates for 41 Aggregated Activities formulated from the list of 66 activities. Estimates for the 41 aggregated activities were done to ensure against double-counting. One cannot add either participation rates or number of participants by activity because residents can and do engage in multiple activities. Participation rates and number of participants were estimated for the 41 aggregated activities without double-counting.

Intensity of Use (Number of Days)

Participation rates combined with estimates of the number of residents allowed for the estimation of the number of residents who did an activity, in a given region. For some purposes, measurements of the intensity of activities are also needed. For example, assessing the need for recreation facilities. The measure of intensity of use used in this analysis is the number of separate days the person did the activity.

The general approach used was to first estimate the average number of days of a given activity in each region. The average number of days was then multiplied by the number of residents who did the activity in the region.

Days information was obtained from the activities section of the mailback survey (see Exhibit 4). Information on the number of days of participation in each activity for each region was asked for only 37 of the 66 activities for which participation was estimated. These 37 activities are identified by an "A" suffix attached to the activity number (see Exhibit 3).

In order to consider an estimate reliable, a minimum sample size of 25 observations per activity, per region was needed. Generally, we were not able to achieve the minimum sample size for activities that had low participation rates. Estimates have been made for the 39 activities, in each region. Sample averages were used irrespective of sample size and when there was no information available a value of zero (0.00) day was used for the average days. The sample averages, standard errors of the mean, the number of observations and documentation of outliers dropped[2] for each of the 39 activities, for each region are summarized in Tables A.3.1 and A.3.2 for days. Estimates of total annual number of days by activity and region are obtained by multiplying the estimated averages of the annual number of days by activity and region found in Tables A.3.1 and A.3.2 by the number of participants found in Tables A.2.2 and A.2.3 on pages 35-36 in Leeworthy and Wiley, 1997. Days are then added across regions to get the "All Keys" totals for each activity. Days in sub-activity categories are added up to get aggregate activity totals (e.g. All Snorkeling Days in the Upper Keys is equal to Charter/Party + Rental Boat + Private Boat + Shore days in the Upper Keys). Table A.3.3 summarizes the total annual number of days by region. Table A.3.3 here corresponds to Table A.2.9, page 42 of Leeworthy and Wiley, 1997.

Aggregation Issues. In adding days across activities, especially within regions, there may be a certain amount of double-counting. This may be a significant problem for the number of days, since in a given day, one is more likely to have engaged in multiple activities. The problem of double-counting would also be expected to be less when adding within a given activity (e.g. snorkeling) across type of boat (e.g. charter/party, rental, and private). The problem would be even less when adding across regions for a given activity. Where the problem of double-counting is greatest is when one attempts to add across entirely different activities. For example, attempting to add snorkeling and scuba diving days for a given region may include a relatively high amount of double-counting. A good indication of this is activity participation numbers where comparisons can be made between the number of participants who did snorkeling and the number who did scuba diving for a given region with the number of participants who did either snorkeling or scuba diving but for which double-counting has been eliminated. This should provide a guide to the extent of possible double-counting.

Endnotes

1. The FSU Survey Research Center retyped the activity list and left out two activities (601 A Personal watercraft - private and 700 A Sailing charter/party boat (pay operation)). So for the visitors survey, information on 68 activities was collected but for this analysis, information was collected for only 66 activities.

2. The documentation of outliers column includes two numbers. The first number is the values or range of values dropped. The second number is the number of observations dropped. Outliers were defined as any observation which accounted for 10 percent or more of the sample sum.

Table A.3.1. Average Number of Days of Activity Per Trip: Upper and Middle Keys

	Upper Keys				Middle Keys			
	Mean	Std. Error[2]	n	Outliers[1]	Mean	Std. Error[2]	n	Outliers[1]
Snorkeling								
Charter/Party Boat	4.1	3.1993	10	≥20; 3	4.4	3.8545	5	≥20; 3
Rental Boat	2.0	0.4472	6	None	4.3	2.1360	4	None
Private Boat	14.2	1.3840	104	None	15.4	2.0376	78	None
Shore	6.7	3.1467	33	≥30; 4	10.8	2.6870	38	≥50; 4
Scuba Diving								
Charter/Party Boat	4.3	4.4506	15	≥45; 3	3.0	9.4295	8	≥25; 2
Rental Boat	1.0	7.0000	2	22; 1	0.0	-	0	None
Private Boat	11.0	5.1336	50	260; 1	11.1	2.0159	36	50; 1
Scuba from Shore	4.2	1.4472	6	None	2.6	2.6638	8	25; 1
Offshore Fishing								
Charter Boat	2.4	16.4046	10	≥20; 2	4.2	2.6445	6	20; 1
Party Boat	3.3	1.0259	10	≥10; 2	2.0	1.2234	6	10; 1
Rental Boat	1.3	0.3333	3	None	1.0	-	1	None
Private Boat	12.3	2.2435	77	≥100; 2	12.8	8.3783	62	≥125; 4
Flats/Backcountry Fishing								
Guided	7.7	3.3830	3	None	1.5	0.5000	2	None
Rental Boat	0.0	-	0	None	0.0	-	0	None
Private Boat	9.5	2.8192	44	120; 1	10.3	1.4718	32	None
Other Fishing								
Charter Boat	1.0	-	1	None	0.0	-	0	None
Party Boat	2.0	1.0000	2	None	0.0	-	0	None
Rental Boat	7.5	4.5000	2	None	0.0	-	0	None
Private Boat	20.6	10.5253	23	260; 1	6.0	2.2801	18	≥20; 4
Fishing from Shore	**9.8**	5.3038	29	≥36; 4	**12.4**	5.4559	21	≥40; 4
Personal Watercraft - Rental	**2.8**	2.0455	11	15; 3	**2.6**	49.5711	5	300; 1
Sailing								
Rental Boat	1.0	0.0000	2	None	1.0	0.0000	2	None
Private Boat	9.9	2.3094	30	≥40; 3	15.7	9.1854	15	≥97; 3
Other Boating								
Charter/Party Boat	1.3	1.3828	9	15; 1	2.1	0.6961	9	None
Rental Boat	3.0	7.4237	2	25; 1	3.0	6.0000	1	15; 1
Private Boat	13.7	5.3041	50	≥90; 2	8.5	1.5650	36	50; 1
Viewing Nature & Wildlife								
Glass-bottom Boat	1.3	0.1306	12	None	1.0	-	1	None
Guided Backcountry Excursion	1.5	0.5000	2	None	7.0	71.5000	1	≥150; 1
Private/Rental Boat	12.8	1.4784	73	None	8.1	2.2240	48	≥50; 3
Wildlife & Nature Study - Land								
Wildlife observation/photography	10.9	10.3516	44	≥60; 5	8.8	13.6637	30	≥100; 6
Other Nature Study	5.3	17.9041	16	≥20; 6	10.0	18.5005	12	≥50; 6
All Beach Activities								
Swimming at Beaches	12.8	6.0799	56	≥150; 3	11.0	3.0475	85	≥100; 3
Other Beach Activities	16.5	4.7716	38	≥100; 2	6.6	4.0385	37	≥52; 6
Windsurfing or Sailboarding	**9.3**	7.9267	3	40; 1	**4.0**	38.6839	2	120; 1
Swimming in Outdoor Pools	**29.3**	9.0187	54	≥200; 3	**18.9**	6.4292	30	200; 1
Museums & Historic Sites								
Museums	2.5	0.6865	23	≥10; 3	2.0	0.8852	36	≥20; 2
Historic Areas	3.4	0.4943	33	None	3.9	0.6183	43	None

1. This column is documentation of the outliers that were dropped for each variable. The first number in the column is the range of values that were dropped. The second number is the number of observations that were dropped.
2. This is the standard error before the outliers were dropped.

Table A.3.2. Average Number of Days of Activity Per Trip: Lower Keys and Key West

	Lower Keys				Key West			
	Mean	Std. Error[2]	n	Outliers[1]	Mean	Std. Error[2]	n	Outliers[1]
Snorkeling								
Charter/Party Boat	4.1	3.3286	17	≥30; 2	4.4	2.9197	32	≥20; 2
Rental Boat	2.0	7.7032	3	≥20; 2	4.3	1.9311	4	None
Private Boat	14.2	1.9984	94	None	15.4	2.5995	74	≥100; 3
Shore	6.7	8.7210	44	≥150; 4	10.8	3.6307	49	≥100; 2
Scuba Diving								
Charter/Party Boat	4.3	0.4199	8	None	3.0	2.9672	8	≥20; 2
Rental Boat	1.0	-	1	None	0.0	-	0	None
Private Boat	11.0	3.3166	29	97; 1	11.1	4.5053	26	≥50; 3
Scuba from Shore	4.2	0.6292	4	None	2.6	2.8983	4	≥10; 2
Offshore Fishing								
Charter Boat	2.4	8.0474	5	50; 1	4.2	0.8718	9	10; 1
Party Boat	3.3	0.0000	2	None	2.0	0.8133	13	10; 2
Rental Boat	1.3	-	1	None	1.0	0.5000	2	None
Private Boat	12.3	3.9380	60	≥97; 3	12.8	2.3069	48	None
Flats/Backcountry Fishing								
Guided	7.7	1.0000	2	None	1.5	0.0000	2	None
Rental Boat	0.0	-	1	None	0.0	-	1	None
Private Boat	9.5	4.2188	43	≥100; 2	10.3	4.4094	21	≥40; 3
Other Fishing								
Charter Boat	1.0	-	0	None	0.0	2.5000	2	None
Party Boat	2.0	-	0	None	0.0	0.5099	5	None
Rental Boat	7.5	-	1	None	0.0	-	1	None
Private Boat	20.6	6.3873	15	≥60; 2	6.0	1.8350	20	30; 1
Fishing from Shore	9.8	9.0718	32	≥100; 2	12.4	3.7886	32	≥50; 3
Personal Watercraft - Rental	2.8	0.9574	4	None	2.6	1.0651	9	12; 1
Sailing								
Rental Boat	1.0	-	1	None	1.0	2.2500	4	None
Private Boat	9.9	6.2062	17	100; 1	15.7	5.7905	33	200; 1
Other Boating								
Charter/Party Boat	1.3	0.5062	11	None	2.1	0.4950	29	15; 1
Rental Boat	3.0	-	1	None	3.0	4.0415	2	15; 1
Private Boat	13.7	3.4020	32	90; 1	8.5	6.2544	39	250; 1
Viewing Nature & Wildlife								
Glass-bottom Boat	1.3	0.0000	2	None	1.0	0.4750	18	10; 1
Guided Backcountry Excursion	1.5	21.1285	6	150; 1	7.0	20.9374	5	≥40; 2
Private/Rental Boat	12.8	6.5782	54	≥100; 3	8.1	5.7594	55	≥120; 3
Wildlife & Nature Study - Land								
Wildlife observation/photography	10.9	10.4234	45	≥100; 10	8.8	4.6857	40	≥52; 9
Other Nature Study	5.3	5.7603	20	≥50; 3	10.0	10.6776	18	≥97; 3
All Beach Activities								
Swimming at Beaches	12.8	3.9669	53	≥60; 6	11.0	2.9666	94	≥90; 7
Other Beach Activities	16.5	5.0636	25	≥50; 4	6.6	4.2324	77	300; 1
Windsurfing or Sailboarding	9.3	3.0000	2	None	4.0	1.5000	2	None
Swimming in Outdoor Pools	29.3	21.9031	13	≥40; 9	18.9	6.7540	79	≥200; 4
Museums & Historic Sites								
Museums	2.5	0.2979	27	None	2.0	0.5821	95	None
Historic Areas	3.4	1.1511	27	≥20; 3	3.9	0.8121	132	100; 1

1. This column is documentation of the outliers that were dropped for each variable. The first number in the column is the range of values that
    were dropped. The second number is the number of observations that were dropped.
2. This is the standard error before the outliers were dropped.

Table A.3.3. Total Annual Number of Days of Activity by Region (Thousands of Days)

Activity1	Upper Keys	Middle Keys	Lower Keys	Key West	All Keys
All Snorkeling	**199.2**	**187.9**	**205.7**	**153.8**	**746.5**
Charter/Party Boat	4.8 *	3.4 *	3.6 *	6.2	18.0
Rental Boat	1.2 *	1.8 *	0.9 *	1.5 *	5.5
Private Boat	165.0	131.8	135.3	77.5	509.6
Snorkeling from Boat	171.0	137.0	139.8	85.3	533.1
Shore	28.2	50.9	65.8	68.5	213.4
All Scuba Diving	**55.2**	**52.0**	**32.6**	**29.7**	**169.6**
Charter/Party Boat	5.7 *	2.4 *	1.5 *	2.3 *	11.9
Rental Boat	0.3 *	0.0	1.7 *	0.0	2.0
Private Boat	48.3	46.8	27.8	25.4	148.2
Scuba from Boat	54.2	49.2	31.0	27.6	162.1
Shore	1.0 *	2.8 *	1.6 *	2.1 *	7.5
Offshore Fishing	**114.5**	**112.5**	**92.9**	**96.1**	**416.1**
Charter Boat	3.8 *	3.0 *	1.3 *	1.4 *	9.5
Party Boat	4.8 *	1.9 *	1.2 *	2.6 *	10.5
Rental Boat	0.3 *	0.2 *	0.1 *	0.5 *	1.1
Private Boat	105.6	107.4	90.3	91.7	395.0
Flats/Backcountry Fishing	**47.0**	**39.0**	**49.7**	**23.2**	**158.8**
Guided	3.3 *	0.5 *	0.8 *	0.3 *	4.8
Rental Boat	0.0	0.0	0.0 *	0.2 *	0.2
Private Boat	43.7	38.5	48.9	22.7 *	153.8
Other Fishing	**56.8**	**22.3**	**22.6**	**28.0**	**129.7**
Charter Boat	0.0 *	0.0	0.0	1.7 *	1.7
Party Boat	0.3 *	0.0	0.0	0.6 *	0.9
Rental Boat	2.0 *	0.0	0.0 *	0.1 *	2.1
Private Boat	54.4 *	22.3 *	22.6 *	25.7 *	124.9
Fishing from Shore	**56.1**	**49.2 ***	**49.3**	**30.6**	**185.2**
All Fishing	**274.3**	**223.0**	**214.6**	**177.9**	**889.8**
Personal Watercraft - Rental	**4.8 ***	**1.3 ***	**0.7 ***	**2.9 ***	**9.7**
Sailing	**25.3**	**21.8**	**21.5**	**19.3**	87.9
Rental Boat	0.1 *	0.2 *	0.4 *	0.9 *	1.6
Private Boat	25.2	21.6 *	21.2 *	18.3	86.3
Other Boating	**77.9**	**39.6**	**53.6**	**54.5**	**225.6**
Charter/Party Boat	1.4 *	3.8 *	3.1 *	5.1	13.4
Rental Boat	0.9 *	0.6 *	0.1 *	0.5 *	2.1
Private Boat	75.7	35.2	50.3	48.9	210.1
Viewing Nature & Wildlife - Boat	**101.5**	**48.4**	**101.4**	**53.4**	**304.7**
Glass-bottom Boat	2.4 *	0.3 *	0.3 *	1.5 *	4.5
Guided Backcountry Excursion	0.5 *	1.8 *	2.2 *	1.0 *	5.5
Private/Rental Boat	98.6	46.2	98.9	51.0	294.7
Wildlife & Nature Study - Land	**61.6**	**42.8**	**64.5**	**54.9**	**223.8**
Wildlife observation/photography	53.8	27.1	39.7	38.4	159.1
Other Nature Study	7.7 *	15.8 *	24.8 *	16.5 *	64.7
All Viewing Wildlife & Nature	**163.1**	**91.2**	**165.8**	**108.3**	**528.5**
All Beach Activities	**176.5**	**154.5**	**85.1**	**237.3**	**653.3**
Swimming at Beaches	93.5	123.2	62.2	118.7	397.6
Other Beach Activities	82.9	31.3	22.9	118.6	255.7
Windsurfing or Sailboarding	**2.9 ***	**0.5 ***	**1.7 ***	**1.1 ***	**6.3**
Swimming in Outdoor Pools	**226.1**	**74.7**	**31.5 ***	**233.3**	**565.6**
Museums & Historic Sites	**16.3**	**28.7**	**28.4**	**106.6**	**180.0**
Museums	5.3	9.5	8.7	46.4	69.9
Historic Areas	11.0	19.2	19.7	60.2	110.1

* Sample size not large enough (less than 25 observations) to consider estimate reliable.

References

Leeworthy, Vernon R., Wiley, Peter C. 1997. A Socioeconomic Analysis of the Recreation ACtivities of Monroe County Residents in the Florida Keys/Key West. Silver Spring, MD: National Oceanic and Atmospheric Administration.

Leeworthy, Vernon R., Wiley, Peter C. 1996. Visitor Profiles: Florida Keys/Key West. Silver Spring, MD: National Oceanic and Atmospheric Administration.

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Exhibits

Exhibit 1

MONROE COUNTY TELEPHONE SURVEY
SURVEY RESEARCH LABORATORY
FLORIDA STATE UNIVERSITY
LAST REVISED; JULY 5, 1996 jp

>CHK1<   INTERVIEWER CHECKPOINT NUMBER 1;

The CASE ID NUMBER for this case is: [fill CASE]

The telephone number you will be calling is:

[fill AREA] - [fill PRFX] - [fill SUFX]

Check to be sure that you have the correct case and the correct telephone number. Do you have the right case?

        <1>   YES this is the right case
        <2>   No [goto fdis] this is the wrong case

===>

>INTR<   Hello, my name is _____ . I'm calling from Florida State University. Here at the university, we are collecting information about the residents of Monroe County and their use of recreational resources.

[loc 2/12]

Since this number was randomly selected by a computer, I need to know if this is a home or a business.

        <1>   Home [gotoSCR1]
        <2>   BUSINESS

===> [goto DC01]
>SCR1<   How many people in your household are **PERMANENT RESIDENTS** of Monroe County, Florida?

        <0>   NONE
        <1>   ONE PERSON [goto SCR3]
        <2-95> NUMBER OF ELIGIBLES IN HOUSE [gotoSCR2]

        <98>   DON'T KNOW
        <99>   REFUSED

===> [goto DC02]
>SCR2<   How many of those people are at least 16 years of age?

        <0>   NONE
        <1>   ONE PERSON [goto SCR3]
        <2-95> NUMBER OF ELIGIBLES IN HOUSE [gotoSCR4]

        <98>   DON'T KNOW
        <99>   REFUSED

Exhibit 1

===> [goto DC03]

>SCR3<   Is that person at least 16 years of age?

                        <1>   YES
                        <2>   NO [goto DC03]

===> [goto SCR7]
>MON<   [allow 10]

>SCR4<   I need to talk to the person who HAS HAD the most recent birthday. Did anyone have a
              birthday between

              January and TODAY?

              IF YES ASK: What month?

FIRST CHOICE   <7>   July   (any day prior to July 13, 1996)
SECOND CHOICE   <6>   June
THIRD CHOICE   <5>   May
                      <4>   April
                      <3>   March
                      <2>   February
                      <1>   January

                      <13>   DON'T KNOW
                      <14>   REFUSED
                      <15>   NONE BORN IN THESE MONTHS [goto SCR5]

===> [goto T02]
>SCR5<   Did anyone have a birthday between LATE July and December?

              IF YES ASK: What month?

FIRST CHOICE   <12>   December
SECOND CHOICE   <11>   November
THIRD CHOICE   <10>   October
                      <9>   September
                      <8>   August
                      <7>   July   (any day after July 12, 1996)

                      <13>   DON'T KNOW
                      <14>   REFUSED

Exhibit 1

===> [goto T03]
>SCR6<   I need to talk to the person who was born in [fill MON]

        <1>   RESPONDENT LOCATED; CONTINUE with survey.

        <10>   [goto refc]   CALL BACK
        <20>   [goto refc]   NO ANSWER
        <34>   [goto refc]   REFUSAL SELECTED RESPONDENT
        <35>   [goto refc]   REFUSAL NONSELECTED RESPONDENT
        <60>   [goto cspg]   SUPERVISOR USE ONLY--used to finalize samples

        <99>   [goto fdis]   NON CASE NUMBER (FAX, BUSINESS, RECD, OR 6 NA'S)

NOTE: YOU MAY SKIP TO refc OR JUMP BACK TO refc IF YOU HAVE A BREAK DURING THE SURVEY.
===> [goto] CONF]
>SCR7<   I need to talk to that person.

        <1>   RESPONDENT LOCATED; CONTINUE wityh survey.

        <10>   [goto refc]   CALL BACK
        <20>   [goto refc]   NO ANSWER
        <34>   [goto refc]   REFUSAL SELECTED RESPONDENT
        <35>   [goto refc]   REFUSAL NONSELECTED RESPONDENT
        <60>   [goto cspg]   SUPERVISOR USE ONLY--used to finalize samples

        <99>   [goto fdis]   NON CASE NUMBER (FAX, BUSINESS, RECD, OR 6 NA'S)

NOTE: YOU MAY SKIP TO refc OR JUMP BACK TO refc IF YOU HAVE A BREAK DURING THE SURVEY.

===> [goto CONF]
>CONF<   READ INTRO ONLY IF NECESSARY:
        Hello, my name is _____ . I'm calling from Florida State University. Here at the
        univsersity, we are collecting information about the residents of Monroe County and their use
        of recreational resources.

READ: **Before we begin, let me assure you that everything you say will remain confidential.
        However, my supervisor may be monitoring this call to evaluate my performance.**

        <1>   RESPONDENT LOCATED; CONTINUE wityh survey.

        <10>   [goto refc]   CALL BACK
        <20>   [goto refc]   NO ANSWER
        <34>   [goto refc]   REFUSAL SELECTED RESPONDENT
        <35>   [goto refc]   REFUSAL NONSELECTED RESPONDENT
        <60>   [goto cspg]   SUPERVISOR USE ONLY--used to finalize samples

        <99>   [goto fdis]   NON CASE NUMBER (FAX, BUSINESS, RECD, OR 6 NA'S)

NOTE: YOU MAY SKIP TO refc OR JUMP BACK TO refc IF YOU HAVE A BREAK DURING THE SURVEY.
===> [goto Q!]

Exhibit 1

>Q1< **First, I would like to ask you about the quality of life in Monroe County (the Florida Keys). Overall, how would you rate Monroe County as a place to live?**

Would you say...(READ RESPONSES)

<1> EXCELLENT
<2> GOOD
<3> FAIR
<4> POOR
<8> DON'T KNOW
<9> NO RESPONSE

===>
>Q2< There are many reasons that people choose to live where they do in Florida. What is the **most important reason** you chose to live in Monroe County? Would you say: [allow 2]

READ RESPONSES

<0> VOLUNTEERED: NO SPECIAL REASON
<1> YOU WERE BORN THERE
<2> JOB OR BUSINESS REASONS
<3> CLIMATE
<4> ENVIRONMENT
<5> ACCESS TO NATURAL RESOURCES, SUCH AS NATURAL SETTINGS AND WILDLIFE
<6> OPPORTUNITIES FOR WATER ACTIVITIES SUCH AS FISHING OR DIVING
<7> A LOW CRIME RATE
<8> CULTURAL ACTIVITIES
<9> RETIREMENT
<X> OR SOME OTHER REASON I HAVE NOT MENTIONED (SPECIFY) [SPECIFY]

===>
>Q3< In the past **12 MONTHS** have you done any outdoor recreational activities in the Florida Keys?

<1> YES
<2> NO

<8> DON'T KNOW

===>
>Q4< In the past **12 MONTHS** have you done any outdoor recreational activities in Everglades National Park?

<1> YES
<2> NO

<8> DON'T KNOW

Exhibit 1

===> [goto Q6]
>Q5<   Were any of your activities in the Floriday Bay portion of the park?

           <1>   YES
           <2>   NO

           <8>   DON'T KNOW

===>
>Q6<   What is the closest mile market to your residence?

ROUND ALL MILE MARKERS

           <0-996>   MILE MARKER
           <X>   SPECIFY RESPONSE [specify]

           <998>   DON'T KNOW
           <999>   NO RESPONSE

===>
>Q7<   Do you have access to the water from your residence?

           <1>   YES
           <2>   NO

===>
>Q8<   Do you own a boat?

           <1>   YES
           <2>   NO

===>
>Q9<   To be sure we have a respresentative sample of Monroe County, we need to ask you a few questions about your background.

How many years have you lived in Monroe County?

           <1>   LESS THAN ONE YEAR
           <2>   ONE TO FIVE YEARS
           <3>   SIX TO TEN YEARS
           <4>   ELEVEN TO TWENTY YEARS
           <5>   TWENTY-ONE TO FORTY YEARS
           <6>   FORTY-ONE OR MORE

           <8>   DON'T KNOW
           <9>   NO RESPONSE

===>
>Q10<   In what year were you born?

           <1900-1980>   YEAR OF BIRTH

Exhibit 1

```
===>
>Q11<        What is your ethnic background?  [allow 2]

             READ RESPONSES AS NECESSARY:

                  <1>    AMERICAN INDIAN OR ALASKAN NATIVE
                  <2>    ASIAN OR PACIFIC ISLANDER
                  <3>    BLACK (NON-HISPANIC)
                  <4>    HISPANIC
                  <5>    WHITE
                  <6>    OTHER SPECIFY [specify]

                  <8>    DON'T KNOW
                  <9>    NO RESPONSE

===>
>Q12<        What is the highest level of education that you have completed?

                  <1>    EIGHTH GRADE OR LESS
                  <2>    NINTH TO ELEVENTH GRADE
                  <3>    TWELFTH GRADE
                  <4>    THIRTEEN TO FIFTEEN YEARS
                  <5>    SIXTEEN YEARS (COLLEGE GRADUATE)
                  <6>    SEVENTEEN OR MORE (GRAD SCHOOL)

                  <7>    REFUSED
                  <8>    DON'T KNOW
                  <9>    NO RESPONSE

===>
>Q13<        What is your employment status? [allow 2]

             Probe:  Are you employed, unemployed retired or something else?

                  <1>    UNEMPLOYED
                  <2>    EMPLOYED FULL-TIME
                  <3>    EMPLOYED PART-TIME
                  <4>    RETIRED
                  <5>    STUDENT
                  <6>    HOMEMAKER
                  <7>    NONE OF THE ABOVE SPECIFY [specify]

                  <98>   DON'T KNOW
                  <99>   NO RESPONSE

===>
>Q14<        Do you work outside Monroe County?

                  <1>    YES
                  <2>    NO

===>
>Q15<        What is your zip code?  [allow 5]
```
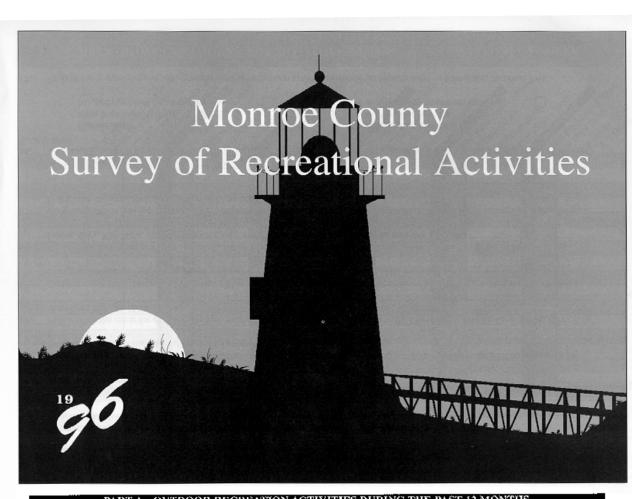
Exhibit 1

```
===>
>Q16<        What is your total household income?

             PROBE:  In what general category does your total household income fall?
```

<1>	Under $5,000	<10>	$60,000 to 70,000
<2>	$5,000 to 10,000	<11>	$70,000 to 80,000
<3>	$10,000 to 15,000	<12>	$80,000 to 90,000
<4>	$15,000 to 20,000	<13>	$90,000 to 100,000
<5>	$20,000 to 25,000	<14>	Over $100,000
<6>	$25,000 to 30,000	<97>	Refused
<7>	$30,000 to 40,000	<98>	Don't Know
<8>	$40,000 to 50,000		
<9>	$50,000 to 60,000		

```
===>
>rte<        [if Q3 eq <1>] [goto Q17] [else]
             [if Q4 eq <1>] [goto Q17] [else]
             [endif] [endif]

>Q17<        We would also like you to participate in a second part of this study, that will be mailed to you.
             You will be asked about your recreational activities in Monroe County over the last year.  For
             participating in this part of the survey, your name will be entered into a drawing for a free
             brunch or dinner for two at one of six Florida Keys resorts near you.

             Would you be willing to participate in the second part of this survey--the mail survey portion?

             <1>    YES
             <2>    NO  [goto Q17P]

===> [goto Q18]
>Q17p<
```

No matter how little or how much you participate in recreational activities in the Keys, the mail questionnaire is needed to accurately represent recreational activities in your area. Would you be willing to participate in the second part of this survey--the mail survey portion?

```
             <1>    YES
             <2>    NO [goto BYE]
```

YOU MAY WIN ONE OF THE FOLLOWING!!

Islamorada Area ---   Bruch at Cheeca Lodge

Key Largo Area ---   Brunch at Marriott's Key Largo Bay Beach Resort

**Key West or
   Stock Island ---   Brunch at Marriott's Casa Marina Resort or
                              Dinner at the Pier House.**

Lower Keys Area ---   Brunch at Little Palm Island

Marathon Area ---   Brunch at Hawk's Cay resort

Exhibit 1

===>
>Q18<   IF YES: Record name and address on the dispo's page 2.

TYPE <g> TO GO ON

===>
>BYE<   That completes our survey. Thank you for your time.
Good bye.

TYPE <g> TO GO ON

===>
>sex<   Sex of the respondent

<1>   Male
<2>   Female

===>
>DC01<   Thanks you for your time and help. We are only speaking with households today.

Good bye.

===>
>DC02<   Thank you for your time and help. We are only speaking with permanent residents today.

Good bye.

===>
>DC03<   Thank you for your time and help. We are only speaking with Florida residents over the age of sixteen today.

Good bye.

Exhibit 2

Monroe County
Survey of Recreational Activities

19 96

PART A: OUTDOOR RECREATION ACTIVITIES DURING THE PAST 12 MONTHS
IN THE FLORIDA KEYS AND EVERGLADES NATIONAL PARK
(Please use the enclosed activities list and map to help you answer the questions in this section. Please fill-in your answers to questions 1-7 on the next page.)

A1.   Which of the activities on the enclosed Activities List did you or someone in your household do either in the Florida Keys or in the Everglades National Park during the past 12 months? **(Note, if you did nore than 20 activities, please fill-in the 20 activities most important to you)**

A2.   For each activity you listed, how many members of your household **age 16 or older** did the activity either in the Florida Keys or in the Everglades National Park during the past 12 months?

A3.   For each activity you listed, how many members of your household **under age 16** did the activity either in the Florida Keys or in the Everglades National Park during the past 12 months?

A4.   Please fill in the circle for each activity you, yourself, did during the past 12 months in the Upper Keys, Middle Keys, Lower Keys, Key West or Everglades National Park.

A5.   On how many different days did you, yourself, participate in each activity in the Upper Keys, Middle Keys, Lower Keys, Key West or Everglades National Park. **(Only answer for those activities you listed with an A suffix)**

A6.   On a typical dayt when you participated in each activity, how many hours did you do the activity in the Upper Keys, Middle Keys, Lower Keys, Key West or Everglades National Park. **(Only answer for those activities you listed with an A suffix)**

A7.   How many others (excluding yourself in your household did each activity in the Upper Keys, Middle Keys, Lower Keys, Key West, or Everglades National Park during the past 12 months?

A8.   What would you say is the most important activity you did in the Florida Keys *[A461]* and the most important activity you did in Everglades National Park *[A462]* ?

A9.   On how many days did you participate in outdoor recreation activities **outside** the Florida Keys or Everglades National Park during the past 12 months *[A463]* ?

Exhibit 2

PART A: CONTINUED
NUMBER OF DAYS AND HOURS FOR ACTIVITIES WITH AN 'A' IN THE ACTIVITY NUMBER

	(QA2) Number in household **OVER 16** who did activity	(QA2) Number in household **UNDER 16** who did activity	**Everglades** You Participated (QA 4) / # Days (Q A5) / # Hours (Q A6) / # Of Other (Q A7)	**Upper Keys** You Participated (QA 4) / # Days (Q A5) / # Hours (Q A6) / # Of Other (Q A7)	**Middle Keys** You Participated (QA 4) / # Days (Q A5) / # Hours (Q A6) / # Of Other (Q A7)	**Lower Keys** You Participated (QA 4) / # Days (Q A5) / # Hours (Q A6) / # Of Other (Q A7)	**Key West** You Participated (QA 4) / # Days (Q A5) / # Hours (Q A6) / # Of Other (Q A7)
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							

2

PART B: YOUR EXPENDITURES FOR YOUR LAST TRIP IN THE FLORIDA EVERGLADES NATIONAL PARK OR THE FLORIDA KEYS

In this section, we want to ask you about your expenditures for your *last trip* or outing in the Florida Keys and/or in Everglades National Park. But before you fill-in the expenditure information, we would like you to fill in a brief description of both your last trip or outing in the Florida Keys and/or your last trip or outing to Everglades national Park.

Description of **LAST TRIP** *or outing to do outdoor recreational activity in the Florida Keys.*

B1. What activities did you do on your last trip or outing to do outdoor recreation in the Florida Keys? (**Please use the enclosed activities list and record the numbers for the activitiies**) *[B1, B2, B3, B4, B5, B6]*

B2. Where did you go on your last trip or outing to do recreation activities in the Florida Keys? Closest City: *[B7]*

B3. **a.** How far was the place you went from your place of residence? *[B8]*

b. If your last trip involved the use of a boat, how many miles from either your place of residence or from where you launched or store your boat to the place where you did activity? *[B9]*

B4. How many days was your last trip or outing to do outdoor recreation activities in the Florida Keys? Count any part of a day as a whole day. (**If an overnight trip, answer B5, if not go to B6**) *[B10]*

B5. How many nights did you spend in location away in the Florida Keys on your last trip or outing to do outdoor recreation in the Florida Keys? *[B11]*

B6. How many people were you or someone in your household paying expendses for, including yourself, on your last trip or outing in the Florida Keys? *[B12]*
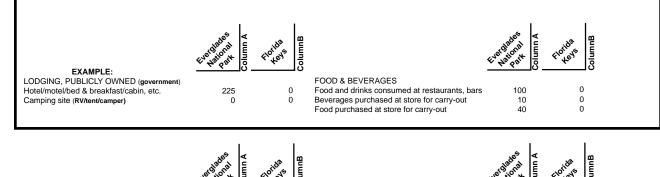
Description of **LAST TRIP** *or outing to do outdoor recreational activity in the Everglades National Park.*

B7. What activities did you do on your last trip or outing to do outdoor recreation in Everglades National Park? (**Please use the enclosed activities list and record the numbers for the activitiies**) *[B13, B14, B15, B16, B17, B18]*

B8. How many days was your last trip or outing to do outdoor recreation activities in Everglades National Park? Count any part of a day as a whole day. (**If an overnight trip, answer B9, if not go to B11**) *[B19]*

B9. How many nights did you spend away from home on your last trip to Everglades National Park? *[B20]*

B10. How many of these nights were spent inside Everglades National Park? *[B21]*

B11. How many people were you or someone in your household paying expendses for on your last trip to Everglades National Park? *[B22]*

Exhibit 2

Please report your expenditures for each of the items listed to the nearest whole dollar. In Column A, put the total amount of money you spent for your last trip in the Everglades National Park. In Column B, put the total amount you spent on your last trip in the Florida Keys.

EXAMPLE: Joe and Jane Smith drove to Everglades National Park from key West. They spent 3 nights in the Everglades national Park at $#75 per night, or a total of $225. The Smith's spent $40 for food and $10 for beverages at a store before leaving Key West and spent $100 for food, drinks, at the restaurants and at the concessions in the Everglades National Park. Their total spending for food and lodging on the last trip to Everglades National Park (Column A) was $375. The total amount spent on the last trip to the Florida keys (Column B) was $0.00. They did not visit the Florida Keys.

EXAMPLE:	Everglades National Park (Column A)	Florida Keys (Column B)		Everglades National Park (Column A)	Florida Keys (Column B)
LODGING, PUBLICLY OWNED (government)			FOOD & BEVERAGES		
Hotel/motel/bed & breakfast/cabin, etc.	225	0	Food and drinks consumed at restaurants, bars	100	0
Camping site (RV/tent/camper)	0	0	Beverages purchased at store for carry-out	10	0
			Food purchased at store for carry-out	40	0

	Everglades National Park (Column A)	Florida Keys (Column B)		Everglades National Park (Column A)	Florida Keys (Column B)
LODGING, PUBLICLY OWNED (government)			**TRANSPORTATION**		
Hotel/motel/bed & breakfast/cabin, etc.	[B23]	[B70]	Rental automobile, motor home, trailer,	[B31]	[[B78]
Camping site (RV/tent/camper)	[B24]	[B71]	and motocycle or other recreation behicle		
			Gas & oil - auto/RV	[B32]	[B79]
LODGING, PRIVATELY OWNED			Repair & service - atuo/RV	[B33]	[B80]
(non-government)			Parking fees & tolls	[B34]	[B81]
Hotel/motel/bed&breakfast/cabin, etc.	[B25]	[B72]	Taxi fare	[B35]	[B82]
Rental home, cottage, cabin, condo	[B26]	[B73]	Bus Fare		
Camping site (RV/tent/camper)	[B26]	[B74]	a) Package tour	[B36]	[B83]
			b) Any other bus fare	[B37]	[B84]
FOOD & BEVERAGES			Airline fares		
Food and drinks consumed at restaurants, bars	[B28]	[B75]	a) Package tour	[B38]	[B85]
Beverages purchased at store for carry-out	[B29]	[B76]	b) Any other airline fare	[B39]	[B86]
Food purchased at store for carry-out	[B30]	[B77]			

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Please report your expenditures for each of the items listed to the nearest whole dollar. In Column A, put the total amount of money you spent for last trip in the Everglades National Park.

	Everglades National Park (Column A)	Florida Keys (Column B)		Everglades National Park (Column A)	Florida Keys (Column B)
BOATING			**OTHER ACTIVITY EXPENDITURES**		
Boat, jet ski, and wave runner rental	[B40]	[B87]	Rental fee for recreaion equipment	[B58]	[B105]
Boat fuel and oil	[B41]	[B88]	(bicycles, golf carts or others not listed above)		
Boat repairs	[B42]	[B89]	Guide service, tour, or outfitters	[B59]	[B106]
Boat launch fees	[B43]	[B90]	(not listed above, like parasailing)		
Boat slip fees or marina fees (this trip only)	[B44]	[B91]	Admission to motion pictures,		
Sailing charters or sunset cruises	[B45]	[B92]	and theaters, museums, etc.	[B60]	[B107]
FISHING			**MISCELLANEOUS EXPENDITURES**		
Cut bait	[B46]	[B93]	Film purchases	[B61]	[B108]
Live bait	[B47]	[B94]	Film developing	[B62]	[B109]
Daily or special fishing permits	[B48]	[B95]	Footwear	[B63]	[B110]
Fishing lines, fly lines,			Clothing	[B64]	[B111]
and fish nets, minnow traps	[B49]	[B96]	Souvenirs and gifts (no clothing)	[B65]	[B112]
Charter/party boat, guide service	[B50]	[B97]	Barber, alundry, and other personal services	[B66]	[B113]
			Telephone, xerox, fax,		
SCUBA DIVING/SNORKELING			and other business services	[B67]	[B114]
Rental fee for equipment	[B51]	[B98]	Physician, dentist,		
Charter/party boat, guide service	[B52]	[B99]	and other medical services	[B68]	[B115]
			Other, specify_____ [B69B]	[B69]	[B116]
SIGHT-SEEING			_____ [B117]		
Sight-seeing tours	[B53]	[B100]			
Glass bottom boat rides	[B54]	[B101]			
Back country excursions, kayak tours	[B55]	[B102]			
park entrace fees	[B56]	[B103]			
Admission to tourist, amusement, festivals					
and other commercial attractions	[B57]	[B104]			

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Exhibit 2

PART C: ANNUAL VACATION AND EQUIPMENT PURCHASES

This section asks about how much money people spent on recreational equipment and boat storage or marina services not already included in *PART B*

Column A should include the total amount of money spent by your household for each of the items in the past 12 months.
Column B should include the total amount of money spent by your household for each of the items in *Broward, Dade or Monroe Counties (South Florida)* in the past 12 months.
Column C should include the total amount of money spent by your household for each item made only in Monroe County.
    Example: Joe and Jane Smith purchased a boat for $17,000 from a dealer at their home in Jacksonville last summer. They also purchased a jet ski for $12,000 from a dealer in Key Largo. Here is how they would report these expenditures.

	Column A	Column B	Column C
BOATING EQUIPMENT			
New motorized boats or jet skis	29,000 Total Amount Last 12 months	29,000 Total Amount Last 12 months	29,000 Total Amount Last 12 months
MAJOR RECREATIONAL EQUIPMENT			
C1. Diving or snorkeling equipment	[C1]	[C2]	[C3]
C2. Fishing rods and reels	[C4]	[C5]	[C6]
C3. Cameras and other photo gear	[C7]	[C8]	[C9]
C4. Binocular and other viewing equipment	[C10]	[C11]	[C12]
C5. Miscellanious specify: (i.e.:boats, guns, cameras, skis, behicles, any other major equipment)			
_____[C13]_____	[C13A]	[C13B]	[C13C]
_____[C14]_____	[C14A]	[C14B]	[C14C]
BOATING EQUIPMENT			
C6. New motorized boats or jet skis	[C16]	[C17]	[C18]
C7. New nonmotorized boats (i.e.: sailboats, row boats, canoes...)	[C19]	[C20]	[C21]
C8. New boat engines	[C22]	[C23]	[C24]
C9. New boat accessories	[C25]	[C26]	[C27]
C10. New sails or rigging	[C28]	[C29]	[C30]
C11. New boat trailer	[C31]	[C32]	[C33]
C12. Boat storage and marina fees	[C39]	[C30]	[C41]
C13. Other boating expenses, Describe:			
_____[C37]_____	[C37A]	[C37B]	[C37C]
_____[C38]_____	[C38A]	[C38B]	[C38C]

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PART D: IMPORTANCE AND SATISFACTION WITH FACILITIES, SERVICES AND NATURAL RESOURCES IN THE FLORIDA KEYS/FLORIDA BAY AREA

In this section, we are interested in identifying recreation site information which is important to you as a resident of Monroe County. Please read each statement and rate the importance of each item as it contributes to an ideal recreation/tourist setting for the activities you did in the Florida Keys/Florida Bay area by circling the appropriate number to the right of the statement. If an item does not apply, indicate by cirling 9 or if you simply don't know circle 8.

Scale: Extremely Important / Very Important / Important / Somewhat Important / Not Important / Don't Know / Not Applicable

D1. Clear water (**high visibility**)	5 4 3 2 1 8 9	D13. Directional signs, street signs, mile markers	5 4 3 2 1 8 9
D2. Amount of living coral on reefs	5 4 3 2 1 8 9	D14. Condition of roads and streets	5 4 3 2 1 8 9
D3. Public transportation	5 4 3 2 1 8 9	D15. Cleanliness of streets and sidewalks	5 4 3 2 1 8 9
D4. Parking	5 4 3 2 1 8 9	D16. Condition of bike paths and sidewalks/walking paths	5 4 3 2 1 8 9
D5. Many different kinds of fish and sea life to view	5 4 3 2 1 8 9	D17. Shoreline access	5 4 3 2 1 8 9
D6. Many different kinds of fish and sea life to catch	5 4 3 2 1 8 9	D18. Designated swimming/beach area	5 4 3 2 1 8 9
D7. Large numbers of fish	5 4 3 2 1 8 9	D19. Quality of beaches	5 4 3 2 1 8 9
D8. Opportunity to view large wildlife (**manatees, whales, dolphins**)	5 4 3 2 1 8 9	D20. Service and friendliness of people	5 4 3 2 1 8 9
D9. Uncrowded conditions	5 4 3 2 1 8 9	D21. Historic preservation (**historic landmarks, houses, etc**)	5 4 3 2 1 8 9
D10. Maps, brochures, and other tourist information	5 4 3 2 1 8 9	D22. Availability of public restrooms	5 4 3 2 1 8 9
D11. Boat ramps/launching facilities	5 4 3 2 1 8 9	D23. Value for the price	5 4 3 2 1 8 9
D12. Marina facilities	5 4 3 2 1 8 9	D24. Parks and specially protected areas	5 4 3 2 1 8 9
		D25. Mooring buoys near coral reefs	5 4 3 2 1 8 9

7

Exhibit 2

On the previous page you indicated the importance of a list of items to your recreational/tourist experiences. Now read eaof the items on this list and rate how satisfied you were with each at the places you did your activities in the Florida Keys/Florida Bay Area by circling the appropriate number to the right of the statement. If an item does not apply, indicate by circling 9 or if you simply don't know circle 8.

Scale columns: Delighted / Happy/Satsfied / Mixed / Unhappy/Dissatisfied / Terrible / Don't Know / Not Applicable

D26. Clear water (**high visibility**)	5 4 3 2 1 8 9	**D38.** Directional signs, street signs, mile markers	5 4 3 2 1 8 9
D27. Amount of living coral on reefs	5 4 3 2 1 8 9	**D39.** Condition of roads and streets	5 4 3 2 1 8 9
D28. Public transportation	5 4 3 2 1 8 9	**D40.** Cleanliness of streets and sidewalks	5 4 3 2 1 8 9
D29. Parking	5 4 3 2 1 8 9	**D41.** Condition of bike paths and sidewalks/walking paths	5 4 3 2 1 8 9
D30. Many different kinds of fish and sea life to view	5 4 3 2 1 8 9	**D42.** Shoreline access	5 4 3 2 1 8 9
D31. Many different kinds of fish and sea life to catch	5 4 3 2 1 8 9	**D43.** Designated swimming/beach area	5 4 3 2 1 8 9
D32. Large numbers of fish	5 4 3 2 1 8 9	**D44.** Quality of beaches	5 4 3 2 1 8 9
D33. Opportunity to view large wildlife (**manatees, whales, dolphins**)	5 4 3 2 1 8 9	**D45.** Service and friendliness of people	5 4 3 2 1 8 9
D34. Uncrowded conditions	5 4 3 2 1 8 9	**D46.** Historic preservation (**historic landmarks, houses, etc**)	5 4 3 2 1 8 9
D35. Maps, brochures, and other tourist information	5 4 3 2 1 8 9	**D47.** Availability of public restrooms	5 4 3 2 1 8 9
D36. Boat ramps/launching facilities	5 4 3 2 1 8 9	**D48.** Value for the price	5 4 3 2 1 8 9
D37. Marina facilities	5 4 3 2 1 8 9	**D49.** Parks and specially protected areas	5 4 3 2 1 8 9
		D50. Mooring buoys near coral reefs	5 4 3 2 1 8 9

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D51. Had you lived-in or visited the Florida Keys more than five years ago? (**circle one**)
    1. Yes   2. No (**if no go to Section 'E'**)

On the previous page you indicated the importance of a list of items to your recreational/tourist experiences. Now read eaof the items on this list and rate how satisfied you were with each at the places you did your activities in the Florida Keys/Florida Bay Area by circling the appropriate number to the right of the statement. If an item does not apply, indicate by circling 9 or if you simply don't know circle 8.

Scale columns: Delighted / Happy/Satsfied / Mixed / Unhappy/Dissatisfied / Terrible / Don't Know / Not Applicable

D52. Clear water (**high visibility**)	5 4 3 2 1 8 9
D53. Amount of living coral on reefs	5 4 3 2 1 8 9
D54. Opportunity to view large wildlife	5 4 3 2 1 8 9
D55. Uncrowded conditions	5 4 3 2 1 8 9
D56. Condition of roads and streets	5 4 3 2 1 8 9
D57. Shoreline access	5 4 3 2 1 8 9
D58. Quality of beaches	5 4 3 2 1 8 9
D59. Service and friendliness of people	5 4 3 2 1 8 9
D60. Historic preservation (**historic landmarks, houses, etc**)	5 4 3 2 1 8 9
D61. Parks and specially protected areas	5 4 3 2 1 8 9

9

Exhibit 2

On the previous page you indicated the importance of a list of items to your recreational/tourist experiences. Now read eaof the items on this list and rate how satisfied you were with each at the places you did your activities in the Florida Keys/Florida Bay Area by circling the appropriate number to the right of the statement. If an item does not apply, indicate by circling 9 or if you simply don't know circle 8.

Column headers (both columns): Delighted / Happy/Satisfied / Mixed / Unhappy/Dissatisfied / Terrible / Don't Know/No Opinion

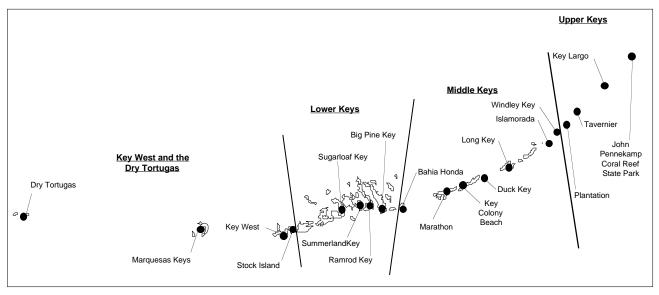| No.	Statement	Delighted	Happy/Satisfied	Mixed	Unhappy/Dissatisfied	Terrible	Don't Know/No Opinion
E1.	The federal government will have to introduce harsh measures to halt pollution since few people will regulate themselves.	1	2	3	4	5	8
E2.	We should not worry about killing too many game animals because in the long run things will balance out.	1	2	3	4	5	8
E3.	I'd be willing to make personal sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.	1	2	3	4	5	8
E4.	Pollution is not personally affecting my life.	1	2	3	4	5	8
E5.	The benefits of modern consumer products are more important than the pollution that results from their production and use.	1	2	3	4	5	8
E6.	We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves.	1	2	3	4	5	8
E7.	Courses focusing on the conservation of natural resources should be taught in the public schools.	1	2	3	4	5	8
E8.	Although there is continual contamination of our lakes, streams, and air, nature's purifying processes will soon return them to normal.	1	2	3	4	5	8
E9.	Because the government has such good inspection and control agencies, it's very unlikely that pollution due to energy production will become excessive.	1	2	3	4	5	8
E10.	The government should provide each citizen with a list of agencies and organizations which the citizen could report grievances concerning pollution.	1	2	3	4	5	8
E11.	Predators such as hawks, crows, skunks, and coyotes which prey on farmers' grain crops and poultry should be eliminated.	1	2	3	4	5	8
E12.	The currently active antipollution organizations are really more interested in disrupting society than they are in fighting pollution	1	2	3	4	5	8
E13.	Even if public transportation was more efficient than it is, I would prefer to drive my car to work.	1	2	3	4	5	8
E14.	Industry is trying its best to develop effective antipollution technology.	1	2	3	4	5	8
E15.	If asked, I would contribute time, money, or both to an organization like the Sierra Club that works to improve the quality of the environment.	1	2	3	4	5	8
E16.	I would be willing to accept an increase in my family's expenses of $100 next year to promote the wise use of natural resources.	1	2	3	4	5	8

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Exhibit 3

The Florida Keys/Key West

Exhibit 4

ACTIVITIES LIST

Number	Activities Using Boats and Personal Watercraft

Snorkeling

100 A   Snorkeling from charter/party boat (pay operation)
101 A   Snorkeling from Rental boat
102 A   Snorkeling from private boat

Scuba Diving

200 A   Scuba diving from charter/party boat (pay operation)
201 A   Scuba diving from rental boat
202 A   Scuba diving from private boat

Special Activities while Snorkeling or Scuba Diving

300   Diving for lobsters
301   Underwater photography
302   Wreck diving
303   Spear fishing

Fishing - Offshore

400 A   Fishing from charter boat (pay operation six persons or less) - offshore
401 A   Fishing from party or head boat (charge per person) - off shore
402 A   Fishing from rental boat - offshore
403 A   Fishing from private boat - offshore

Fishing - Flats or Back Country

404 A   Fishing from Charter/party boat (pay operation) - flats or back country
405 A   Fishing from rental boat - flats or back country
406 A   Fishing from private boat - flats or back country

Other Fishing

407 A   Other fishing from charter boat (pay operation six persons or less)
408 A   Other Fishing from party or head boat (charge per person)
409 A   Other fishing from rental boat
410 A   Other fishing from private boat

Viewing Nature and Wildlife

500 A   Glass bottom boat rides (pay operation)
501 A   Back country boating excursions (pay operation/guided service/NOT FISHING)
502 A   Viewing nature and wildlife from private or rental boat

Personal Watercraft (jet skis, wave runners, etc.)

600 A   Personal watercraft - rental
601 A   Personal watercraft - private

Sailing

700 A   Sailing charter/party boat (pay operation)
701 A   Sailing rental boat
702 A   Sailing private boat

Other Activities NOT MENTIONED ABOVE (parasailing, hang gliding, sunset cruises, water-skiing)

800 A   Other activities from charter/party (pay operation)
801 A   Other activities from rental boat
802 A   Other activities from private boat

------ Over ------

Exhibit 4

ACTIVITIES LIST   *white*

Number	**Other Water-Based Activities - NO BOATS**

Snorkeling & Scuba Diving
10 A   Snorkeling from shore
11 A   Scuba diving from shore

Special Activities while Diving from Shore
12   Diving for lobsters
13   Underwater photography

14 A   Fishing from shore (beach, bank, pier, bridge, jetty, dock)

15 A   Swimming at Beaches (not in pool)
16 A   Swimming in Outdoor pool
17   Swimming with Dolphins
18 A   Windsurfing or sailboarding

Number	**Land-Based Activities**

Nature Study - Wildlife Observation - Photography
19 A   Wildlife observation or wildlife photography
20 A   Other nature study and observation
21   Photography (not including wildlife)

Camping - Backpacking - Hiking - Picnicking
22   Backpacking
23   Camping in developed campgrounds
24   Camping in primitive campgrounds
25   Day Hiking
26   Attending ranger guided walk
27   Self-guided nature or historic trails
28   Picnicking

Cultural, Historic and Tourist Attractions
29 A   Visiting historic areas, sites, buildings or memorials
30   Attending special events (fairs, festivals, ceremonies, etc.)
31   Attending outdoor concerts, plays or other outdoor performances
32   Attending indoor concerts, plays, performances or events
33   Sight-seeing tours and tourist attractions (paid)
34   Sight-seeing (not paid tours)
35   Reading roadside exhibits or markers
36 A   Visiting a museum, educational facility or information center
37   Attending outdoor sports events (sailing or boat races; spectator at fishing tournament)

Outdoor sports
38   Golf
39   Tennis outdoors
40   Participation in other outdoor sports and games

Bicycling - Horseback riding - Driving for Pleasure
41   Bicycling
42   Horseback riding
43   Driving for pleasure (mopeds, motorcycles)

Beach Activities - Sunbathing
44 A   All Beach Activities (other than swimming)

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