
Technical Appendix: Sampling Methodologies
and Estimation Methods Applied
to the Florida Keys/Key West
Visitors Surveys

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Technical Appendix: Sampling Methodologies and Estimation Methods Applied to the Florida Keys/Key West Visitors Surveys

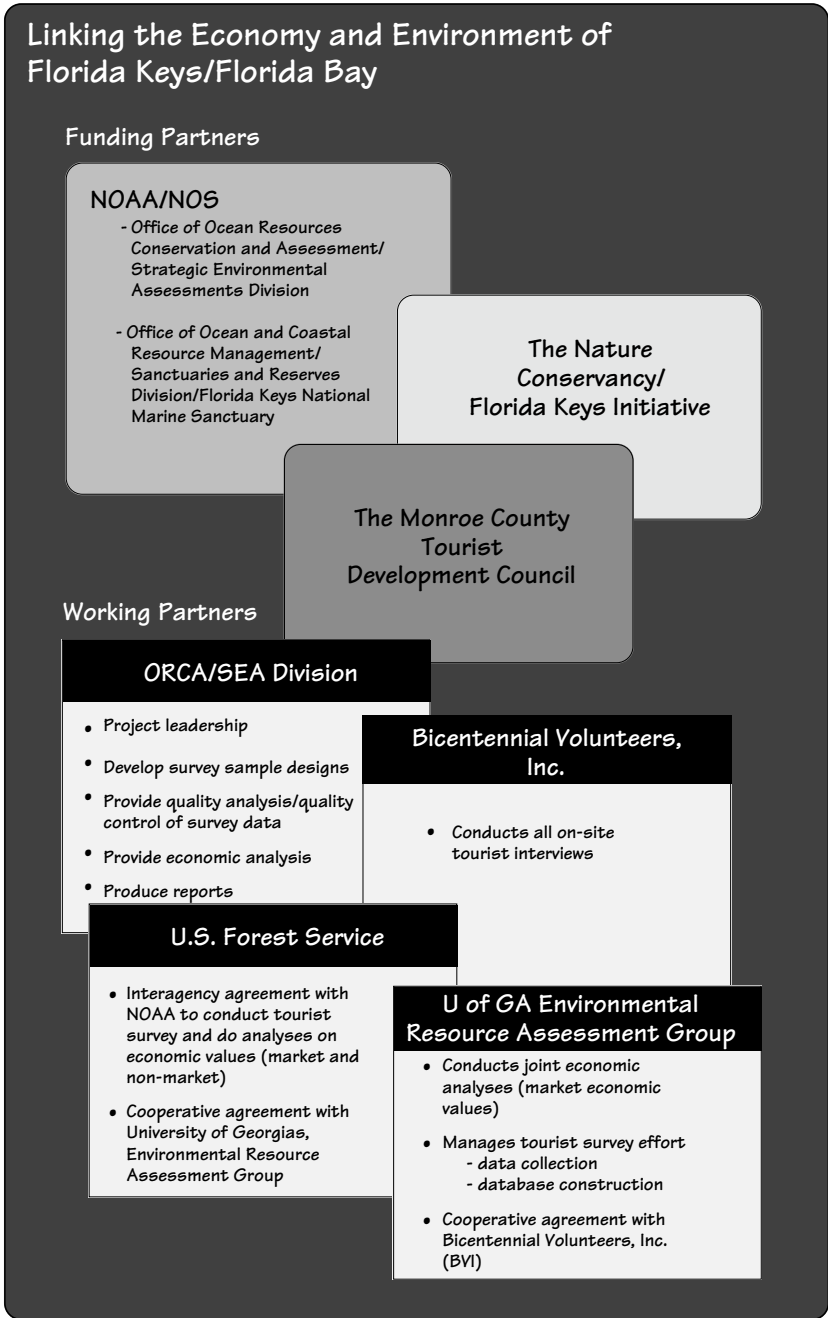


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Preface

This document was prepared to provide detailed documentation on how various measurements were derived as reported for visitors to the Florida Keys/Key West in “Visitor Profiles: Florida Keys/Key West” (Leeworthy and Wiley 1996) and “Economic Contribution of Recreating Visitors to the Florida Keys/Key West” (English et al 1996). As a technical appendix, this document is intended for researchers that want to do further analyses with the visitor data and for researchers that may want to replicate the study in the future.

Chapter 1 provides details on the sampling methodologies and methods for estimating the total number of visitors or person-trips (visits) and the number of person-days of visitation. Chapter 2 documents the sample weighting applied to both the on-site and mailback samples. Chapter 3 provides details on the results of analyses conducted to determine the existence of nonresponse bias in the various mailback surveys. The corrections for nonresponse bias are included in the sample weighting explained in Chapter 2. Chapter 4 documents the methods used to estimate participation rates and the total number of participants in each activity by season and region. Chapter 4 also documents how intensity of use was estimated for a select list of 39 activities by region and season. Intensity of use was defined in terms of the number of separate person-days of activity and the number of hours of activity. Results presented in the Visitor Profiles report were extended in this appendix to include estimates for all 39 activities, in all four regions, in both seasons by substituting “best” estimates for items identified as having unreliable estimates of average days or hours per trip. In each case, these estimates had little influence on the totals for a more aggregated activity like all snorkeling because the sub-activity with an unreliable average for days or hours of activity, e.g. snorkeling from a rental boat, had low participation rates. Finally, Chapter 5 documents the methods used for estimating the economic contribution visitors had on Monroe County.

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

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This document and all other project documents can be obtained on the World Wide Web at the following address:
<http://www-orca.nos.noaa.gov/projects/econkeys/econkeys.html>
Please note that it is a dash not a dot after www.

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Chapter 1. Method of Estimating the Number of Person-Trips (visits) and Person-days

The sampling design used in the Auto, Air, and Cruise Ship Survey allows us to estimate the number of person-trips to the Florida Keys made by non-residents of Monroe County by season and mode of travel (access) to the Florida Keys. The measurement, “person-trips,” must be differentiated from the number of visitors and the number of visitor days.

Concept of a Person-trip. For any given day, the number of person-trips and the number of visitors is the same. But once we expand the time period for estimation beyond one day, then the possibility exists that the same person can make more than one trip (visit). Because we interview visitors as they are leaving the Florida Keys (ending their visit), we count someone each time they visit the Florida Keys. This is the concept of a person-trip or visit. We can use these two terms interchangeably.

Number of Visitors. The number of person-trips (visits) and the number of visitors are two measurements that have long been a source of confusion. The State of Florida’s Division of Tourism has long confused these two measurements. For the two measurements to be equivalent requires that for the given time period of estimation that each person only makes one visit (trip). Although this is true for the vast majority of visitors, it is not true for all visitors. In the Florida Keys, visitors during the July-August 1995 sampling period, made on average 5.12 trips annually, while visitors during the January-April 1996 sampling period made on average 2.42 trips annually. By dividing the total number of person-trips (visits) by the average number of trips (visits), for any given time period, we get an estimate of the separate number of visitors. That is, the separate number of different people that visited the Florida Keys during the given time period. We did not obtain the separate number of trips (visits) made by visitors each sampling season, so we cannot derive and estimate of the number of separate visitors by season. We can make such an estimate for the annual time period, however, the estimate is not needed for purposes of this study. For purposes of this study, we want an estimate of the total number of person-trips (visits) during each season. This estimate allows us to extrapolate average trip expenditures per person into total expenditures during the given time period for estimation. Also, when we estimate the percent of visitors that engaged in a certain recreation activity, we can extrapolate this into an estimate of the total number of visitors that did the activity during that time period.

Number of Person-Days. Another useful measurement is the number of person-days. Each visit (trip) may have a different length of stay. For day-trips, the concept of a person-day and a person-trip are thus equivalent. But many trips (visits) are for more than one day. In the Florida Keys, the average length of stay was 4.2 days per visit and 6.35 days per visit, for the July-August 1995 and January-April 1996 sampling periods, respectively. Multiplying the average length of stay by the total number of person-trips (visits) yields an estimate of the total number of person-days for any given time period. Dividing the estimate of the total number of person-days by the number of days in the time period yields an estimate of the average number of visitors in the Florida Keys for the average day during that time period. This latter estimate could be used in assessing the “functional population” i.e., the number of people in the Florida Keys on a given day. The concept of a functional population is used for planning for facilities and services and in the Florida Keys, hurricane evacuation.

Sampling Methodology

Auto, Air, and Cruise Ship Sample

The Florida Keys has a special geographic feature which allowed us to design a sample to estimate the total number of person-trips (visits). The Florida Keys are a chain of islands located at the southern end of the Florida peninsula. Access is limited to one highway (U.S. 1), two airports (Marathon and Key West), and the cruise ship docks in Key West. People can also come by private boat, and they do, but this is less than one percent of total visitation.

Another fact that makes estimation of person-trips possible is that the Florida Department of Transportation (FLDOT) collects hourly traffic counts on the northbound lane of U.S. 1 at points where people are exiting the Keys. The airports also maintain air enplanement counts on all flights leaving the Keys, and the Port Authority maintains passenger counts for all cruise ships docking at or anchoring off Key West.

Restricted access and availability of total count data allowed us to design a sample from which we could estimate both person-trips (visits) and person-days. We did this for two seasons. We chose July-August 1995 as a sampling period that would be representative of visitation during the June-November 1995 season and January 15-April 15 1996 as representative of the December 1995 through May 1996 season.¹

We used a stratified random sample design. Stratified across mode of access (Auto, Air, and Cruise Ship). Within mode of access, we sampled during different days of the week and times of the day for the auto and air samples. The cruise ships were on fixed schedules. For cruise ships, we attempted to get a representative sample of the different size ships that visit Key West.

We over-sampled the air and cruise ship passengers to ensure adequate sample sizes to estimate important project measurements separately for these two groups. A priori, we had little information on how to exactly stratify by mode of access, since no one had ever estimated the number of person-trips (visits) by mode of travel for the Florida Keys. So our sample quotas by mode of access are not likely to result in exact sample stratification (i.e., not the same distribution that exists in the real population). Therefore, post sample weighting will be required based on the estimates of the total number of person-trips (visits) by mode of access.²

Auto Survey. We randomly pulled vehicles from the traffic stream in the northbound right lane of U.S. 1 (at approximately the 105 mile marker). The parking lots of the Thom Thumb (at the corner of Taylor Drive and U.S. 1) and the Key Largo Elementary School were used during the July-August 1995 sampling period, and only the Thom Thumb store during the January-April 1996 sampling period. A permit was obtained from the FLDOT (permit # 052-95) to conduct the survey. Both survey sites met requirements for safely getting vehicles off and back onto the highway.

Traffic signs were placed on both sides of the northbound lanes. The first set read "TRAFFIC SURVEY 1,000 FEET", the second set read "TRAFFIC SURVEY 500 FEET", and the third set read "BE PREPARED TO STOP". Police units, with their emergency lights on, were placed on both sides of the northbound lane to aid in slowing traffic. One officer pointed at a vehicle (vehicle chosen randomly) and directed the vehicle into the parking lot. Traffic cones were deployed to help direct the traffic into the parking lot. In the parking lot, the driver of the vehicle was greeted by a member of the Bicentennial Volunteers, Inc.³ The volunteer screened occupants of the vehicle using several criteria designed to select only non-residents of Monroe County that were leaving the Florida Keys (ending their visit), and had participated in some recreation activity (See Exhibit 1, Tally Sheet and Exhibit 2, the Blue Card containing the list of recreation activities). Those not meeting the screening criteria or that refused to be interviewed were quickly sent back onto the highway and tallied in the appropriate column of the Tally Sheet. The information obtained on the tally sheet allows us to translate the number of vehicles to the number of vehicles with recreating visitors.

There are a couple of other design aspects that required special treatment. First, for purposes of safety, the Florida Highway Patrol recommended that we only pull vehicles from the right lane. U.S. 1 is a four lane highway along the portion we sampled. Second, not all types of vehicles would be eligible to be pulled into the parking lots (tractor trailers, large commercial vehicles and buses). We did pull motor homes and vehicles pulling trailers (both travel trailers and boats). In order to be able to translate vehicle counts from the FLDOT on U.S. 1 into vehicles containing eligible visitors, we needed to be able to estimate the proportion of vehicles that were eligible to be selected by the officers and we needed to be able to test whether traffic in the right lane was any different from traffic in the left lane (type of vehicle). We gathered the necessary information using Tally Sheet number two (Exhibit 3).

Exhibit 4 is a calendar showing the dates and times the highway survey was conducted during both the July-August 1995 and January-April 1996 sampling periods. The highway survey was conducted on 24 days during the July-August 1995 period and on 34 days during the January-April 1996 period. Note that our sampling times were restricted to the hours between 9 am and 4 pm. This is extremely important because intercounty commuters (i.e., people that live inside Monroe County but work outside Monroe County and people that work inside Monroe County but live outside Monroe County) are not accounted for in this sample design. We had to supplement our sample design with estimates of intercounty commuters from the Census of Intercounty Commuters (U.S. Department of Commerce, Bureau of Economic Analysis, 1996).

There were two key issues for which many members of the community expressed concern about the conduct of the highway survey; police intimidation and traffic delays and/or accidents. **Neither problem occurred** due to the design and professional implementation by the Florida Highway Patrol, the Monroe County Sheriffs Department, and the Florida Marine Patrol.⁴ The only person (s) that came into contact with the occupants of vehicles were the Bicentennial Volunteers located in the parking lots. Traffic was never stopped on the highway. Vehicles were selected and directed into a parking lot.

Residents of Monroe County, non-qualifying visitors, or visitors that refused the interview were never delayed more than one or two minutes maximum. For most residents, the delay was only a few seconds. An interesting finding was that the survey worked “best” when traffic was relatively heavy. That is, even during the heaviest traffic periods, the traffic survey never resulted in a traffic backup.

Person-trips-Auto Survey: Recreating Visitors. We need five basic measurements in order to estimate the number of person-trips by recreating visitors accessing the Florida Keys by the highway:

1. Total traffic counts.
2. Proportion of traffic that was eligible to be pulled from the traffic stream.
3. Proportion of vehicles that was pulled from the traffic stream that contained visitors that were non-residents of Monroe County, that were ending their visit to the Florida Keys, and that did some recreation activity during their visit.
4. Number of eligible visitors per vehicle.
5. Number of intercounty commuters.

Total traffic counts. Total traffic counts are available for U.S. 1 on an hourly basis from the FLDOT. Exhibit 5 shows an example for July 1995. We obtained this information from the FLDOT for June 1995 through May 1996. Table A.1.1 summarizes the traffic counts by sampling period or season and by type and time of day.

Proportion of traffic pulled. Exhibit 3 shows the tally sheet used for obtaining the information on the proportion of the traffic that was eligible to be pulled from the traffic stream. Tour buses, school buses, commercial pick-ups and vans, and commercial and government trucks were not eligible to be pulled from the traffic stream.

Ten minute samples were taken alternatively between the left and right northbound lanes on U.S. 1. The tally person counted every vehicle in the lane during each ten-minute period. On a typical sampling day, four to five samples were taken on each lane. This allowed us to test for differences in the distribution by type of vehicle between the left and right lanes (remember, we only pulled vehicles from the right lane). We used a non-parametric test (Kolmogorov-Smirnoff, two-sample test).⁵ The test showed no difference between the left and right lanes except for weekdays during the July-August, 1995 sampling season. Because the differences were not great or general, we used the average of the left and right lane proportions on the total traffic counts on U.S. 1. Table A.1.2 summarizes the proportions of eligible sample-type vehicles by season and type and time of day.

Proportion of vehicles with recreating visitors. Exhibit 1 shows the tally sheet used for gathering the necessary information for estimating the proportion of eligible vehicles that contained recreating visitors who were ending their trip to the Florida Keys. This proportion is defined as all exiting visitors who did some recreation activity (column 7 + column 8) divided by the total number of vehicles pulled. Note that we can also get an estimate of the proportion of vehicles containing visitors no matter what they were doing (participants and non-participants in recreation activity). This estimate is obtained by adding columns 6, 7 and 8 and then dividing by the total number of vehicles pulled.

But the above estimate of the proportion of eligible vehicles that contained recreating visitors would not be correct since, as noted above, our sampling times did not include times when workers would be commuting to and from work. If this correction is not made, the proportion of recreating visitors would be biased upwards by a factor of two.

From the Census of Intercounty Commuters (U.S. Bureau of Economic Analysis 1996), we estimate that, during the morning, 2,016 residents of the Florida Keys cross the 106.5 mile marker on their way to work outside Monroe County. Also, during the afternoons, we estimate that 2,046 workers who are employed in the Florida Keys, but live outside Monroe County, cross the 106.5 mile marker on their way home. Table A.1.3 summarizes the proportions of recreating visitors by mode of access and season after adjusting for intercounty commuters.

Number of people per vehicle. Exhibit 6 shows the questionnaire that was used for the Auto, Air, and Cruise Ship Survey. This form took about 3-5 minutes to complete. The information relevant to the estimation of person-trips (visits) is the number of people in the vehicle. The number of people per vehicle can also be further broken down into the number of people age 16 and older and the number less than 16 years of age. For the July-August, 1995 sampling period there were an average of 2.85 recreating visitors per vehicle and, for the January-April, 1996 sampling period there was an average of 2.43 recreating visitors per vehicle. These averages were not significantly different.

Estimation for the Two Sampling Periods. It was hypothesized that there would be differences in both the proportion of eligible vehicles and the proportion of eligible vehicles containing recreating visitors for weekday and weekend traffic.

Further, that there would also be differences between morning and afternoon traffic on both weekdays and weekends. We estimated total traffic and the proportions of vehicles for each of the four time periods 1) weekday mornings (1:00 AM - 12:00 noon), 2) weekday afternoons (1:00 PM - 12:00 midnight), 3) weekend mornings (1:00 AM - 12:00 noon), and 4) weekend afternoons (1:00 PM - 12:00 midnight). We found statistically significant differences in most of the proportions.

Tables A.1.4 - A.1.5 show how we estimate the number of person-trips (visits) for the two sampling periods using the total traffic counts for each time period and the estimated vehicle proportions and number of people per vehicle for each season.

Column 1 of Tables A.1.4 - A.1.5 contains the total traffic counts on U.S. 1 at the 106.5 mile marker by type of day and time of day. Column 2 is the estimated proportion of eligible vehicles to be pulled from the traffic stream. Column 3 is the total number of eligible vehicles (Column 1 * Column 2). Column 4 is the estimated proportion of eligible vehicles that contained recreating visitors ending their trip to the Florida Keys. Column 5 contains the total number of vehicles with recreating visitors exiting the Keys (Column 3 * Column 4). Column 6 contains the average number of people per vehicle. This did not vary by type of day or time of day. Column 7 contains our estimated number of person-trips (Column 5 * Column 6).

Estimation for the Two Six-month Seasons. As noted above, we used the July - August 1995 sample to estimate person-trips (visits) and person-days for the June - November 1995 season and the January - April 1996 sample to estimate for the December 1995 - May 1996 season. To do this required additional adjustments. We believe that it would not be correct to assume that the proportions of traffic would be constant across time periods. Our samples were taken during the busiest portions of each of the six-month seasons. So, we believe, that during the slower months in each season, that residents would be a constant number making the proportion of traffic that is recreating visitors smaller. We call this the **constant resident assumption**. Commuters who live outside the Florida Keys and work inside the Keys were allowed to vary with the increases and decreases in auto traffic within each season. Tables A.1.6 and A.1.7 show how we derived our estimates for auto visitors for the June - November 1995 and December 1995 - May 1996 seasons using the constant resident assumption.

Table A.1.6 shows that during the time period from June through November 1995 there were over 1.8 million vehicles that traveled on the northbound lane of U.S. 1. Between 85.64 and 98.67 percent of those vehicles were eligible vehicles for sampling. Over the June-November 1995 period, there were about 1.7 million eligible vehicles (about 91.5 percent). We estimate that over 345 thousand of those vehicles contained recreating visitors or about 20.4 percent of the eligible vehicles and about 18.7 percent of the total traffic on U.S. 1. With an estimated average of 2.85 people per vehicle, we estimate over 984 thousand person-trips (visits) for June-November 1995.

Table A.1.7 shows that during the December 1995 through May 1996 time period there were over 2.1 million vehicles that traveled on the northbound lane of U.S. 1. Between 86.86 and 97.97 percent of those vehicles were eligible vehicles for sampling. Overall there were about 1.9 million eligible vehicles (about 91 percent). We estimate that almost 417 thousand of those vehicles contained recreating visitors or about 21.57 percent of the eligible vehicles and about 19.56 percent of the total traffic on U.S. 1. With an estimated average of 2.43 recreating visitors per vehicle, we estimate over 1.013 million person-trips (visits) for the December 1995 through May 1996 period.

For the entire year (June 1995 through May 1996), we estimate almost 2 million person-trips (visits) were made to the Florida Keys by recreating visitors using the auto mode of access.

Person-trips Auto Survey: Non-recreating Visitors. Tables A.1.8 - A.1.11 show the calculations for estimating the number of person-trips (visits) by non-recreating visitors. Although the estimates of non-recreating visitors were not an objective of the study, the information was collected to derive the estimates and some may find this useful. Below we will show how the information can be used in deriving the total visitor component of the "functional population".

During the June-November, 1995 time period, we estimate over 217.5 thousand person-trips (visits) by the auto mode of access for non-recreating visitors. This number excludes commuter workers (i.e. workers that live outside the Florida Keys). For the December 1995 through May 1996 period, we estimate over 294.16 thousand person-trips (visits) by non-recreating visitors. For the entire year (June 1995 through May 1996), we estimate 511.67 thousand person-trips (visits) by non-recreating visitors.

Person-trips Auto Survey: All Visitors. Combining our estimates for recreating and non-recreating visitors, we estimate about 1.2 million person-trips for the June-November 1995 season and about 1.3 million person-trips (visits) for the December 1995 through May 1996 season for a total annual estimate of over 2.5 million person-trips (visits) by the auto mode of access.

Airport Survey. We conducted sampling at both the Key West and Marathon airports. All flights out of both airports are carrying passengers leaving the Florida Keys. Exhibit 7 is a calendar showing the days and times we sampled flights and interviewed visitors for both the July-August 1995 and January-April 1996 sampling periods. Even though we sampled on different days of the week and time of days as in the highway survey, we did not develop separate estimates of the proportion of passengers by type and time of day. The reason is that air enplanement data are not available by type and time of day.

The Bicentennial Volunteers conducted all the interviews at the two airports. The volunteers set-up at the terminal gates and screened all passengers at the terminal using the questions on the Air Tally Sheet (Exhibit 8). Those that qualified for an interview and agreed to the interview were interviewed using the same questionnaire as the highway survey (Exhibit 6).

Person-trips Air Survey: Recreating Visitors. We only needed two measurements from the airport samples to estimate person-trips (visits) for visitors accessing the Florida Keys by the air mode of travel; 1) the number of air enplanements (people getting on planes leaving the Keys) and 2) the proportion of passengers that were recreating visitors.

Exhibit 9 shows the air enplanement counts for each month of the study period. Exhibit 8 is the tally sheet we used to gather the information necessary for estimating the proportion of passengers that were recreating visitors. Multiplying the estimated proportion of recreating visitors by the number of air passenger enplanements yields an estimate of the number of person-trips (visits) by the air mode of travel. Tables A.1.12 and A.1.13 summarize the estimation for different sampling periods and seasons.

During July-August 1995, 65.35 percent of the Key West passengers and 61.01 percent of the Marathon passengers were recreating visitors. For the June-November 1995 study period, we estimate 71,030 person-trips (visits) from the Key West airport and 8,494 person-trips (visits) from the Marathon airport for a total of 79,524 person-trips (visits) by the air mode of travel.

During the January-April 1996 sampling period, we estimate 74.74 percent of the Key West passengers and 73.14 percent of the Marathon passengers were recreating visitors. For the December 1995 through May 1996 study period, we estimate 124,246 person-trips (visits) from the Key West airport and 17,704 person-trips (visits) from the Marathon airport for a total of 141,950 person-trips (visits) by the air mode of travel.

Across both seasons, we estimate an annual total of 221,474 person-trips (visits) to the Florida Keys by the air mode of travel. About 88 percent of all the visits by the air mode of travel were made through the Key West airport. A slightly higher proportion of the Key West air traffic is made-up of recreating visitors.

Person-trips Air Survey: Non-recreating Visitors. Tables A.1.14 and A.1.15 show how we estimated person-trips (visits) for non-recreating visitors using the airport mode of access. Across both airports and season, the proportion of air enplanements that were non-recreating visitors were only between 1.32 and 3.67 percent. During the June-November 1995 season, we estimate only 1,946 non-recreating visitors. For the December 1995 through May 1996 period, we estimate 3,477 non-recreating visitors. For the entire year (June 1995 through May 1996), we estimate 5,423 person-trips (visits) made by non-recreating visitors using the airport mode of access.

Person-trips Air Survey: All Visitors. Combining our estimates of recreating and non-recreating visitors for the airport mode of access yields an estimate of about 81.5 thousand person-trips (visits) during the June-November 1995 season and about 145.4 thousand person-trips (visits) during the December 1995 through May 1996 season, for an annual total of about 227 thousand person-trips (visits) by the airport mode of access.

Cruise Ship Survey. All the cruise ships land their passengers in Key West. Smaller ships are able to dock at Mallory Square, Truman Annex Pier B, or at the Navy Mole. The Navy Mole began accepting cruise ships during the winter sampling period. The Navy Mole is also capable of docking larger ships such as the Ecstasy which during the summer season had to anchor in the channel and ferry passengers to shore at Truman Annex.

Cruise ships have fixed schedules. Ships docked at Mallory Square must depart before the daily sunset celebration. Most cruise ships are in Key West for half-a-day or less. During the entire year, there was only one over-night stay and only a few full-day scheduled stops. The Key West Port Authority keeps data on the number of passengers on each ship that lands in Key West (Exhibit 12). Two shipping agents handle all the cruise ships that land in Key West, Caribe Nautical and Maritime Services. Both shipping agents granted us permission to set-up on the docks and survey cruise ship passengers.

Because the cruise ships are self-contained (serve meals aboard) and have relatively short stays, and many ships have to ferry passengers to and from the ships to Key West (those anchored in the channel), we hypothesized that not all passengers that are on the cruise ship manifest get off the ship in Key West. Further, we also expected that a small proportion of passengers might be residents of Monroe County. And, to be consistent with our highway and airport surveys, we should screen-out cruise ship passengers that are residents of Monroe County.

We had to estimate the proportion of passengers that get off the cruise ships in Key West and the proportion of these passengers that were non-residents of Monroe County. Unlike the highway and airport surveys, all passengers that got off the ships were presumed to be recreating visitors. We never encountered anyone in our samples from the cruise ships that did not engage in at least one of the recreation activities on our list.

Proportion of passengers that get off the ships in Key West. The Florida Keys National Marine Sanctuary (FKNMS) recruited and supervised volunteers for the task of counting the number of passengers that got off the cruise ships in Key West. Hourly counts were obtained for each ship in the sample. We sampled five ships during the July-August 1995 sampling period and 10 ships during the January-April 1996 sampling period. We attempted to get a representative sample of different size ships especially with respect to the differences of whether they were anchored or docked.

A problem occurred for those ships docked at Mallory Square and at Truman Annex Pier B. Our counts generally exceeded the number of passengers on-board. It was not possible to keep count of people that got off and on the ship more than once. For these ships, we were forced to assume 100 percent of all passengers got off the ship in Key West.

For the ships that anchored and ferried their passengers to Truman Annex, the ferry drop-off location provided a situation where counts were better controlled. Few, if any, people went back and forth more than once. In none of these cases did 100 percent of the passengers get off the ships according to our counts, thus confirming our hypothesis.

During the January-April 1996 sampling period, the Navy Mole was used by the cruise ships. This is located across town from where the other ships land their passengers. The Conch Train was used to transport cruise ship passengers from the Navy Mole to downtown Key West. Our Bicentennial Volunteers were given permission to interview cruise ship passengers while they waited for the Conch Train for their return trip to the Navy Mole. The volunteers from the FKNMS were given permission to count the passengers as they got off the ship and onto the Conch Train at the Navy Mole. As with Mallory Square and Truman Annex Pier B, our counts resulted in an estimate that 100 percent of all passengers got off the ship in Key West. However, unlike the situations at Mallory Square and Truman Annex Pier B, the counting was much more controlled at the Navy Mole. It would appear that avoidance of the ferry ride is what keeps some cruise ship passengers from getting off the ships in Key West. So one need only worry about adjusting cruise ship passenger counts when the proportion of passengers on boats anchoring is significant.

Person-trips Cruise Ships. During July-August 1995, we estimate that 90.64 percent of all cruise ship passengers got off the ships in Key West and that 98.83 percent of them were recreating visitors. With 121,048 cruise ship passengers arriving during the June-November 1995 period, we estimate 108,434 person-trips (visits) to the Florida Keys by the cruise ship mode of travel (Table A.1.16).

During January-April 1996, we estimate that 94.81 percent of all cruise ship passengers got off the cruise ships in Key West and that 95.47 percent of them were recreating visitors. With 235,185 cruise ship passengers arriving during the December 1995 through May 1996 period, we estimate that 212,878 person-trips (visits) to the Florida Keys by the cruise ship mode of travel (Table A.1.16).

For the entire year (June 1995 through May 1996), we estimate 321,312 person-trips (visits) to the Florida Keys were made by the cruise ship mode of travel.

Summary: Person-trips (visits)

Tables A.1.17 - A.1.19 summarize our estimates of person-trips (visits) by type of visitor (e.g. recreating, non-recreating and all), by sampling period (July-August 1995 and January-April 1996), and by mode of access (e.g. auto, air and cruise ship). Tables A.1.20 - A.1.22 summarize the same information for the June-November 1995 and December 1995 through May 1996 seasons.

June-November 1995. We estimate about 1.17 million person-trips (visits) were made by recreating visitors across all three modes of access to the Florida Keys. About 84.0 percent came by auto, 6.8 percent by air, and 9.3 percent by cruise ship. An additional 219.4 thousand person-trips (visits) were made by non-recreating visitors for a total of about 1.39 million person-trips (visits) by all visitors.

December '95 - May '96. We estimate about 1.368 million person-trips (visits) were made by recreating visitors across all three modes of access to the Florida Keys. About 74 percent came by auto, 10.4 percent by air, and 15.6 percent by cruise ship. An additional 297 thousand person-trips (visits) were made by non-recreating visitors for a total of over 1.67 million person-trips (visits) by all visitors.

June '95 - May '96. We estimate about 2.54 million person-trips (visits) were made by recreating visitors across all three modes of access to the Florida Keys. About 78.6 percent came by auto, 8.7 percent by air, and 12.7 percent by cruise ship. An additional 517 thousand person-trips (visits) were made by non-recreating visitors for a total of over 3.0 million person-trips (visits) by all visitors.

Person-days

As discussed above, the concept of a person-trip (visit) is important for several purposes in the study. However, person-trips (visits) are not of constant length. The person-trip (visit) measurement doesn't tell us much about the relative congestion in the Keys during different seasons. As Table A.1.20 shows, there is very little difference between the estimated number of person-trips (visits) for the June-November 1995 and December 1995 - May 1996 seasons (1.17 million versus 1.368 million). But anyone familiar with the Florida Keys would readily attest to the fact that, on average, it is much busier during the December 1995 - May 1996 season than the June-November 1995 season.

Person-days is the appropriate measure to reflect the total demand placed on facilities and services by visitors to the Florida Keys. We can estimate person-days for each sampling period and season with measures obtained on the average length of stay for visitors by mode of access and season. Estimates of the average length of stay (measured in number of days) are summarized in Table A.1.23. These estimates were derived from the Auto, Air and Cruise Ship on-site samples. These estimates are for recreating visitors. Since we did not interview non-recreating visitors, we had to assume that non-recreating visitors have the same average length of stay as recreating visitors. Since the probability of engaging in a recreation activity is related to the length of stay, our estimates for non-recreating visitors will most likely be overstated or biased upwards. We can account for this upward bias by developing a range of estimates based on reducing the average length of stay for non-recreating visitors by 50 percent. The estimate using the assumption that non-recreating visitors, on average, stay about half the number of days of recreating visitors will be called a lower bound estimate.

Person-days are derived by multiplying the estimates of person-trips (visits) by the average length of stay. Tables A.1.24 - A.1.29 summarize the results for different types of visitors (e.g., recreating, non-recreating, and all), by mode of access, and by sampling period or season.

Table A.1.29 contains the summary for all types of visitors during the June-November 1995 and December 1995 - May 1996 seasons plus an annual total. We estimate that during the June-November 1995 season, there were between 4.64 and 5.83 million person-days of visitation in the Florida Keys. This translates into between 25 and 32 thousand visitors in the Keys on an average day. With a resident population of about 80 thousand, we estimate an average "functional population" of between 105 and 112 thousand people. This is an estimate of the number of people requiring facilities and services in the Keys on an average (not peak) day during this time period.

For the December 1995 - May 1996 season, we estimate between 9.4 and 10.4 million person-days of visitation. This translates into between 51 and 57 thousand visitors in the Keys on an average day during this season. Again, with a resident population of about 80 thousand, we estimate an average of between 131 and 137 thousand people per day during this time period.

As a comparison, Price Waterhouse and Wallace Roberts & Todd prepared estimates of the “functional population” for Monroe County for the years 1985 and 1990 and forecasted this to the year 2010. For 1995, they forecasted a “functional population” (residents and visitors on a peak day) of 145,800. This estimate is considerably higher than what we have estimated here for both seasons. The estimates here, however, are for an average, not peak day.

Consistency Checks

Several consistency checks were performed to validate our estimates of total visitation. From sample data and our visitation estimates, it was possible to estimate campground usage, hotel, motel and vacation rental usage, total lodging expenditures, and expenditures on food & beverages. For each of these items, official reported statistics exist with which we can compare our estimates to gauge whether they are reasonably accurate. This is only a rough test since the official reported statistics may contain under-reporting or other inaccuracies. For an example, see the guest editorial by Bernard Matthews on the number of vacation rentals (Solares Hill, October 3, 1996).

Campground Usage. Before estimating campsite usage, we compiled a list of campgrounds and number of campsites so campsite capacity could be calculated. Three sources were used: Trailer Life Campground/RV Park Services Directory 1995, The Monroe County Tourist Development Council (licensed campgrounds), and the State of Florida’s, Department of Natural Resources 1991 outdoor recreation facilities inventory. From all three sources, it is estimated that there are 4,367 campsites in the Florida Keys (see Table A.1.30). Next our sample estimates of the percent of auto visitors that participated in camping were combined with our estimates of the number of auto visitors to estimate the number of person-trips of camping in each season. Estimates of the number of nights of camping per trip were then multiplied by the number of person-trips of camping to get an estimate of the number of person-nights of camping. This estimate was then divided by the average number per camping party to get the number of campsites used in each season. The number of campsites times the number of nights in each six-month season (183) yields an estimate of campsite capacity. Campsite usage divided by total campsite capacity yields an estimate of capacity utilization. It is estimated that capacity utilization was 51.52 percent for the year, 8.72 percent during the summer season and 94.31 percent during the winter season. These calculations are summarized in Table A.1.31.

Hotel, Motel and Vacation Rental Usage. Following similar methods followed above, we were able to estimate hotel and motel and vacation rental usage. For hotel, motel and vacation rental units, we obtained information on the number of units from the Florida Department of Business and Professional Regulation, Division of Hotels and Restaurants, the Monroe County Tax Collector’s Office, Occupational Licensing Department, and from a guest editorial by Bernard Matthews, a Realtor specializing in vacation rentals, published in Solares Hill, October 3, 1996. Of importance here is that this editorial included estimates of 4,100 licensed vacation rental units and 4,000 estimated unlicensed rental units. We calculated capacity utilization using all licensed units, licensed and unlicensed vacation rentals (8,100 units), and rental units assuming only half the number of unlicensed units (total of 6,100 units). Table A.1.32 summarizes our calculations. Using the estimate of 13,239 licensed units, we estimate an annual capacity utilization rate of 66.73 percent (56.56 percent during the summer and 76.90 percent during the winter). For vacation rental units only using the 8,100 units estimate, we estimate an annual capacity utilization rate of 32.99 percent (31.24 percent during the summer and 34.74 percent during the winter). Using the 6,100 units estimate, we estimate an annual vacation rental utilization rate of 43.81 percent (41.48 percent during the summer and 46.13 percent during the winter). This estimate is close to the estimate of the average of 23 weeks of rental per unit used in the article by Bernard Matthews (23 divided by 52 weeks is about 44 percent).

Lodging and Food & Beverage Expenditures. Another way of looking at consistency is to approach it from the expenditure/reported sales approach. Using our visitation estimates and our estimates of average expenditures per person per trip for lodging and food & beverages, we estimate total expenditures and compare these to reported sales from the State of Florida’s Department of Revenue for Monroe County corresponding to our time period of estimation (June 1995 - May 1996). For lodging (private lodging establishments only since government owned facilities revenues are not in those reported by the Department of Revenue), we estimated over \$392 million compared to almost \$403 million reported by the Department of Revenue. Thus using our estimates imply that recreating visitors account for 97.3 percent of reported lodging expenditures. If we include the revenue currently unreported from 2,000 unlicensed vacation rentals (the 6,100 units= 4,100 licensed + 2,000 unlicensed) of \$80 million, our estimate is only 81.18 percent of reported plus unreported revenue. For food & beverages, we estimate recreating visitors accounted for 68 percent of reported sales and if we assume about 10 percent under reporting due to tips (which are included in visitor spending), our estimate is 61.82 percent of all sales. These calculations are summarized in Table A.1.33.

Capacity Utilization Method of Visitor Estimation - A Comparison

Another consistency check is to compare our visitation estimates with estimates derived from an alternative method commonly used, called the *capacity utilization method*. This method of estimation requires estimates of the number of units of campsites, hotel, motel, and vacation rental units as we used above in our consistency checks along with capacity utilization rates from the industry or association representing the industry. Also required are estimates of the number of day-visitors and the number of visitors who stay with family and friends. A.T. Kearney, Inc. (1990) used this method for the Florida Keys. We used our surveys to estimate the number of day-visitors and the number of visitors staying with family and friends and the capacity utilization rates for each type of accommodation used by A.T. Kearney. We estimate three different scenarios based on different numbers of vacation rental units. Our estimates using the capacity utilization method range from 2.3 million to 2.7 million (see Tables A.1.34, A.1.35 and A.1.36). Thus, our estimate, derived using our estimation methodology of 2.54 million is within the range of estimates derived using this alternative method of estimating visitation.

Visitation Estimates and the Economy of Monroe County

One of the primary objectives of this study is to estimate the economic contribution that recreation/tourism makes to Monroe County. Visitation estimates are crucial input into this estimation procedure. Over the past several years, there have been many visitor estimates that have circulated throughout Monroe County. Estimates of 2 million, 4 million and 6 million can be found in the socioeconomic impact assessment of the Draft Management Plan of the Florida Keys National Marine Sanctuary. Although these estimates likely refer to different time periods, only the 2 million estimate for 1990 by A.T. Kearney was coordinated with an attempt to estimate the corresponding economic contribution. As we will demonstrate, the estimates of 4 million and 6 million visitors are not consistent with the overall economy of Monroe County for the period June 1995 - May 1996. Table A.1.37 contains a summary of a set of consistency checks we performed using alternative visitation estimates. The table also contains our visitation estimate of 2.54 million and three alternative levels of visitation; 3 million, 4 million, and 6 million. We conclude that *estimates of recreating visitors* (remember we estimate a total of all visitors of a little over 3 million, that includes recreating and nonrecreating visitors) *of 3 million and higher are not consistent with the economy of Monroe County for the period June 1995 - May 1996.*

The 4 million and 6 million visitor estimates can be easily rejected because they fail most, if not all, the consistency checks (see Table A.1.37). The 3 million estimate requires more context for this judgment. Except for lodging expenditures, the 3 million estimate may not at first seem inconsistent. The estimate does not yield estimates that exceed 100 percent for any item other than lodging expenditures and even this estimate is less than 100 percent, if we accept estimates of under reporting in the vacation rental market of 2,000 units and \$80 million.

As we delve further into the lodging issue, we looked at hotel, motel, vacation rental, and campsite capacity utilization rates. A combined capacity utilization rate for the year of 78.80 percent for hotels, motels, and vacation rentals is higher than weighted average capacity utilization rate used by A.T. Kearney (1990) of 75.3 percent (weighted average of 79.3 percent for hotels and motels and 44 percent for vacation rentals). This is not greatly different, but remember that the 78.8 percent capacity utilization rate is for all visitors (recreating and nonrecreating), whereas our estimates are for recreating visitors only. So, in our judgment, the 3 million recreating visitor estimate does not pass this consistency check. If we break-down the 3 million recreating visitor estimate by season, the corresponding capacity utilization rates would be 66.79 percent for the June - November 1995 season and 90.82 percent for the December 1995 - May 1996 season. This would further reinforce the conclusion that 3 million recreating visitors is not consistent with hotel, motel, and vacation rental capacity utilization rates.

The campsite capacity utilization rate for the 3 million recreating visitor estimate of 60.83 percent is not too much higher than that reported by A. T. Kearney (1990) of 57 percent. However, when we did a break-down by season, the December 1995 - May 1996 season estimate of capacity utilization was 111.37 percent. Thus, we conclude that the estimate of 3 million recreating visitors is not consistent with campsite capacity utilization.

The estimates for the percent of the economy for output/sales, income and employment associated with the estimate of 3 million recreating visitors may not seem inconsistent. None of the estimates exceed 100 percent and they are not that much higher than those for our estimate of 2.54 million recreating visitors. To understand why these estimates are inconsistent requires a better understanding of the entire Monroe County economy, especially the "basic" industries.

Basic industries are the driving force in an economy. Basic industries are characterized by the sources of demand for local goods and services originating outside the region of study. In this cases, from outside Monroe County. Tourists in this study are defined as nonresidents of Monroe County. So the demand for goods and services by tourists to Monroe County is

generated from income sources outside the county. There are several other “basic” industries in Monroe County. The retirement community is a basic industry because much of the income they receive (e.g. pensions, dividends, social security and medicare payments) are not related to income generating activities in Monroe County. However, this income received in Monroe County is spent on goods and services in Monroe County. Thus, the retirement community is a source of new money into the County and becomes a driving force in the local economy. The Keys as a “bedroom community” is also a basic industry. Residents of Monroe County that work outside the county bring income into the county and spend it on local goods and services. The military is also a basic industry. Federal dollars supporting operations and the wages and salaries of military personnel are to a large extent, spent locally. The final major basic industry is the commercial fishery. It is estimated that anywhere from 75 to 95 percent of the commercial landings in Monroe County are exported. This portion of the commercial fishery is thus a basic industry.

There have not been any detailed studies of all the basic industries in Monroe County to determine the contribution of each while ensuring that together they do not account for more than 100 percent of the economy, but there have been studies on several of these industries and there is some data that would give us a rough guide as to their possible cumulative total. Residents of Monroe County that worked outside Monroe County earned \$116.5 million in 1994. Military wages and salaries were \$58.5 million in 1994. A recent study done for the Monroe County Commercial Fishermen, Inc. by CEMR (1995) estimated that income generated by the commercial fishery is around \$100 million. Dividends, interest, rent, and transfer payments (most of this associated with the retirement community) was over \$1 billion in 1994. Not all of the bedroom community’s income, retirement income, or military wages and salaries are spent locally in Monroe County but we could expect that a fairly high percentage of it is. Cumulatively, we could expect that these basic industries account for 35 to 40 percent of output/sales, 50 to 55 percent of income, and 50 to 55 percent of all employment in Monroe County. When put in the context of these estimates, the estimate in Table A.1.37 for the percent of output/sales, income and employment associated with the estimate of 3 million recreating visitors are not consistent with the Monroe County economy. Our estimate of 2.54 million recreating visitors is consistent with the Monroe County economy.

¹ We compared visitor profiles collected by the Monroe County Tourist Development council for years 1991 and 1992. In these years, both months included and excluded from our sample were included and origin and length of stay information was available to compare visitors during different months. We found that visitors during June, September, October, and November more like visitors during July and August than during January-April, and visitors during December and May were more like visitors during the January-April season than the July-August season. We also talked with several businesses throughout the Florida Keys about our season aggregations. The overwhelming majority agreed with our aggregations. Those that questioned it, thought that there was a definite season break at Thanksgiving. Dividing the month of November into before and after Thanksgiving would not be possible with air enplanement data or cruise ship passenger counts. But this may not be necessary anyway because our method of counting visitation captures people at the end of their trip and the information we obtain is about the time they spent on their current visit. Thus, most of the visitors that arrived after Thanksgiving would be counted in December counts. Therefore, we placed November in the June-November season.

² Sample weighting will be discussed in Chapter 2 of this appendix.

³ The Bicentennial Volunteers, Inc. is an organization made-up of primarily retired Tennessee Valley Authority employees. Members volunteer their time to various public projects throughout the Nation. The volunteers are engaged in a variety of efforts from teaching water safety classes to manning visitor centers at local, state, and federal parks. A cadre of volunteers have their own recreational vehicles (RVs) and have been doing survey work for federal and state agencies since 1988. The U.S. Forest Service and NOAA have used the volunteers at over 100 sites since 1988. We negotiate for free campsites for the volunteers and reimburse them for mileage and provide them \$38 per couple per day for food and other costs. There were 12 volunteers in the Florida Keys during July-August, 1995 and 18 during January-April, 1996.

⁴ Off-duty members of the Florida Highway Patrol, the Monroe County Sheriff’s Department, and the Florida Marine Patrol were hired to implement traffic control and provide security to our interviewers (the Bicentennial volunteers). Lt. Russ Bass of the Florida Highway Patrol coordinated all the officers. Lt. Hank Arnold of the Monroe County Sheriff’s Department handled administrative details and coordinated scheduling for the Monroe County Sheriff’s Department during the July-August, 1995 sampling period. Two officers were used on each sampling day. This was especially important during the summer because of the heat. Officers took half-hour turns directing traffic to the parking lot.

⁵ The Kolmogorov-Smirnoff, two-sample test tests for differences in the entire empirical distribution function not just particular moments of the distribution like the mean or median.

Table A.1.1 Total Auto Traffic Counts on U.S. 1
(MM106.5, Northbound lanes) By Sampling
Period Season, and Type and Time of Day

Sampling Period or Season/ Type and Time of Day	Traffic Counts	Percent
July-August 1995	676,425	100.00
Week Day Mornings	156,951	23.20
Week Day Afternoons	247,509	36.59
Weekend Mornings	74,848	11.07
Weekend Afternoons	197,117	29.14
January-April 1996	1,464,976	100.00
Week Day Mornings	394,712	26.95
Week Day Afternoons	583,816	39.85
Weekend Mornings	147,870	10.09
Weekend Afternoons	338,578	23.11
June-November 1995	1,848,454	100.00
Week Day Mornings	474,964	25.70
Week Day Afternoons	705,302	38.15
Weekend Mornings	195,162	10.56
Weekend Afternoons	473,026	25.59
Dec. '95 - May '96	2,130,724	100.00
Week Day Mornings	565,918	26.56
Week Day Afternoons	839,975	39.42
Weekend Mornings	220,942	10.37
Weekend Afternoons	503,889	23.65

Source: Florida Department of Transportation

Table A.1.2 Proportions of Eligible Sample-type Vehicles on U.S. 1 By Season
and Type and time of Day

Season/ Type and Time of Day	Proportion of Sample-type Vehicles (%)		
	Left Lane	Right Lane	K-S Test*
July-August 1995			
Week Day Mornings	88.57	79.50	Statistically different
Week Day Afternoons	91.76	84.86	Statistically different
Weekend Mornings	97.92	100.00	No difference
Weekend Afternoons	97.14	99.50	No difference
January-April 1996			
Week Day Mornings	88.08	88.35	No difference
Week Day Afternoons	90.20	86.86	No difference
Weekend Mornings	97.01	97.97	No difference
Weekend Afternoons	96.09	96.48	No difference

* Kolmogorov-Smirnoff Two-Sample Test for differences in the empirical
distribution function.

Table A.1.3 Proportion of Recreating Visitors By Mode of Access and Season

Mode of Access/ Sampling Period	Recreating Visitors (%)	Non-recreating Visitors (%)	Residents (%)	Non-exiting Recreating Visitors (%)
Auto Visitors				
<i>July-August 1995</i>				
Week Day Mornings	16.75	7.50	69.48	6.27
Week Day Afternoons	22.63	44.00	31.21	2.15
Weekend Mornings	18.20	7.98	68.33	5.49
Weekend Afternoons	27.93	41.29	27.58	3.20
<i>January-April 1996</i>				
Week Day Mornings	22.25	7.12	53.10	17.53
Week Day Afternoons	22.05	42.35	28.44	7.16
Weekend Mornings	24.45	7.07	54.17	14.31
Weekend Afternoons	20.46	45.36	24.18	10.00
Air Visitors				
<i>Key West</i>				
July-August 1995	65.35	1.32	33.33	N/A
January-April 1996	74.74	1.79	23.47	N/A
<i>Marathon</i>				
July-August 1995	61.01	3.67	35.32	N/A
January-April 1996	73.14	2.07	24.79	N/A
Cruise Ship Visitors				
July-August 1995	98.83	0.00	1.17	N/A
January-April 1996	95.47	0.00	4.53	N/A

Table A.1.4 Number of Person-trips (visits) By Mode of Access, July-August 1995: Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Total Traffic	Proportion of Traffic Sample-type Vehicles	Total Sample Type Vehicles	Proportion of Sample-type Vehicles With Recreating Visitors	Total Vehicles With Recreating Visitors	Average Number of People Per Vehicle	Total Number of Person-trips By Recreating Visitors
Week Day Morning	156,951	85.64	134,413	16.75	22,514	2.85	64,165
Week Day Afternoon	247,509	89.21	220,807	22.63	49,969	2.85	142,412
Weekend Morning	74,848	98.67	73,853	18.20	13,441	2.85	38,307
Weekend Afternoon	197,117	97.90	192,978	27.93	53,899	2.85	153,612
Total	676,425	91.96	622,051	22.48	139,823	2.85	398,496

Table A.1.5 Number of Person-trips (visits) By Mode of Access, January-April 1996: Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Total Traffic	Proportion of Traffic Sample-type Vehicles	Total Sample Type Vehicles	Proportion of Sample-type Vehicles With Recreating Visitors	Total Vehicles With Recreating Visitors	Average Number of People Per Vehicle	Total Number of Person-trips By Recreating Visitors
Week Day Morning	394,712	88.35	348,728	22.25	77,592	2.43	188,549
Week Day Afternoon	583,816	86.86	507,103	22.05	111,816	2.43	271,713
Weekend Morning	147,870	97.97	144,868	24.45	35,420	2.43	86,071
Weekend Afternoon	338,578	96.48	326,660	20.46	66,835	2.43	162,409
Total	1,464,976	90.61	1,327,359	21.97	291,663	2.43	708,742

Table A.1.6 Number of Person-trips (visits) by Auto Mode of Access, June - November 1995: Recreating Visitors

Step 1. Derivation of Resident Vehicles Per Day				
July - August 1995	Proportion of Traffic Residents (%)	Eligible Vehicles	Number of Resident Vehicles	Number of Resident Vehicles Per Day ¹
Week Day Mornings	69.48	134,413	93,390	2,122
Week Day Afternoons	31.21	220,807	68,914	1,566
Weekend Mornings	68.33	73,853	50,464	2,804
Weekend Afternoons	27.58	192,978	53,223	2,957

Step 2. Derivation of Adjustment to Recreating Visitor Proportion Based on the Constant Resident Assumption					
June - November 1995	Eligible Vehicles	Number of Resident Vehicles Per Day	Number of Resident Vehicles ²	Proportion of Traffic Resident	Adjustment to Recreating Visitor Proportion (%)
Week Day Mornings	406,759	2,122	277,982	68.34	-
Week Day Afternoons	629,200	1,566	205,146	32.60	-1.39
Weekend Mornings	192,566	2,804	145,808	75.72	-7.39
Weekend Afternoons	463,092	2,957	153,764	33.20	-5.62

Step 3. Derivation of Estimates for Extrapolation Months Using the Constant Resident Assumption					
June, Sept., Oct., Nov.	Adjusted Proportion of Recreating Visitors (%) ³	Eligible Vehicles	Number of Vehicles with Recreating Visitors	Number of Visitors Per Vehicle	Number of Recreating Visitors
Week Day Mornings	16.75	272,346	45,618	2.85	130,011
Week Day Afternoons	21.24	408,393	86,743	2.85	247,218
Weekend Mornings	10.81	118,713	12,833	2.85	36,574
Weekend Afternoons	22.31	270,114	60,262	2.85	171,747
Total	19.21	1,069,566	205,456	2.85	585,550

Step 4. Estimates for June - November 1995			
Number of Person-trips (visits)			
Type of Day	July - Aug 1995	June, Sept., Oct. & Nov. 1995	June - November 1995
Week Day Mornings	64,165	130,011	194,176
Week Day Afternoons	142,412	247,218	389,630
Weekend Mornings	38,307	36,574	74,881
Weekend Afternoons	153,612	171,747	325,359
Total	398,496	585,550	984,041

1. Number of resident vehicles divided by the number of days in July - Aug. 1995. There were 44 week days and 18 weekend days in the July - Aug. 1995 period.

2. Number of resident vehicles per day times the number of days in the June- November 1995 season. There were 131 week days and 52 weekend days in the June-November 1995 season.

3. Column 4, Table A.1.4 minus the adjustment to recreating visitor proportions from Step2.

Table A.1.7 Number of Person-trips (visits) by Auto Mode of Access, Dec. 1995 - May 1996: Recreating Visitors

Step 1. Derivation of Resident Vehicles Per Day					
January - April 1996	Proportion of Traffic Residents (%)	Eligible Vehicles	Number of Resident Vehicles	Number of Resident Vehicles Per Day ¹	
Week Day Mornings	53.10	348,728	185,175	2,128	
Week Day Afternoons	28.44	507,103	144,220	1,658	
Weekend Mornings	54.17	144,868	78,475	2,308	
Weekend Afternoons	24.18	326,660	78,986	2,323	
Step 2. Derivation of Adjustment to Recreating Visitor Proportion Based on the Constant Resident Assumption					
Dec. 1995 - May 1996	Eligible Vehicles	Number of Resident Vehicles Per Day	Number of Resident Vehicles ²	Proportion of Traffic Resident	Adjustment to Recreating Visitor Proportion (%)
Week Day Mornings	499,989	2,128	278,768	55.75	-2.65
Week Day Afternoons	729,602	1,658	217,198	29.77	-1.33
Weekend Mornings	216,457	2,308	120,016	55.45	-1.28
Weekend Afternoons	486,152	2,323	120,796	24.85	-0.67
Step 3. Derivation of Estimates for Extrapolation Months Using the Constant Resident Assumption					
Dec. '95 & May '96	Adjusted Proportion of Recreating Visitors (%) ³	Eligible Vehicles	Number of Vehicles with Recreating Visitors	Number of Visitors Per Vehicle	Number of Recreating Visitors
Week Day Mornings	19.60	151,261	29,647	2.43	72,042
Week Day Afternoons	20.72	222,499	46,102	2.43	112,028
Weekend Mornings	23.17	71,589	16,587	2.43	40,307
Weekend Afternoons	19.78	159,492	31,548	2.43	77,293
Total	20.48	604,841	123,884	2.43	301,670
Step 4. Estimates for Dec. 1995 - May 1996					
Number of Person-trips (visits)					
Type of Day	Jan. - Apr.	Dec. & May	Dec. 1995 - May 1996		
Week Day Mornings	188,549	72,042	260,591		
Week Day Afternoons	271,713	112,028	383,741		
Weekend Mornings	86,071	40,307	126,378		
Weekend Afternoons	162,409	77,293	239,702		
Total	708,742	301,670	1,010,412		

1. Number of resident vehicles divided by the number of days in January - April 1996. There were 87 week days and 34 weekend days in the January - April 1996 period.

2. Number of resident vehicles per day times the number of days in the Dec. 1995 - May 1996 season. There were 131 week days and 52 weekend days in the Dec. 1995 - May 1996 season.

3. Column 4, Table A.1.5 minus the adjustment to recreating visitor proportions from Step 2.

Table A.1.8 Number of Person-trips (visits) by Auto Mode of Access, July-August 1995: Non-Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Proportion of Traffic Nonrecreating Visitors	Eligible Vehicles	Number of Vehicles with Nonrecreating Visitors	Number of Vehicles with Commuters ¹	Number of Vehicles with other Nonrecreating Visitors ²	Number of Visitors Per Vehicle ³	Number of Nonrecreating Visitors
Week Day Morning	7.50	134,413	10,081	0	10,081	1.5	15,122
Week Day Afternoon	44.00	220,807	97,155	88,704	8,451	1.5	12,675
Weekend Morning	7.98	73,853	5,893	0	5,893	1.5	8,840
Weekend Afternoon	41.29	192,978	79,681	36,288	43,393	1.5	65,090
Total	31.00	622,051	192,810	124,992	67,818	1.5	101,727

1. Commuters are workers that live outside the Florida Keys but work inside the Florida Keys. Number of commuters estimated from the Census of Intercounty Commuters (U.S. Department of Commerce, Bureau of Economic Analysis, 1996).

2. Column 3 minus Column 4.

3.. This estimate is based on an assumption of 1.5 people per vehicle.

Table A.1.9 Number of Person-trips (visits) by Auto Mode of Access, January - April 1996: Non-Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Proportion of Traffic Nonrecreating Visitors	Eligible Vehicles	Number of Vehicles with Nonrecreating Visitors	Number of Vehicles with Commuters ¹	Number of Vehicles with other Nonrecreating Visitors ²	Number of Visitors Per Vehicle ³	Number of Nonrecreating Visitors
Week Day Morning	7.12	348,728	24,829	0	24,829	1.5	37,243
Week Day Afternoon	42.35	507,103	214,758	175,392	39,366	1.5	59,049
Weekend Morning	7.07	144,868	10,242	0	10,242	1.5	15,363
Weekend Afternoon	45.36	326,660	148,173	68,544	79,629	1.5	119,444
Total	29.98	1,327,359	398,002	243,936	154,066	1.5	231,099

1. Commuters are workers that live outside the Florida Keys but work inside the Florida Keys. Number of commuters estimated from the Census of Intercounty Commuters (U.S. Department of Commerce, Bureau of Economic Analysis, 1996).

2. Column 3 minus Column 4.

3.. This estimate is based on an assumption of 1.5 people per vehicle.

Table A.1.10 Number of Person-trips (visits) by Auto Mode of Access, June - November 1995: Non-Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Proportion of Traffic Nonrecreating Visitors	Eligible Vehicles	Number of Vehicles with Nonrecreating Visitors	Number of Vehicles with Commuters ¹	Number of Vehicles with other Nonrecreating Visitors ²	Number of Visitors Per Vehicle ³	Number of Nonrecreating Visitors
Week Day Morning	7.50	406,759	30,507	0	30,507	1.5	45,760
Week Day Afternoon	44.00	629,200	276,848	264,096	12,752	1.5	19,128
Weekend Morning	7.98	192,566	15,367	0	15,367	1.5	23,051
Weekend Afternoon	41.29	463,092	191,211	104,832	86,379	1.5	129,569
Total	30.38	1,691,617	513,933	368,928	145,005	1.5	217,508

1. Commuters are workers that live outside the Florida Keys but work inside the Florida Keys. Number of commuters estimated from the Census of Intercounty Commuters (U.S. Department of Commerce, Bureau of Economic Analysis, 1996).

2. Column 3 minus Column 4.

3.. This estimate is based on an assumption of 1.5 people per vehicle.

Table A.1.11 Number of Person-trips (visits) by Auto Mode of Access, December 1995 - May 1996: Non-Recreating Visitors

	1	2	3	4	5	6	7
Type and Time of Day	Proportion of Traffic Nonrecreating Visitors	Eligible Vehicles	Number of Vehicles with Nonrecreating Visitors	Number of Vehicles with Commuters ¹	Number of Vehicles with other Nonrecreating Visitors ²	Number of Visitors Per Vehicle ³	Number of Nonrecreating Visitors
Week Day Morning	7.12	499,989	35,599	0	35,599	1.5	53,399
Week Day Afternoon	42.35	729,602	308,986	275,100	33,886	1.5	50,829
Weekend Morning	7.07	216,457	15,304	0	15,304	1.5	22,956
Weekend Afternoon	45.36	486,152	220,519	109,200	111,319	1.5	166,978
Total	30.04	1,932,200	580,408	384,300	196,108	1.5	294,162

1. Commuters are workers that live outside the Florida Keys but work inside the Florida Keys. Number of commuters estimated from the Census of Intercounty Commuters (U.S. Department of Commerce, Bureau of Economic Analysis, 1996).

2. Column 3 minus Column 4.

3.. This estimate is based on an assumption of 1.5 people per vehicle.

Table A.1.12 Number of Person-trips (visits) By the Air Mode of Access, July-August 1995 and June-November 1995: Recreating Visitors

Airport	July-August 1995			June-November 1995	
	Air Enplanements	Proportion of Passengers Recreating Visitors	Number of Person-trips	Air Enplanements	Number of Person-trips
Key West	33,710	65.35	22,030	108,691	71,030
Marathon	4,616	61.01	2,816	13,922	8,494
Total	38,326	64.83	24,846	122,613	79,524

Table A.1.13 Number of Person-trips (visits) By the Air Mode of Access, January-April 1996 and December 1995 - May 1996: Recreating Visitors

Airport	January-April 1996			December 1995 - May 1996	
	Air Enplanements	Proportion of Passengers Recreating Visitors	Number of Person-trips	Air Enplanements	Number of Person-trips
Key West	119,134	74.74	89,041	166,237	124,256
Marathon	18,304	73.14	13,388	24,206	17,704
Total	137,438	74.53	102,429	190,443	141,950

Table A.1.14 Number of Person-trips (visits) By the Air Mode of Access, July-August 1995 and June-November 1995: Non-recreating Visitors

Airport	July-August 1995			June-November 1995	
	Air Enplanements	Proportion of Passengers Recreating Visitors	Number of Person-trips	Air Enplanements	Number of Person-trips
Key West	33,710	1.32	445	108,691	1,435
Marathon	4,616	3.67	169	13,922	511
Total	38,326	1.60	614	122,613	1,946

Table A.1.15 Number of Person-trips (visits) By the Air Mode of Access, January-April 1996 and December 1995 - May 1996: Non-recreating Visitors

Airport	January-April 1996			December 1995 - May 1996	
	Air Enplanements	Proportion of Passengers Recreating Visitors	Number of Person-trips	Air Enplanements	Number of Person-trips
Key West	119,134	1.79	2,132	166,237	2,976
Marathon	18,304	2.07	379	24,206	501
Total	137,438	1.83	2,511	190,443	3,477

Table A.1.16 Number of Person-trips (visits) By the Cruise Ship Mode of Access and Season

Season	1	2	3	4	5
	Arrivals	Percent that Get Off Ship	Number Off Ship	Percent Visitors	Number of Person-trips
July-August 1995	35,887	90.64	32,528	98.83	32,147
June-November 1995	121,048	90.64	109,718	98.83	108,434
January-April 1996	171,308	94.81	162,417	95.47	155,060
Dec. '95 - May '96	235,185	94.81	222,979	95.47	212,878

Table A.1.17 Estimated Number of Person-trips (visits) By Mode of Access and Sampling Period: Recreating Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-trips	Percent	Person-trips	Percent
1. Auto	398,496	87.49	708,742	73.35
2. Air	24,846	5.45	102,429	10.60
a) Key West	22,030	4.84	89,041	9.21
b) Marathon	2,816	0.61	13,388	1.39
3. Cruise Ship	32,147	7.06	155,060	16.05
Total	455,489	100.0	966,231	100.0

Table A.1.18 Estimated Number of Person-trips (visits) By Mode of Access and Sampling Period: Non-recreating Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-trips	Percent	Person-trips	Percent
1. Auto	101,727	99.40	231,099	98.92
2. Air	614	0.60	2,511	1.08
3. Cruise Ship	0	0.00	0	0.00
Total	102,341	100.0	233,610	100.0

Table A.1.19 Number of Person-trips (visits) By Mode of Access and Sampling Period: All Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-trips	Percent	Person-trips	Percent
1. Auto	500,223	89.67	939,841	78.33
2. Air	25,460	4.57	104,940	8.75
3. Cruise Ship	32,147	5.76	155,060	12.92
Total	557,830	100.0	1,199,841	100.0

Table A.1.20 Number of Person-trips (visits) By Mode of Access and Season - Recreating Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-trips	Percent	Person-trips	Percent	Person-trips	Percent
1. Auto	984,041	83.96	1,010,412	74.01	1,994,453	78.61
2. Air	79,524	6.79	141,950	10.40	221,474	8.73
a) Key West	71,030	6.06	124,246	9.10	195,276	7.70
b) Marathon	8,494	0.73	17,704	1.30	26,198	1.03
3. Cruise Ship	108,434	9.25	212,878	15.59	321,312	12.66
Total	1,171,999	100.0	1,368,484	100.0	2,540,483	100.0

Table A.1.21 Number of Person-trips (visits) By Mode of Access and Season : Non-Recreating Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-trips	Percent	Person-trips	Percent	Person-trips	Percent
1. Auto	217,508	99.11	294,162	98.83	511,670	98.95
2. Air	1,946	0.89	3,477	1.17	5,423	1.05
a) Key West	1,435	0.65	2,976	1.00	4,411	0.85
b) Marathon	511	0.24	501	0.17	1,012	0.20
3. Cruise Ship	0	0.00	0	0.00	0	0.00
Total	219,454	100.0	297,639	100.0	517,093	100.0

Table A.1.22 Number of Person-trips (visits) By Mode of Access and Season : All Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-trips	Percent	Person-trips	Percent	Person-trips	Percent
1. Auto	1,201,549	86.35	1,304,574	78.45	2,506,123	82.05
2. Air	81,470	5.86	145,427	8.75	226,897	7.43
a) Key West	72,465	5.21	127,222	7.65	199,687	6.54
b) Marathon	9,005	0.65	18,205	1.09	27,210	0.89
3. Cruise Ship	108,434	7.79	212,878	12.80	321,312	10.52
Total	1,391,453	100.0	1,662,879	100.0	3,054,332	100.0

Table A.1.23 Average Length of Stay By Mode of Access and Season

Mode of Access/Season	Length of Stay (# Days)		
	Mean	Std. Error	N
Auto Visitors			
July-August 1995	4.24	0.148	922
June-November 1995	4.24	0.148	922
January-April 1996	6.82	0.343	1,642
Dec. '95 - May '96	6.82	0.343	1,642
Air Visitors			
July-August 1995	7.65	0.955	198
June-November 1995	7.65	0.955	198
January-April 1996	9.04	0.481	387
Dec. '95 - May '96	9.04	0.481	387
Cruise Ship Visitors			
July-August 1995	1.00	0.000	214
June-November 1995	1.00	0.000	214
January-April 1996	1.00	0.000	220
Dec. '95 - May '96	1.00	0.000	220
Weighted Average All Visitors			
July-August 1995	4.22	0.137	1,334
June-November 1995	4.17	0.153	1,334
January-April 1996	6.35	0.275	2,249
Dec. '95 - May '96	6.03	0.261	2,249

Table A.1.24 Number of Person-days By Mode of Access, July-August, 1995 and January-April, 1996 : Recreating Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-days	Percent	Person-days	Percent
1. Auto	1,689,623	88.38	4,833,620	81.72
2. Air	190,072	9.94	925,958	15.66
3. Cruise Ship	32,147	1.68	155,060	2.62
Total	1,911,842	100.0	5,914,638	100.0

Table A.1.25 Number of Person-days By Mode of Access, July-August, 1995 and January-April, 1996: Non-recreating Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-days	Percent	Person-days	Percent
1. Auto	431,322	98.92	1,576,095	98.58
2. Air	4,697	1.08	22,699	1.42
3. Cruise Ship	0	0.00	0	0.00
Total	436,019	100.0	1,598,794	100.0

Table A.1.26 Number of Person-days By Mode of Access, July-August, 1995 and January-April, 1996: All Visitors

Mode of Access	July-August 1995		January-April 1996	
	Person-days	Percent	Person-days	Percent
1. Auto	2,120,945	90.33	6,409,715	85.31
2. Air	194,769	8.30	948,657	12.63
3. Cruise Ship	32,147	1.37	155,060	2.06
Total	2,347,861	100.0	7,513,432	100.0

Table A.1.27 Number of Person-days By Mode of Access and Season: Recreating Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-days	Percent	Person-days	Percent	Person-days	Percent
1. Auto	4,172,355	85.34	6,891,010	82.16	11,063,365	83.33
2. Air	608,358	12.44	1,283,228	15.30	1,891,586	14.25
3. Cruise Ship	108,434	2.22	212,878	2.54	321,312	2.42
Total	4,889,147	100.0	8,387,116	100.0	13,276,263	100.0

Table A.1.28 Number of Person-days By Mode of Access and Season: Non-recreating Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-days	Percent	Person-days	Percent	Person-days	Percent
1. Auto	922,234	98.41	2,006,185	98.46	2,928,419	98.44
2. Air	14,887	1.59	31,432	1.54	46,319	1.56
3. Cruise Ship	0	0.00	0	0.00	0	0.00
Total	937,121	100.0	2,037,617	100.0	2,974,738	100.0

Table A.1.29 Number of Person-days By Mode of Access and Season: All Visitors

Mode of Access	June - November 1995		Dec. 1995 - May 1996		Annual Total	
	Person-days	Percent	Person-days	Percent	Person-days	Percent
1. Auto	5,094,589	87.44	8,897,195	85.35	13,991,784	86.10
2. Air	623,245	10.70	1,314,660	12.61	1,937,905	11.92
3. Cruise Ship	108,434	1.86	212,878	2.04	321,312	1.98
Total	5,826,268	100.0	10,424,733	100.0	16,251,001	100.0

Table A.1.30 Number of Campsites in Florida Keys

Campground	Campground Book	TDC*	Florida DNR 1991
Boyds Campground	125	200	120
Jabour's Trailer Court	74	74	100
Big Pine Fishing Lodge	101	124 (172)	134
Breezy Pine RV Estates	96	96	100
Bluewater RV Resort	80	80	-
Sugarloaf Key KOA	204	184 (212)	150
Lazy Lakes Resort	100	100	100
Sunshine Key RV Resort & Marina	400	389 (405)	389
Bahia Honda State Park	48	48	48
Knights Key Park	150	192 (199)	-
Key RV Park	190	190	-
Jolly Roger Travel Park	200	225	139
Fiesta Key KOA Resort	288	300	495
Long Key State Rec. Area	60	60	60
Key Largo Kampground & Marina	171	110	-
American Outdoors RV Resort	154	154	155
Calusa Camp Resort	401	375 (450)	300
Florida Keys RV Resort	126	126	-
John Pennekamp Coral Reef State Park	47	47	47
sub-total	3,015	3,074 (3,248)	2,337
Seaside Resort	-	15	-
Seahorse Campground	-	125	124
Paradise Island Park	-	10	-
Castaways RV Park	-	36	-
Geiger Key RV Park & Marina	-	31	37
Boca Chica (Navy)	-	-	25
Outdoors Resorts 66 MM	-	30	20
Gulfstream Travel Park & Marina	-	-	83
Point Laura	-	44	43
Key Trailer Courts	-	-	140
Kings Kamp Campground & Marina	-	-	65
Leo's Campground	-	-	22
Riptide Trailer Park	-	-	34
Travel Trailer Town	-	-	77
Twin Harbor Motel & Campground	-	-	20
Trailers by the Sea	-	-	15
Halycon Beach Trailer Park	-	-	58
Lions Liar Travel Park	-	-	30
Campers Cove	-	-	30
Happy Vagabond Campground	-	-	75
Key Largo Ocean Resorts & Marina	-	-	25

Table A.1.30 (continued)

Campground	Campground Book	TDC*	Florida DNR 1991
Key West Seaside Resort	-	-	200
Venture Out at Cudjoe Cay	-	-	60
Seabreeze Trailer Park	-	-	63
SEA Camp Association	-	-	4
Boy Scouts Sea Base	-	-	2
Boy Scouts Camp Sawyer	-	-	6
Girl Scouts Camp Wesmkee	-	-	27
Total	3,105	3,365 (3,539)	3,622

Grand Total = Campground Book Total + TDC (not in Campground Book) + FL DNR (not in TDC or in Campground Book)

Grand Total= 3,015 + 1,352=4,367

*** Numbers in parentheses are total number of licensed units. Could include units other than campsites such as cabins, cottages.**

Campground Book - Trailer Life Campground/RV Park & Services Directory 1995

NOTE: Kearney/Centaur used Humms Guide and the FL DNR and derived an estimate of 4,603 campsites in the Florida Keys in 1989-1990.

Table A.1.31 Consistency Check Campsite Usage

	Summer	Winter	Annual
Auto Person-trips	984,046	1,013,656	1,997,702
x Participation Rate All Camping By Auto Visitors	.0532	.1492	
= Person-trips of Camping	52,351	151,237	203,588
x Nights Camping per trip	3.9	12.11	
= Person-nights of Camping	204,169	1,831,480	2,035,649
÷ Number per Party	2.93	2.43	
= Campsite Usage	69,682	753,695	823,377
Number of Campsites	4,367	4,367	4,367
x Number of Nights	183	183	366
= Campsite Capacity	799,161	799,161	1,598,322
Capacity Utilization Rate	8.72%	94.31%	51.52%

Table A.1.32 Consistency Check for Hotel Usage

	Summer	Winter	Annual
Person-trips	1,172,004	1,368,484	2,540,488
x Percent overnight visits	.88	.854	
= Overnight Person-trips	1,031,364	1,168,685	2,200,049
Hotels & Motels			
Percent of overnight stays	58.72	56.14	
Hotel person-trips	605,617	656,100	1,261,717
x Nights per trip	4.09	4.87	
= Hotel person-nights	2,476,974	3,195,207	5,672,181
÷ Number per Party	2.73	2.37	
= Hotel Usage	907,316	1,348,189	2,255,505
Rental Home, Condo			
Percent of overnight	12.78	7.87	
Rental person-trips	131,808	91,975	223,783
x Nights per trip	9.38	12.99	
= Rental Person-nights	1,236,359	1,194,755	2,431,114
÷ Number per Party	2.67	2.32	
= Rental Usage	463,056	514,981	978,037
Hotel, Motel and Rental Units	13,239	13,239	13,239
x Number of Nights	183	183	366
= Capacity	2,422,737	2,422,737	4,845,474
Capacity Utilization	56.56%	76.90%	66.73%
Rental Capacity 8,100 units	1,482,300	1,482,300	2,964,600
Capacity Utilization Rental	31.24%	34.74%	32.99%
Rental Capacity 6,100 units	1,116,300	1,116,300	2,232,600
Capacity Utilization Rental	41.48%	46.13%	43.81%

Table A.1.33 Consistency Check for Lodging Expenditures

Lodging Expenditures			
	Summer	Winter	Annual
Person-trips	1,172,004	1,368,484	2,540,488
x			
Lodging Expenditures Per Person Per Trip (Private only)	\$128.62	\$164.90	
=			
Total Lodging Expenditures	\$150,743,155	\$225,663,012	\$376,406,167
Reported Lodging Fl Dept. of Revenue 6/95-5/96			\$402,942,607
Estimated /Reported			93.41 %
Unreported Vacation Rentals (6,100 units)			\$80,000,000
Estimated/Reported+Unreported			77.94%
Food & Beverages			
	Summer	Winter	Annual
Person-trips	1,172,004	1,368,484	2,540,488
x			
Food & Beverages Expenditures Per Person Per Trip	\$112.01	\$138.87	
=			
Total Food & Beverage Expenditures	\$131,276,168	\$190,041,373	\$321,317,541
Reported Food & Beverages Fl Dept. of Revenue 6/95-5/96			\$482,110,100
Estimated/Reported			66.65%
Reported * 1.10 (unreported)			\$530,321,110
Estimated/Reported*1.10			60.59%

Table A.1.34 Visitation Estimates Capacity Utilization Method: Scenario 1

The capacity utilization method of estimating visitors was used by A.T. Kearney (1990) in their study of Monroe County Florida for the Minerals Management Service. We combined our survey estimates for party size, number of nights per visit, percent of visitors that stayed with friends and family, and day visitation with the most up-dated counts of units of hotels, motels, vacation rentals, and campsites with the capacity utilization rates for the Keys used by A.T. Kearney (1990). This method yields an approximation and serves as another check on our visitation estimate.

The general method is as follows:

Number of units x utilization rate x number of nights per year = Annual-nights occupied

Annual-nights occupied x average party size = Guest-nights

Guest-nights / average nights per stay = Total visits

Those staying with Friends and Relatives and Day Visitation are accounted for using other survey information.

Hotels and Motels

Hotel and Motel Units 9,265
Occupancy rate .793
Nights per year 366
Average Party Size 2.5
Average Number of Nights 4.5

$[(9,265 \times .793 \times 366) \times 2.5] / 4.5 = \mathbf{1,493,919}$

Vacation Rentals, Condos, etc.

Vacation rental units 5,197
Occupancy rate .44
Nights per year 366
Average Party size 2.5
Average Number of Nights 11

$[(5,197 \times .44 \times 366) \times 2.5] / 11 = \mathbf{190,210}$

Campgrounds

Number of Campsites 4,367
Occupancy rate .57
Nights per year 366
Average Party size 2.7
Average Number of Nights 8

$[(4,367 \times .57 \times 366) \times 2.7] / 8 = \mathbf{307,477}$

Table A.1.34 (continued)

Day Visitors

Mode of Access	Day Visits
Air	2,408
Cruise Ship	321,312
sub-total	323,720

Air plus Cruise Ship were 70.35 percent of sample day visitors

Total Day Visitors = $323,720 / .7035 = 460,156$

Auto Day Visitors = Total Day Visitors - 323,720 = 136,436

Friends and Relatives

15.5 percent of sample visitors stayed with Friends and Relatives (nights gt 0 and lodging eq 0).

Total Visits = (sum of all visits above / .845) = 2,901,493

Friends and Relatives = 2,901,493 - 2,451,762 = **449,731**

Total Visits = 2,901,493

Recreating Visits = Total Visits x .80=2,321,194

Recreating Visits = Total Visits x .90=2,611,344

Table A.1.35 Visitation Estimates Capacity Utilization Method: Scenario 2

(Vacation Rental Units 8,100)

Hotels and Motels 1,493,919

Vacation Rentals (8,100 units)

$[(8,100 \times .44 \times 366) \times 2.5] / 11 = \mathbf{296,460}$

Campgrounds 307,477

Day Visits 460,156

Friends and Relatives

$(2,558,012 / .845) - 2,558,012 = \mathbf{469,221}$

Total Visits 3,027,233

Recreating Visits $3,027,233 \times .80 = 2,421,786$

Recreating Visits $3,027,233 \times .90 = 2,724,510$

Table A.1.36 Visitation Estimates Capacity Utilization Method: Scenario 3

(Vacation Rental Units 6,100)

Hotels and Motels 1,493,919

Vacation Rentals (6,100 units)

$[(6,100 \times .44 \times 366) \times 2.5] / 11 = 223,260$

Campgrounds 307,477

Day Visits 460,156

Friends and Relatives

$(2,484,812 / .845) - 2,484,812 = 455,794$

Total Visits 2,940,606

Recreating Visits $2,940,606 \times .80 = 2,352,485$

Recreating Visits $2,940,606 \times .90 = 2,646,545$

Table A.1.37. Consistency of Alternative Estimates of Visitation with the Monroe County Economy

Visitation (millions)	Percent of Monroe County Economy					
	Output/Sales	Income	Employment	Lodging Expenditures ¹	Hotel Usage ²	Campsite Usage ³
2.54	60.53	45.03	46.49	93.41 (77.94)	66.73 (43.81)	51.72
3.00	71.48	53.18	52.17	110.31 (92.04)	78.80 (51.73)	60.83
4.00	95.31	70.90	73.19	147.08 (122.72)	105.07 (68.97)	81.11
6.00	142.96	106.35	109.79	220.62 (184.08)	157.61 (103.46)	121.67

1. Estimate in parentheses is based on 2,000 unreported vacation rental units with an estimated \$80 million of revenues.
2. Capacity utilization rate for hotels, motels and vacation rental units. Estimate in parentheses is based on 2,000 unreported vacation rental units.
3. Capacity utilization rate.

Chapter 2. Sample Weighting

Chapter 1 discussed the sampling methodology for the Auto, Air, and Cruise Ship Survey as it related to estimating the total number of person-trips (visits) and person-days. These are the estimated population totals from which sample weights are constructed.

Figure 2.1 shows each of the survey samples, their associated subsamples, and the general types of information obtained from each sample and/or subsample. Sample 1 is the Auto, Air and Cruise Ship Survey and has an on-site sample and two mailback samples; 1) the expenditure mailback and 2) the satisfaction mailback. Sample 2 is the CUSTOMER Survey and it has an on-site sample and a mailback sample called the ecosystem mailback. The ecosystem mailback was only implemented during the January - April 1996 period. Sample weighting is required for each of the samples and subsamples listed in Figure 2.1. The reasons sample weighting are required and their derivation will be described below.

Auto, Air and Cruise Ship Survey

On-site Sample. The on-site sample was a stratified random sample. Stratification was done by mode of access to the Florida Keys/Key West (auto, air and cruise ship) and by season. A priori, little information was available to establish exact sampling quotas by each mode of access and season. That is, the exact population distributions by mode of access and season were not known prior to the sampling. In fact, part of the study design was to estimate these very population numbers (see Chapter 1). In addition, project partners wanted the capability to estimate many project measurements by mode of access. To do this required over-sampling the air and cruise ship populations to ensure adequate sample sizes to yield reliable estimates by mode of access. For these reasons, sample-weighting is necessary. Sample weights equilibrate the sample distributions by mode of access to the population distribution by mode of access.

Table A.2.1 shows how sample weights were derived for the July-August 1995 sampling period and for the June - November 1995 season for estimation. Sample weights are derived by dividing the population distribution percentages (from Chapter 1) by the sample distribution percentages. Notice that even though the sample distributions are the same for the July - August 1995 period and the June - November 1995 season for estimation, different weights are required because the population distributions are different during the different time periods. Also, note that the weights are labeled "General Sample Weights". What this means is that these sample weights are appropriate for measurements based on observations of the randomly chosen person that was interviewed in each sample. Alternative weights for activity participation and region visitation will be described later. Table A.2.2 shows the derivation of the "General Sample Weights" for the January - April 1996 sampling period and the December 1995 - May 1996 season.

General versus Activity Sample Weights. The weights derived in Tables A.2.1 and A.2.2 should be applied to sample measurements where the randomly chosen individual represents the basic unit of observation in the sample. For activity participation and region visitation, we calculated participation as the sum of all persons that did an activity (visited a region) divided by the sum of all people in the traveling/recreating party from which the randomly chosen person for the interview was conducted. That is, we gathered information on these two aspects for all members of the traveling/recreating party. The rationale behind this is that we hypothesized, from past experience, that there would be a grouping effect with respect to both activity participation and region visitation. The grouping effect would result in biased estimates of activity participation and region visitation if this grouping effect was not accounted for in our estimation methods. The method of calculating participation rates, described above, accounts for this grouping effect, however, sample weights are required to make sure the sample reflects the population distribution. In fact, the test for the grouping effect is whether participation rates are significantly different and/or the distribution of the randomly chosen individuals by mode of access differs from the distribution of all members of the traveling/recreating groups by mode of access. Both of these aspects are true. Tables A.2.3 and A.2.4 show the derivations of the "Activity Sample Weights".

Annual Sample Weights. In order to estimate annual weighted averages or weighted population distributions across seasons, the sample weights derived above must be adjusted by their sample distributions relative to their population distributions across seasons. Tables A.2.5 and A.2.6 show how the derivation of the annual adjustment factors. These annual adjustment factors are multiplied by the seasonal sample weights to form the annual sample weights. Table A.2.7 summarizes the data base sample weight names for each time period and application.

Expenditure Mailback. Each visitor interviewed on-site received an expenditure mailback questionnaire. Actually, we first identified the person paying for the trip, since in some cases the randomly chosen individual within the traveling group may not have been the person paying trip expenses, and asked that person if they would complete the mailback questionnaire.

After two weeks, if a mailback questionnaire was not received, a post card reminder was sent. After one month, if a mailback response was still not received, a whole new questionnaire and letter were sent asking for a response. Foreign visitors were asked to complete their mailback questionnaires before they departed from the U.S. since the self-mailing questionnaire would require separate postage if mailed from outside the U.S.

Table A.2.8 shows the number of completed questionnaires from both the on-site and expenditure mailback portions of the Auto, Air and Cruise Ship Survey. Mailback response rates are presented by mode of access and survey period. Response rates were slightly higher during the January - April 1996 survey period, and although there were some differences by mode of access, the only significant difference was for the auto mode during the July - August 1995 survey period, which was lower than the response rates from the air and cruise ship modes of access.

Multivariate Approach. A multivariate sample-weighting approach was used for the expenditure mailback data. The weighting had three steps. The first step was to weight the data to equilibrate mailback response rates to the population distribution by mode of access. Tables A.2.9 and A.2.10 show the derivation of these weights. As in the on-site sample weight derivations discussed above, sample weights are equal to the population distribution percentages divided by the sample distribution percentages.

Step two of the process is based on an analysis of nonresponse bias. The analysis revealed that response rates were significantly different by mode of access, household income, race/ethnicity, age, and whether the visitor was foreign or domestic. As was shown above, auto visitors during the July - August 1995 period had a lower response rate. During both survey periods, response rates were higher for higher income groups and for older visitors and were lower for black, hispanic and foreign visitors.

But lower response rates do not necessarily result in nonresponse bias, it just means that the probability of nonresponse bias is higher. To establish whether nonresponse bias existed, analyses were conducted to determine the relationship of socioeconomic factors related to difference in responses and the amounts of each general type of expenditure item. Income was the only factor where there was a significant relationship with the level of expenditure on most items. Age, race/ethnicity and whether a visitor was foreign or domestic were only significant for a couple of items. We concluded from this that nonresponse bias existed but it appeared to be minimal. And, that sample-weighting for these factors would further minimize this bias. See Chapter 3 for a full discussion of the nonresponse bias analysis.

Twelve (12) socioeconomic groups were formed based on race/ethnicity, age, household income, and whether a visitor was foreign or domestic. Table A.2.11 shows the 12 socioeconomic groups, their corresponding response rates, and the sample weights derived to equilibrate response rates across socioeconomic groups for the July - August 1995 survey period. It should be noted that the data was first weighted by mode of access using the results presented in Tables A.2.9 and A.2.10 before running the cross-tabulations between socioeconomic groups and response rates. Table A.2.12 summarizes the results for the June - November 1995 season.

For the January - April 1996 survey period and the December 1995 - May 1996 season, the socioeconomic groups were collapsed into 10 groups. This was required because blacks and hispanics were a much smaller proportion of the visiting populations during these time periods. This was reflected in the on-site samples. Blacks and hispanics had similar response rates, and, in the nonresponse bias analysis, neither group had significantly different expenditures. So, these two groups were combined into 1) Blacks and Hispanics, Income under \$40,000 and 2) Blacks and Hispanics, Income greater than \$40,000. In Addition, several observations had missing information on demographics, so a group labeled "Missing" was formed. Tables A.2.13 and A.2.14 summarize the response rates and sample weights for these time periods.

Step 3 was to form the final sample weights to be used when estimating sample average expenditures. This required simply multiplying the weights derived in Step 1 and those derived in Step 2. These weights have the same names as those in steps one and two except with the three (3) suffix.

Annual Sample Weight. When combining samples across seasons to estimate weighted annual averages, a set of annual weights is required. Table A.2.15 shows the derivation of the annual adjustment factor. As in the on-site sample, the annual weight is equal to the seasonal weights times the annual adjustment factor.

Satisfaction Mailback. Each visitor interviewed on-site received a satisfaction mailback questionnaire. This was handed to each person interviewed as was done with the expenditure mailback. The same follow-up procedures were followed as in the expenditure mailback. Table A.2.16 shows the number of completed questionnaires and the response rates by mode of access

and season. The January - April 1996 survey period had higher response rates than the July - August 1995 period. The differences by mode of access were not significant for the July - August 1995 sample but were significant for the January - April 1996 sample. Auto visitors had a significantly lower response rate than air or cruise ship visitors during the January - April 1996 period. Tables A.2.17 and A.2.18 show the derivation of sample weights for equilibrating response rates by mode of access for each season.

Multivariate Approach. The same multivariate sample-weighting approach described above for the expenditure mailback was used for the satisfaction mailback. In addition, a similar analysis to that conducted for the expenditure mailback on nonresponse bias was conducted and is detailed in Chapter 3. There were some fundamental differences in the findings there in that race/ethnicity and whether a visitor was foreign or domestic were more important factors in explaining responses to various questions. Household income and age were not significant factors for any responses in the satisfaction mailback. Tables A.2.19 to A.2.22 show the derivations of the sample weights that equilibrate response rates by socioeconomic group. Table A.2.23 shows the derivation of the annual adjustment factor for combining samples across seasons and the corresponding annual sample weight.

CUSTOMER Survey

On-site Sample. The on-site CUSTOMER sample was a stratified random sample. However, there was little information available to properly stratify across sites. Local knowledge was relied upon to select a set of sites that would yield representative samples of all the different types of user populations. Over 200 sites were chosen in consultation with the Chambers of Commerce, the Monroe County Tourist Development Council, the Keys Association of Dive Operators (KADO), several charter boat captains and fishing guides, and local, state and federal park managers.

The major objective of the CUSTOMER survey was to estimate the intensity of use (number of days and hours per person per trip) for 39 selected activities by region and season. Sample quotas were established based on minimum sample sizes required to estimate the averages for each activity by region and season. Generally, a minimum of 25 observations per activity, per region, per season were thought needed to reliably estimate averages. It was expected that these minimum sample sizes would be exceeded because each interview, although targeted to fill a quota, included a full activity profile.

The resulting samples did not follow our expectations. Actually, the resulting samples came closer to the actual population distributions as reflected in the Auto, Air and Cruise Ship samples. There were two exceptions. First, cruise ship passengers were generally excluded from the CUSTOMER Survey by the nature of those trips. Cruise Ship passengers were on extremely short stays, typically only a few hours, and generally did not participate in the activities we were targeting or visiting the sites where we were interviewing. Cruise ship passengers never leave Key West. For the entire five months of sampling, only five cruise ship passengers were included in the CUSTOMER Survey. The second exception were visitors who accessed the Florida Keys by private boat. This population of visitors was not included in the population estimates in Chapter 1 and were not part of the Auto, Air and Cruise Ship Survey. It was thought that this population was extremely small. The CUSTOMER Survey would seem to confirm this expectation. About one percent of the CUSTOMER July - August 1995 sample were visitors who accessed the Florida Keys by private boat. For the January - April 1996 sample, private boat visitors were less than one-half of one percent.

The sample sizes obtained in the CUSTOMER Survey for cruise ship passengers or visitors by private boat were simply too small to do anything with. Inclusion or exclusion does not significantly affect any project measurements. Therefore, the CUSTOMER Survey was considered to be representative of the auto and air populations of visitors. Sample weights were derived to equate the CUSTOMER sample distributions to the population distributions by the auto and air modes of access for each season. Tables A.2.24 and A.2.25 show the CUSTOMER on-site sample sizes by mode of access, the sample and population distributions by mode of access, and the derived sample weights. Table A.2.26 shows the annual adjustment factor required for combining the samples across seasons.

Ecosystem Mailback. Each visitor interviewed on-site received an ecosystem mailback questionnaire. This was implemented during the January-April 1996 survey period only. Table A.2.27 shows the number of completed questionnaires and the response rates by mode of access. As with the on-site component of the survey, the number of completed interviews/questionnaires by the cruise ship and private boat modes of access were not adequate to work with. The CUSTOMER Survey is primarily limited to the auto and air visitor populations. The response rate for air visitors was slightly higher than that for auto visitors. Table A.2.28 shows the derivation of the sample weights used to equilibrate the ecosystem mailback sample distribution by mode of access to the December 1995 - May 1996 population distribution by mode of access.

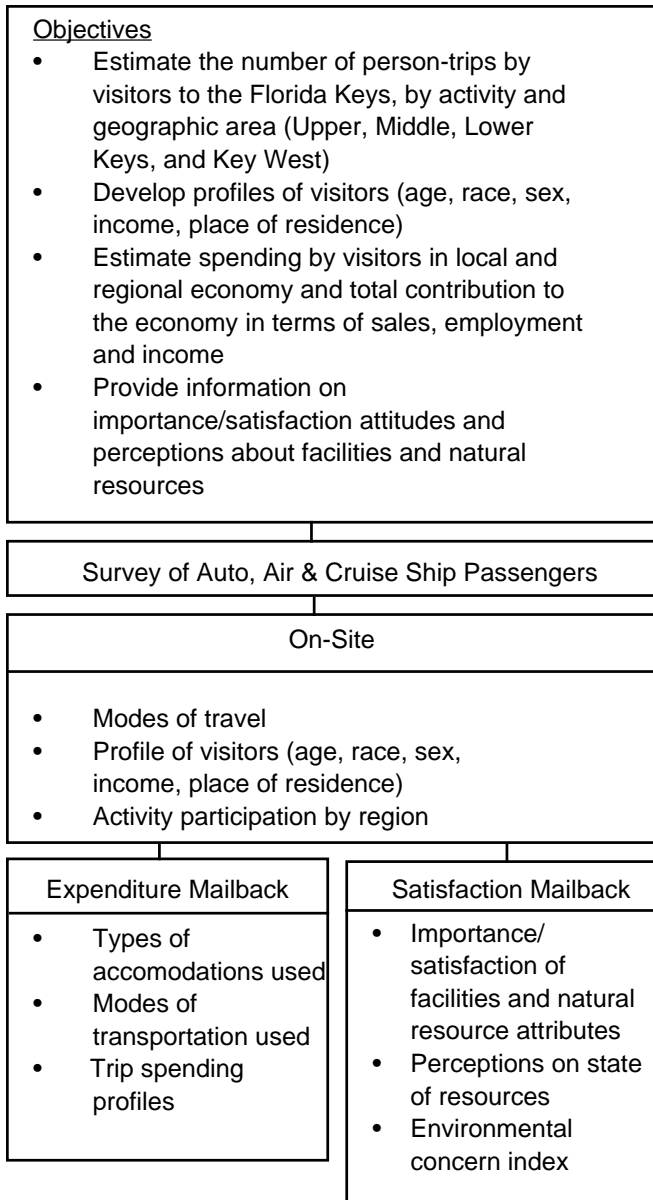
Multivariate Approach. A similar sample-weighting approach used for the mailback samples in the Auto, Air and Cruise Ship Survey was used for the ecosystem mailback of the CUSTOMER Survey. As with the Auto, Air and Cruise Ship Survey mailback samples, an analysis on non-response bias was conducted. It was found that response rates were significantly related to several socioeconomic factors. Response rates were higher for older visitors, more educated visitors, and visitors with higher incomes. Response rates were lower for blacks and hispanics. After adjusting for all of these factors, whether a visitor was domestic or foreign was not a significant factor nor was mode of access. When response scores to each question in the ecosystem mailback were regressed against these socioeconomic factors, it was found that for only a few questions were responses significantly related to any of the socioeconomic factors. Age and education were significant for several questions as might be expected given the nature of the types of questions in the ecosystem mailback (most asking about knowledge of ecosystems and their services). The most significant factor for a variety of questions was education (See Chapter 3 for a complete discussion of the non-response bias analysis). Given these findings, nine (9) socioeconomic groups were formed based on race/ethnicity, age, education and whether a visitor was foreign or domestic. Table A.2.29 shows the socioeconomic groups, their response rates, and the weights derived that equilibrate response rates by socioeconomic group. The final sample weight for the CUSTOMER ecosystem mailback is WDCMAEC3 which is equal to WDCMAEC1 * WDCMAEC2.

Summary

The sample weighting described in this chapter is somewhat complex and results in the derivation of numerous sample weights. Some weights are simply intermediate steps in the derivation of final sample weights that are to be used for the relevant samples for estimating measurements applicable to appropriate populations of visitors. Table A.2.30 summarizes the names of the various sample weights according to sample, season, and appropriate use.

Figure 2.1

Sample 1



Sample 2

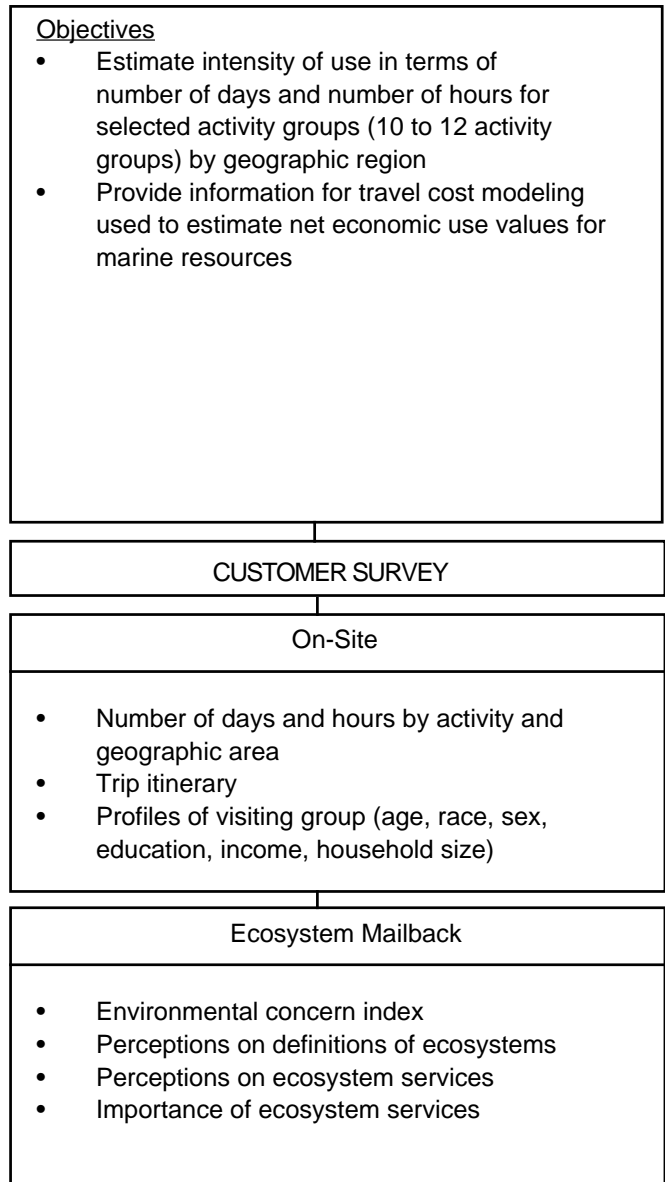


Table A.2.1. Derivation of General Sample Weights for the Auto, Air and Cruise Ship On-site Samples: July - August 1995 and June - November 1995 ¹

Mode of Access	July - August 1995			June - November 1995		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTJU_AG1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTJU_NO1
Auto	69.1	87.49	1.266136	69.1	83.96	1.215052
Air						
Key West	12.6	4.84	0.384127	12.6	6.06	0.480952
Marathon	2.2	0.61	0.277273	2.2	0.73	0.331818
Cruise Ship	16.1	7.06	0.438509	16.1	9.25	0.574534

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages. General sample weights apply to all sample measurements except, activity participation and region visitation by all members of traveling groups.

Table A.2.2. Derivation of General Sample Weights for the Auto, Air and Cruise Ship On-site Samples: January - April 1996 and December 1995 - May 1996 ¹

Mode of Access	January - April 1996			December 1995 - May 1996		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTJA_AP1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTDC_MA1
Auto	73.0	73.35	1.004794	73.0	74.07	1.014657
Air						
Key West	10.2	9.22	0.903921	10.2	9.08	0.890196
Marathon	7.0	1.38	0.197143	7.0	1.29	0.184286
Cruise Ship	9.8	16.05	1.637755	9.8	15.56	1.587755

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages. General sample weights apply to all sample measurements except, activity participation and region visitation by all members of traveling groups.

Table A.2.3. Derivation of Activity Sample Weights for the Auto, Air and Cruise Ship On-site Samples: July - August 1995 and June - November 1995 ¹

Mode of Access	July - August 1995			June - November 1995		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUAG1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUNO1
Auto	86.07	87.49	1.016498	82.13	83.96	1.022282
Air						
Key West	3.79	4.84	1.277045	4.72	6.06	1.283898
Marathon	0.49	0.61	1.244898	0.58	0.73	1.258621
Cruise Ship	9.65	7.06	0.731606	12.57	9.25	0.735879

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages. Activity sample weights apply to activity participation and region visitation by all members of traveling groups.

Table A.2.4. Derivation of Activity Sample Weights for the Auto, Air and Cruise Ship On-site Samples: January - April 1996 and December 1995 - May 1996 ¹

Mode of Access	January - April 1996			December 1995 - May 1996		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJAAP1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WDCMA1
Auto	74.11	73.35	0.989745	74.81	74.07	0.990108
Air						
Key West	8.04	9.22	1.146766	7.92	9.08	1.146465
Marathon	1.01	1.38	1.366337	0.95	1.29	1.357895
Cruise Ship	16.84	16.05	0.953088	16.32	15.56	0.953431

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages. Activity sample weights apply to activity participation and region visitation by all members of traveling groups.

Table A.2.5. Derivation of General Sample Weight Adjustment Factor for the Annual Auto, Air and Cruise Ship Sample

Season	Population (Person-trips)	Population Distribution (%)	Sample Size	Sample Distribution (%)	Annual Adjustment Factor ¹
June - November 1995	1,172,004	46.13	1,334	37.22	1.239387
Dec. 1995 - May 1996	1,368,484	53.87	2,250	62.78	0.858076
Annual Total	2,540,488	100.00	3,584	100.00	N/A

1. Annual on-site weight is WTJU_MA1 which is equal to WTJU_NO1 * 1.239387 for the June- Nov. 1995 season observations, and is equal to WTDC_MA1 * 0.858076 for the Dec. 1995 - May 1996 season observations.

Table A.2.6. Derivation of Activity Sample Weight Adjustment Factor for the Annual Auto, Air and Cruise Ship Sample

Season	Population (Person-trips)	Population Distribution (%)	Sample Size	Sample Distribution (%)	Annual Adjustment Factor ¹
June - November 1995	1,172,004	46.13	3,890	41.83	1.102797
Dec. 1995 - May 1996	1,368,484	53.87	5,409	58.17	0.926079
Annual Total	2,540,488	100.00	9,299	100.00	N/A

1. Annual on-site weight is WJUMA1 which is equal to WJUNO1 * 1.102797 for the June- Nov. 1995 season observations, and is equal to WDCMA1 * 0.926079 for the Dec. 1995 - May 1996 season observations.

Table A.2.7. Sample Weight Names for the Auto, Air and Cruise Ship On-site Sample

Time Period	Type of Application	
	General	Activity
July - August 1995	WTJU_AG1	WJUAG1
January - April 1996	WTJA_API	WJAAP1
June - November 1995	WTJU_NO1	WJUNO1
Dec. 1995 - May 1996	WTDC_MA1	WDCMA1
June 1995 - May 1996	WTJU_MA1	WJUMA1

Table A.2.8. Number of Completed Expenditure Mailback Questionnaires and Response Rates

Mode of Access	July - August 1995			January - April 1996		
	On-site	Expenditure Mailback	Response Rate (%)	On-site	Expenditure Mailback	Response Rate (%)
Auto	922	332	36.0	1,643	754	45.9
Air	198	83	41.9	387	188	48.6
Key West	168	54	32.1	230	106	46.1
Marathon	30	29	96.7	157	82	52.2
Cruise Ship	214	90	42.1	220	94	42.7
Total	1,334	505	37.9	2,250	1,036	46.0

Table A.2.9. Derivation of Mode of Access Sample Weights for the Auto, Air and Cruise Ship Expenditure Mailback Samples: July - August 1995 and June - November 1995 ¹

Mode of Access	July - August 1995			June - November 1995		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUAGSE1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUNOSE1
Auto	65.74	87.49	1.330849	65.74	83.96	1.277152
Air	16.44	5.45	0.331508	16.44	6.79	0.413017
Cruise Ship	17.82	7.06	0.396184	17.82	9.25	0.519080

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages.

Table A.2.10. Derivation of Mode of Access Sample Weights for the Auto, Air and Cruise Ship Expenditure Mailback Samples: January - April 1996 and December 1995 - May 1996

Mode of Access	January - April 1996			December 1995 - May 1996		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJAAPWE1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WDCMAWE1
Auto	72.78	73.35	1.007832	72.78	74.07	1.017725
Air	18.24	10.60	0.581140	18.24	10.37	0.568531
Cruise Ship	8.98	16.05	1.787305	8.98	15.56	1.732739

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages.

Table A.2.11. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Expenditure Mailback: July - August 1995

Socioeconomic Group	Response (%)		Sample Weight (WJUAGSE2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	63.19	36.81	1.000633	0.998913
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	54.19	45.81	1.166820	0.802663
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	66.87	33.13	0.945566	1.109870
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	46.74	53.26	1.352803	0.690387
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	58.96	41.04	1.072422	0.895955
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	52.31	47.69	1.208755	0.771021
Blacks Income under \$40,000 Domestic	85.54	14.46	0.739186	2.542877
Blacks Income greater than \$40,000 Domestic	73.69	26.31	0.858054	1.397567
Hispanics Income under \$40,000 Domestic	89.81	10.19	0.704042	3.608440
Hispanics Income greater than \$40,000 Domestic	76.24	23.76	0.829357	1.547559
Foreign Visitors Income under \$40,000	88.22	11.78	0.716731	3.121392
Foreign Visitors Income greater then \$40,000	80.06	19.94	0.789782	1.844032

Table A.2.12. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Expenditure Mailback: June - November 1995

Socioeconomic Group	Response (%)		Sample Weight (WJUNOSE2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	63.95	36.05	0.985301	1.026075
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	53.48	46.52	1.178197	0.795142
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	67.41	32.59	0.934728	1.135010
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	47.14	52.86	1.336657	0.699773
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	59.33	40.67	1.062026	0.909516
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	51.99	48.01	1.211964	0.770464
Blacks Income under \$40,000 Domestic	85.14	14.86	0.740075	2.489233
Blacks Income greater than \$40,000 Domestic	72.17	27.83	0.873077	1.329141
Hispanics Income under \$40,000 Domestic	89.65	10.35	0.702844	3.573913
Hispanics Income greater than \$40,000 Domestic	75.48	24.52	0.834791	1.508564
Foreign Visitors Income under \$40,000	88.26	11.74	0.713913	3.150767
Foreign Visitors Income greater then \$40,000	79.97	20.03	0.787920	1.846730

Table A.2.13. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Expenditure Mailback: January - April 1996

Socioeconomic Group	Response (%)		Sample Weight (WJAAPWE2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	71.45	28.55	0.763331	1.592294
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	58.25	41.75	0.936309	1.088862
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	63.92	36.08	0.853254	1.259978
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	44.77	55.23	1.218226	0.823103
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	54.98	45.02	0.991997	1.009773
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	49.17	50.83	1.109213	0.894354
Blacks and Hispanics Income under \$40,000 Domestic	70.51	29.49	0.773507	1.541539
Blacks and Hispanics Income greater than \$40,000 Domestic	75.78	24.22	0.719715	1.876961
Foreign Visitors Income under \$40,000	69.22	30.78	0.787922	1.476933
Foreign Visitors Income greater than \$40,000	53.79	46.21	1.013943	0.983770
Missing	50.00	50.00	1.090800	0.909200

Table A.2.14. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Expenditure Mailback: December 1995 - May 1996

Socioeconomic Group	Response (%)		Sample Weight (WDCMAWE2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	71.38	28.62	0.763939	1.588749
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	58.27	41.73	0.935816	1.089624
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	63.88	36.12	0.853632	1.258859
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	44.80	55.20	1.217187	0.823732
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	54.95	45.05	0.992357	1.009323
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	49.13	50.87	1.109912	0.893847
Blacks and Hispanics Income under \$40,000 Domestic	70.56	29.44	0.772817	1.544497
Blacks and Hispanics Income greater than \$40,000 Domestic	75.79	24.21	0.719488	1.878149
Foreign Visitors Income under \$40,000	69.31	30.69	0.786755	1.481590
Foreign Visitors Income greater than \$40,000	53.83	46.17	1.013004	0.984839
Missing	50.00	50.00	1.090600	0.909400

Table A.2.15. Derivation of Sample Weight Adjustment Factor for the Annual Auto, Air and Cruise Ship Expenditure Mailback Sample

Season	Population (Person-trips)	Population Distribution (%)	Sample Size	Sample Distribution (%)	Annual Adjustment Factor ¹
June - November 1995	1,172,004	46.13	505	32.77	1.407690
Dec. 1995 - May 1996	1,368,484	53.87	1,036	67.23	0.801279
Annual Total	2,540,488	100.00	1,541	100.00	N/A

1. Annual expenditure weight is WJUMA3 which is equal to WJUNOSE3 * 1.40769 for the June - Nov. 1995 season observations, and is equal to WDCMAWE3 * 0.801279 for the Dec. 1995 - May 1996 season observations.

Table A.2.16. Number of Completed Satisfaction Mailback Questionnaires and Response Rates

Mode of Access	July -August 1995			January - April 1996		
	On-site	Satisfaction Mailback	Response Rate (%)	On-site	Satisfaction Mailback	Response Rate (%)
Auto	922	432	46.9	1,643	861	52.4
Air	198	92	46.5	387	219	56.6
Key West	168	79	47.0	230	128	55.7
Marathon	30	13	43.3	157	91	52.2
Cruise Ship	214	104	48.6	220	104	58.0
Total	1,334	628	47.1	2,250	1,184	52.6

Table A.2.17. Derivation of Mode of Access Sample Weights for the Auto, Air and Cruise Ship Satisfaction Mailback Samples: July - August 1995 and June - November 1995 ¹

Mode of Access	July - August 1995			June - November 1995		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUAGSA1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJUNOSA1
Auto	68.79	87.49	1.271842	68.79	83.96	1.220526
Air	14.65	5.45	0.372014	14.65	6.79	0.463481
Cruise Ship	16.56	7.06	0.426328	16.56	9.25	0.558575

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages.

Table A.2.18. Derivation of Mode of Access Sample Weights for the Auto, Air and Cruise Ship Satisfaction Mailback Samples: January - April 1996 and December 1995 - May 1996 ¹

Mode of Access	January - April 1996			December 1995 - May 1996		
	Sample Distribution (%)	Population Distribution (%)	Sample Weight WJAAPSA1	Sample Distribution (%)	Population Distribution (%)	Sample Weight WDCMASA1
Auto	72.72	73.35	1.008663	72.72	74.07	1.018564
Air	18.50	10.60	0.572973	18.50	10.37	0.560540
Cruise Ship	8.78	16.05	1.828018	8.78	15.56	1.772210

1. Sample weights are equal to the population distribution percentages divided by the sample distribution percentages.

Table A.2.19. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Satisfaction Mailback: July - August 1995

Socioeconomic Group	Response (%)		Sample Weight (WJUAGSA2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	63.32	36.68	0.837650	1.280262
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	74.68	25.32	0.710230	1.854660
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	50.58	49.42	1.048636	0.950222
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	79.12	20.88	0.670374	2.249042
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	40.14	59.86	1.321375	0.784497
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	63.42	36.48	0.836329	1.283762
Blacks Income under \$40,000 Domestic	43.89	56.11	1.208475	0.836927
Blacks Income greater than \$40,000 Domestic	56.21	43.79	0.943604	1.072391
Hispanics Income under \$40,000 Domestic	38.29	61.71	1.385218	0.760978
Hispanics Income greater than \$40,000 Domestic	68.35	31.65	0.776001	1.483728
Foreign Visitors Income under \$40,000	82.87	17.13	0.640039	2.741389
Foreign Visitors Income greater then \$40,000	79.54	20.46	0.666834	2.295210
Missing	69.94	30.06	0.758364	1.562209

Table A.2.20. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Satisfaction Mailback: June - November 1995

Socioeconomic Group	Response (%)		Sample Weight (WJUNOSA2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	63.36	36.64	0.836490	1.282751
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	74.88	25.12	0.707799	1.871019
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	50.83	49.17	1.042691	0.955867
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	78.93	21.07	0.671481	2.230659
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	40.38	59.62	1.312531	0.788326
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	63.44	36.56	0.835435	1.285558
Blacks Income under \$40,000 Domestic	43.73	56.27	1.211983	0.835259
Blacks Income greater than \$40,000 Domestic	56.49	43.51	0.938219	1.080211
Hispanics Income under \$40,000 Domestic	38.33	61.67	1.382729	0.762121
Hispanics Income greater than \$40,000 Domestic	68.91	31.09	0.769119	1.511740
Foreign Visitors Income under \$40,000	82.49	17.51	0.642502	2.684180
Foreign Visitors Income greater then \$40,000	75.70	24.30	0.700132	1.934156
Missing	70.10	29.90	0.756063	1.571906

Table A.2.21. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Satisfaction Mailback: January - April 1996

Socioeconomic Group	Response (%)		Sample Weight (WJAAPSA2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	67.06	32.94	0.716373	1.577413
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	50.07	49.93	0.959457	1.040657
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	58.77	41.23	0.817424	1.260247
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	36.19	63.81	1.327439	0.814292
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	48.71	51.29	0.986245	1.013063
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	41.67	58.33	1.152868	0.890794
Blacks and Hispanics Income under \$40,000 Domestic	81.02	18.98	0.592940	2.737619
Blacks and Hispanics Income greater than \$40,000 Domestic	68.07	31.93	0.705744	1.627310
Foreign Visitors Income under \$40,000	69.71	30.29	0.689141	1.715418
Foreign Visitors Income greater than \$40,000	45.73	54.27	1.050514	0.957435
Missing	50.00	50.00	0.960800	1.039200

Table A.2.22. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Satisfaction Mailback: December 1995 - May 1996

Socioeconomic Group	Response (%)		Sample Weight (WDCMASA2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Income under \$20,000 Domestic	67.01	32.99	0.716759	1.575326
White/Indian/Asian/Other Age 36 and over Income under \$20,000 Domestic	50.14	49.86	0.957918	1.042318
White/Indian/Asian/Other Age under 36 Income \$21,000 - \$40,000 Domestic	58.87	41.13	0.815865	1.263554
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	36.20	63.80	1.326796	0.814577
White/Indian/Asian/Other Age under 36 Income greater than \$40,000 Domestic	48.56	51.44	0.989086	1.010303
White/Indian/Asian/Other Age 36 and over Income greater than \$40,000 Domestic	41.62	58.38	1.154012	0.890202
Blacks and Hispanics Income under \$40,000 Domestic	80.98	19.02	0.593109	2.732387
Blacks and Hispanics Income greater than \$40,000 Domestic	68.16	31.84	0.704665	1.632224
Foreign Visitors Income under \$40,000	69.79	30.21	0.688207	1.720291
Foreign Visitors Income greater than \$40,000	45.72	54.28	1.050525	0.957443
Missing	50.00	50.00	0.960600	1.039400

Table A.2.23. Derivation of Sample Weight Adjustment Factor for the Annual Auto, Air and Cruise Ship Satisfaction Mailback Sample

Season	Population (Person-trips)	Population Distribution (%)	Sample Size	Sample Distribution (%)	Annual Adjustment Factor ¹
June - November 1995	1,172,004	46.13	628	34.66	1.330929
Dec. 1995 - May 1996	1,368,484	53.87	1,184	65.34	0.824457
Annual Total	2,540,488	100.00	1,812	100.00	N/A

1. Annual expenditure weight is WJUMASA3 which is equal to WJUNOSA3 * 1.330929 for the June - Nov. 1995 season observations, and is equal to WDCMASA3 * 0.824457 for the Dec. 1995 - May 1996 season observations.

Table A.2.24. Derivation of Sample Weights for the CUSTOMER On-site Sample June - November 1995

Mode of Access	Number of Completed Interviews	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTJU_NO1
Auto	1,668	93.66	83.96	0.896434
Air	94	5.28	6.79	1.285985
Cruise Ship	1	0.05	9.25	8.677140
Private Boat	18	1.01	0 *	8.677140
Total	1,781	100.00	100.00	N/A

* The Auto, Air and Cruise Ship Survey did not include visitors that accessed the Florida Keys by private boat and they were therefore not in the population totals for all visitors in Chapter 1. The weight assigned here simply assures that auto, and air visitors percentage distributions within the sample would be the same as in the populations estimated in Chapter 1.

Table A.2.25. Derivation of Sample Weights for the CUSTOMER On-site Sample
December 1995 - May 1996

Mode of Access	Number of Completed Interviews	Sample Distribution (%)	Population Distribution (%)	Sample Weight WTDC_MA1
Auto	2,610	92.92	74.07	0.797137
Air	183	6.51	10.37	1.592934
Cruise Ship	4	0.14	15.56	27.31029
Private Boat	12	0.43	0 *	27.31029
Total	2,809	100.00	100.00	N/A

* The Auto, Air and Cruise Ship Survey did not include visitors that accessed the Florida Keys by private boat and they were therefore not in the population totals for all visitors in Chapter 1. The weight assigned here simply assures that auto, and air visitors percentage distributions within the sample would be the same as in the populations estimated in Chapter 1.

Table A.2.26. Derivation of Sample Weight Adjustment Factor for the Annual CUSTOMER On-site Sample

Season	Population (Person-trips)	Population Distribution (%)	Sample Size	Sample Distribution (%)	Annual Adjustment Factor ¹
June - November 1995	1,172,004	46.13	1,781	38.80	1.188918
Dec. 1995 - May 1996	1,368,484	53.87	2,809	61.20	0.880229
Annual Total	2,540,488	100.00	4,590	100.00	N/A

1. Annual on-site weight is WTJU_MA1 which is equal to WTJU_NO1 * 1.188918 for the June- Nov. 1995 season observations, and is equal to WTDC_MA1 * 0.880229 for the Dec. 1995 - May 1996 season observations.

Table A.2.27. Number of Completed Ecosystem Mailback Questionnaires and Response Rates by Mode of Access

January - April 1996			
Mode of Access	On-site	Ecosystem Mailback	Response Rate (%)
Auto	2,610	1,390	53.26
Air	183	107	58.47
Cruise Ship	4	2	50.00
Private Boat	12	4	33.33
Total	2,809	1,503	53.51

Table A.2.28. Derivation of Sample Weights for the Ecosystem Mailback Sample: December 1995 - May 1996

December 1995 - May 1996			
Mode of Access	Sample Distribution (%)	Population Distribution (%)	Sample Weight WDCMAEC1
Auto	92.48	74.07	0.800930
Air	7.12	10.37	1.456461
Cruise/Private Boat	0.40	15.56	38.90000
Total	100.00	100.00	N/A

Table A.2.29. Derivation of Sample Weights to Equilibrate Response Rates by Socioeconomic Group for the Ecosystem Mailback: December 1995 - May 1996

Socioeconomic Group	Response (%)		Sample Weight (WDCMAEC2)	
	No	Yes	No	Yes
White/Indian/Asian/Other Age under 36 Education HS or less Domestic	63.11	36.89	0.770876	1.391976
White/Indian/Asian/Other Age 36 and over Education HS or less Domestic	46.27	53.73	1.051437	0.955704
White/Indian/Asian/Other Age under 36 Education above HS Domestic	52.89	47.11	0.919834	1.090002
White/Indian/Asian/Other Age 36 and over Education above HS Domestic	43.46	56.54	1.119420	0.908206
Blacks and Hispanics Domestic	74.55	25.45	0.652582	2.017682
Foreign Visitors Age under 36 Education HS or less	68.19	31.81	0.713448	1.614272
Foreign Visitors Age 36 and over Education HS or less	42.22	57.78	1.152297	0.888716
Foreign Visitors Age under 36 Education above HS	45.50	54.50	1.069231	0.942202
Foreign Visitors Age 36 and over Education above HS	53.90	46.91	0.916368	1.094649
Missing	60.00	40.00	0.810833	1.283750

Table A.2.30. Summary of Sample Weights by Sample and Season

Survey/Sample	Season		
	June - Nov. 1995	Dec. 1995 - May 1996	June 1995 - May 1996
Auto, Air & Cruise Ship			
On-site - General	WTJU_NO1	WTDC_MA1	WTJU_MA1
On-site - Activity	WJUNO1	WDCMA1	WJUMA1
Expenditure	WJUNOSE3	WDCMAWE3	WJUMA3
Satisfaction	WJUNOSA3	WDCMASA3	WJUMASA3
CUSTOMER			
On-site	WTJU_NO1	WTDC_MA1	WJUMA1
Ecosystem	N/A	WDCMAEC3	N/A

Chapter 3. Nonresponse Bias Analyses for the Mailback Surveys

Chapter 2 described the various survey samples and mailback surveys used and the sample weighting methods applied to each sample. 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 lodging. Applying the higher average to all visitors 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 visitors 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 visitor 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 expenditure mailbacks had the most potential for nonresponse bias. The sample weighting employed and described in Chapter 2 adjusts for the nonresponse bias by weighting the mailback samples to be representative of the population of all visitors. 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.

Expenditure Mailback: July - August 1995

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 mode of access, age of the person interviewed, household income, race/ethnicity and origin of the visitor (see Table A.3.1). 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. Statistically significant differences were found for age, household income, whether a visitor was foreign or domestic, and for race/ethnicity (see Table A.3.2).

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 survey 1=yes 0=no). Table A.3.3 defines each of the variables used in the analysis along with the arithmetic means of each variable. Three equations were estimated: ordinary least squares, probit and logit. All three equations identify the same set of factors as being statistically significant in explaining mailback survey response rates. The three equations use dummy variables for several of the socioeconomic factors. For mode of access, auto visitors are in the constant term. For household income, those with incomes under \$20,000 (INC20K) are in the constant term, and for race/ethnicity, White/Indian/Asian/Other are in the constant term. Age of the respondent was positively related meaning that older visitors had higher response rates. Hispanic and Black visitors had lower response rates and domestic visitors had higher response rates than foreign visitors. The results of the multivariate tests confirm the findings from the univariate tests except for household income which was not significant in the multivariate tests. Two other factors were included in the multivariate tests that were not discussed in the univariate tests. They were the number of days in the Keys on the interview trip (DAYS) and the number of people the person was paying for (NPEPPAY). These two variables are important because they would be related to the amount of expenditures. We estimated the expenditures per person per trip. Thus the number of people and the number of days are important in this process and we wanted to ensure that there was no bias in that either visitors that took longer or shorter trips did not have higher or lower response rates or that respondents did not have smaller or larger groups that they were paying for. Neither one of these variables were significant factors in explaining response rates.

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 the level of question responses (i.e., the amount of expenditures per person per trip). Table A.3.5 shows the expenditure items for which relationships were estimated between expenditures and socioeconomic factors. Simple linear regressions were estimated between each expenditure category 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 mode of access, auto visitors were

in the constant. For household income, visitors with incomes under \$20,000 are in the constant, and for race/ethnicity, White/Indian/Asian/Other are in the constant.

For expenditures on lodging, cruise ship passengers had lower average expenditures per person per trip, holding other factors constant (Table A.3.6). Also, the longer the trip (DAYS) the higher the expenditures per person per trip. None of the factors that were related to response rates were significant here suggesting that nonresponse bias is not a problem for lodging expenditures. The same is true for other activity expenditures (OTHACPPC) and transportation expenditures (TRANSPPC).

For expenditures on food & beverages (FOODPPC), boating (BOATPPC), fishing (FISHPPC), sightseeing (SIGHPPC), miscellaneous expenditures (MISCPPC), and total trip related expenditures (TOTVPPC), there is a significant relationship between socioeconomic factors that are related to response rates and a significant relationship between some of these socioeconomic factors and average expenditures. For example, higher income groups have, on average, higher expenditures on food & beverages than those that have incomes under \$20,000, holding other factors constant. And, visitors with higher incomes had higher survey response rates. This suggests the possibility of nonresponse bias for these expenditure items.

For expenditures on diving (DIVPPC) and on services (SERVPPC) there is not a significant relationship between socioeconomic factors and average expenditures. Even though a couple of factors (e.g. Black visitors for diving and visitors with incomes \$60,000 to \$100,000 for services) were individually significant, the overall test that all the coefficients for all the socioeconomic factors are equal to zero is not rejected (F-significance in Table A.3.6 greater than .10).

Expenditure Mailback: January - April 1996

Response Rates and Socioeconomic Factors. Cross-tabulations of socioeconomic factors and response rates are reported in Table A.3.7. The univariate tests for differences are reported in Table A.3.8. For the January - April 1996 survey, only age of the person interviewed was significant with older visitors having higher response rates. Table A.3.9 defines the socioeconomic factors included in the multivariate tests and Table A.3.10 summarizes the results of these tests. Again, all three tests identified the same factors as being significantly related to response rates. Black visitors had lower response rates as did Florida residents. Domestic visitors had higher response rates than foreign visitors and visitors with household incomes between \$20,000 and \$100,000 had higher response rates than those with incomes under \$20,000 or with incomes over \$100,000. The multivariate tests yielded different results than the univariate tests. In the multivariate tests age was not significant once other factors were included whereas race/ethnicity, household income, and whether a visitor was foreign or domestic were.

Question Responses and Socioeconomic Factors. The same linear regressions estimated for the July - August 1995 sample were estimated for the January - April 1996 sample. Table A.3.11 defines each variables and provides an estimate of the variable mean (unweighted). Table A.3.12 summarizes the results of the analysis.

For lodging, food & beverages, and services none of the factors related to response rates were also related to the amount of expenditures indicating that nonresponse was not a problem for these items. For diving, sightseeing and other activity expenditures the tests for all the coefficients equal to zero is not rejected meaning that none of the socioeconomic factors were related to expenditures and thus nonresponse bias also was not a problem for these expenditure items. For transportation, boating, fishing, miscellaneous, and total expenditures, there was a significant relationship between socioeconomic factors related to response rates and level of expenditures suggesting the possibility of nonresponse bias for these expenditure items.

Satisfaction Mailback: July - August 1995

Response Rates and Socioeconomic Factors. Cross-tabulations between socioeconomic factors and response rates are presented in Table A.3.13. The univariate tests are summarized in Table A.3.14. The univariate tests indicate that age, race/ethnicity, and whether a visitor is foreign or domestic were significantly related to response rates. Table A.3.15 provides the definitions of the variables used in the multivariate tests and Table A.3.16 summarizes the results of the multivariate tests. The multivariate tests indicate the same factors identified as significant in the univariate tests are significant factors when controlling for other factors. Older visitors had higher response rates as did domestic visitors. Black and Hispanic visitors had lower response rates as did foreign visitors.

Question Responses and Socioeconomic Factors. The satisfaction mailback included both importance and satisfaction ratings for 25 items along with ratings on satisfactions for 10 items five years ago and certain special issue questions. Here a

selected set of importance ratings were used to test for the existence of nonresponse bias. The items selected are enough to demonstrate that the potential for nonresponse bias does exist. As will be demonstrated at the end of this chapter, the extent of nonresponse bias appears to be minimal.

Table A.3.17 defines the variables for the importance ratings for which relationships between socioeconomic factors was tested. All the importance factors were rated on a scale from one to five with one being not important and five being extremely important. Table A.3.18 summarizes the results of regressions relating socioeconomic factors to 11 items. For only two of the 11 items, were socioeconomic factors related to response rates not related to the level of importance scores (IMPWATER and IMPCORAL). For all other items then, there is the potential for nonresponse bias.

Satisfaction Mailback: January - April 1996

Response Rates and Socioeconomic Factors. Cross-tabulations between socioeconomic factors and response rates are presented in Table A.3.19. The univariate tests are summarized in Table A.3.20. The univariate tests indicate that age, and whether a visitor is foreign or domestic were significantly related to response rates. Table A.3.21 provides the definitions of the variables used in the multivariate tests and Table A.3.22 summarizes the results of the multivariate tests. The multivariate tests indicate that the two factors identified as significant in the univariate tests (AGE and DOMESTIC) are significant factors when controlling for other factors. Older visitors had higher response rates as did domestic visitors. Black and Hispanic visitors had lower response rates as did foreign visitors. But, the multivariate tests also indicated that mode of access and race/ethnicity were also significant factors. Air visitors had higher response rates than auto visitors and cruise ship visitors had lower response rates than auto visitors. Black and Hispanic visitors had lower response rates than the combined categories of White/Indian/Asian/Other visitors.

Question Responses and Socioeconomic Factors. Table A.3.23 defines the variables for the importance ratings for which relationships between socioeconomic factors was tested. All the importance factors were rated on a scale from one to five with one being not important and five being extremely important. Table A.3.24 summarizes the results of regressions relating socioeconomic factors to 11 items. For only one of the 11 items, was socioeconomic factors related to response rates not related to the level of importance scores (IMPHIST). For all other items then, there is the potential for nonresponse bias.

Ecosystem Mailback: January - April 1996

Response Rates and Socioeconomic Factors. The ecosystem mailback was only given out to visitors during the January - April 1996 survey period. Also, the ecosystem mailback was given to the CUSTOMER Survey sample not the Auto, Air and Cruise Ship sample as was the case for the expenditure and satisfaction mailbacks. Overall, there were 2,809 visitors interviewed on-site in the CUSTOMER Survey during the January - April 1996 survey period and 1,503 (53.51 percent) responded to the ecosystem mailback. The ecosystem mailback was different in that it asked primarily about visitor's knowledge of what they think ecosystems are, what services they think come from ecosystems, and how important a list of services were to them. Response rate for this mailback questionnaire would be expected to be related to the educational level of respondents. And, even though education and household income are often highly correlated, it is expected that, for the ecosystem mailback, there would be separate effects related to education. Table A.3.25 shows the response rates by socioeconomic factors. Note that for mode of access that Cruise Ship and Private Boat modes had a very limited number of observations for both the on-site and mailback components of the CUSTOMER Survey. Therefore, the results of the CUSTOMER Survey and here, the ecosystem mailback, are limited to visitors from the Auto and Air modes of access.

Univariate tests indicated that age, education, and race/ethnicity were significant factors in explaining response to the ecosystem mailback (Table A.3.26). Table A.3.27 provides the definitions of the variables used in the multivariate tests. It is important to note here that for education (EDUCIN1) the variable values range from one to six with the number corresponding to the educational levels given in Table A.3.25. The average educational level of 4.5 translates into an educational level between 13-15 years and 16 years (college grad). The multivariate tests indicated that age, education, race/ethnicity, and household income are related to response rates. This was the same as the univariate test results except for household income. Here, household income was limited to those that did not provide income and those that earned over \$100,000. In both cases, these two groups had lower response rates. Unlike the other mailbacks in this study, response rates were not significantly different between foreign and domestic visitors, holding other factors constant. Older visitors and more highly educated visitors had higher response rates and Blacks and Hispanics had lower response rates (Table A.3.28).

Question Responses and Socioeconomic Factors. As with the other mailback questionnaires in this study, the analysis on question responses and socioeconomic factors was limited to a selected set of questions. Tests were run on all responses but

only a select list are presented here. The questions presented here are representative of all the questions with respect to the socioeconomic factors that were significantly related to responses and therefore show enough to convince us that nonresponse bias is a possibility. As will be shown below, the extent of potential bias appears to be minimal and can be corrected for by sample weighting. Table A.3.29 provides the definitions of the variables used in this analysis. Two different types of questions were analyzed here. First, there were seven questions which asked the respondent how important they thought ecosystems were in providing the seven services listed. The respondent was asked to rate the importance on a 1 to 5 scale (1 being not at all important to 5 meaning extremely important). The respondent was then given a list of 20 ecosystem services and asked to rate the importance to them of each one of these services. Again, they were asked to rate these services on the same 1 to 5 scale. Four of those services were included here for the nonresponse bias analysis.

As with the previous mailback surveys discussed above, linear regressions were run relating question responses to socioeconomic factors. Table A.3.30 contains a summary of these results. For one question (IMPB), no factors were significantly related. For two questions (IMPPHOS and IMPSULPH) none of the factors that were related to response rates were also related to question response. Thus, for these three factors the possibility of nonresponse appears to not exist. For the remaining questions, however, the factors that were important in explaining response rates were also important in explaining question response, indicating the possibility of nonresponse bias.

Solution to the Problem of Nonresponse Bias

As was mentioned in the introduction to this Chapter and in Chapter 2, the solution chosen for adjusting for nonresponse bias was a multivariate sample weighting method. The details of this sample weighting are described in Chapter 2. 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.3.31 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 expenditure mailback would seem to have the potential for significant differences as a result of nonresponse bias. Expenditures would have been overestimated without adjusting for nonresponse bias by sample weighting. For the satisfaction and ecosystem mailbacks, 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.3.1. Response Rates by Socioeconomic Factors: July - August 1995
Expenditure Mailback

Socioeconomic Factor	Response Rate (%)	On-site Sample Size	Mailback Sample Size
Mode of Access			
Auto	36.01	922	332
Air	41.92	198	83
Cruise Ship	42.06	214	90
Age			
16-25	18.87	106	20
26-35	29.87	298	89
36-45	40.78	434	177
46-60	44.32	370	164
Over 60	47.22	108	51
Household Income			
Under \$20,000	28.00	75	21
\$20,000 - \$39,999	35.42	240	85
\$40,000 - \$59,999	43.01	279	120
\$60,000 - \$100,000	42.45	351	149
Over \$100,000	43.31	157	68
Missing	26.72	232	62
Race/ethnicity			
American Indian	100.00	1	1
Asian/Pacific Islander	30.00	10	3
Black Not Hispanic	21.82	55	12
White Not Hispanic	40.17	1,165	468
Hispanic	17.78	90	16
Other	33.33	3	1
Missing	40.00	10	4
Origin of Visitor			
Domestic (U.S.)	42.38	1,116	473
Foreign	14.68	218	32
Florida	40.33	538	217
Total Sample	37.86	1,334	505

Table A.3.2. Univariate Non-parametric Test of Response Rates and Socioeconomic Factors: July - August 1995 Expenditure Mailback ¹

Socioeconomic Factor	Statistical Significance of KS Test ²	Significant ³
Mode of Access	0.3136	NO
Age	0.0001	YES
Household Income	0.0805	YES
Origin of Visitor		
Domestic or Foreign	0.0001	YES
Florida Resident	0.6226	NO
Race/ethnicity	0.0183	YES
Number of people paying for	0.5013	NO

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distributions of socioeconomic factors between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socioeconomic factor for respondents to the mailback survey was different from those that did not respond at the 99 percent confidence level. Similarly, .05 significance corresponds to the 95 percent confidence level and .10 corresponds to the 90 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.3.3. Variable Definitions for Multivariate Tests of Response Rates and Socioeconomic Factors: July - August 1995 Expenditure Mailback

Variable	Definition	Mean (N=1,331) ¹
ERESPON	Responded to Mailback 1=yes 0=no	0.3794
AUTO	Dummy Variable 1=Auto Mode of Access	0.6904
AIR	Dummy Variable 1=Air Mode of Access	0.1488
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.1608
AGE	Age of Person Interviewed	28.65
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0676
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0413
DAYS	Number of Days in Keys on Interview Trip	4.2320
NPEPPAY	Number of People Paying for on Trip	2.1630
FLDUM	Dummy Variable 1=Florida resident	0.4042
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0563
INC40K	Dummy Variable 1=Household Income \$20,000 - \$39,999	0.1803
INC60K	Dummy Variable 1=Household Income \$40,000 - \$59,999	0.2096
INC100K	Dummy Variable 1=Household Income \$60,000 - \$100,000	0.2637
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1180
INC2MISS	Dummy Variable 1=Household Income Missing	0.1721
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8385

1. Total sample size was 1,334 but three respondents did not provide their age, so the means presented here are for the sample of 1,331 used in the multivariate tests.

Table A.3.4. Multivariate Tests of Response Rates and Socioeconomic Factors: July - August 1995 Expenditure Mailback ¹

Socioeconomic Factor	Ordinary Least Squares	Probit	Logit
Constant	0.055778 (0.85)	-1.3219 (-6.66)***	-2.2159 (-6.47)***
AIR	-0.013296 (-0.33)	-0.043876 (-0.39)	-0.059968 (-0.33)
CRUISE	0.026303 (0.63)	0.074248 (0.65)	0.112930 (0.61)
AGE	0.000184 (1.67)*	0.000576 (1.68)*	0.000967 (1.60)*
HISPANIC	-0.25451 (-4.80)***	-0.77139 (-4.67)***	-1.2774 (-4.40)***
BLACK	-0.23163 (-3.40)***	-0.67738 (-3.30)***	-1.1021 (-3.16)***
DAYS	0.000099 (0.05)	0.000382 (0.07)	0.000542 (0.06)
NPEPPAY	0.012366 (1.29)	0.035974 (1.33)	0.057539 (1.30)
FLDUM	-0.011648 (-0.36)	-0.035824 (-0.40)	-0.048463 (-0.34)
INC2MISS	0.051332 (0.81)	0.12968 (0.70)	0.24740 (0.79)
INC40K	0.044701 (0.72)	0.13571 (0.75)	0.23759 (0.79)
INC60K	0.098701 (1.60)	0.28178 (1.59)	0.47225 (1.60)
INC100K	0.098553 (1.63)	0.27619 (1.59)	0.47174 (1.62)
INC150K	0.094310 (1.41)	0.27119 (1.43)	0.45400 (1.44)
DOMESTIC	0.293100 (6.77)***	0.90733 (6.85)***	1.52140 (6.56)***
Adjusted R-square	0.06808	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-likelihood	-926.1488	-883.4865	-883.4865
Chi-squared Significance	N/A	0.0000	0.0000
N	1,331	1,331	1,331

1. Dependent variable (ERESPON) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is .3794. 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.3.5. Variable Definitions for Tests of Relationships Between Expenditures and Socioeconomic Factors: July - August 1995
Expenditure Mailback

Variable	Definition	Mean (N=488) ¹
LODGEPPC	Expenditures on Lodging Per Person Per Trip Spent in Monroe County	152.54
FOODPPC	Expenditures on Food & Beverages Per Person Per Trip Spent in Monroe County	123.05
TRANSPPC	Expenditures on Transportation Per Person Per Trip Spent in Monroe County	64.66
BOATPPC	Expenditures on Boating Per Person Per Trip Spent in Monroe County	29.53
FISHPPC	Expenditures on Fishing Per Person Per Trip Spent in Monroe County	9.61
DIVPPC	Expenditures on Diving Per Person Per Trip Spent in Monroe County	17.02
SIGHPPC	Expenditures on Sightseeing Per Person Per Trip Spent in Monroe County	10.68
OTHACPPC	Expenditures on Other Activities Per Person Per Trip Spent in Monroe County	9.43
MISCPPC	Expenditures on Miscellaneous Items Per Person Per Trip Spent in Monroe County	37.50
SERVPPC	Expenditures on Services Per Person Per Trip Spent in Monroe County	5.07
TOTVPPC	Total Expenditures (sum of LODGEPPC to SERVPPC) Per Person Per Trip Spent in Monroe County	459.09
AIR	Dummy Variable 1=Air Mode of Access	0.1657
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.1796
AGE	Age of Person Interviewed	44.38
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0319
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0239
DAYS	Number of Days in Keys on Interview Trip	4.355
INC2MISS	Dummy Variable 1=Household Income Missing	0.1218
INC40K	Dummy Variable 1=Household Income \$20,000 to \$39,999	0.1677
INC60K	Dummy Variable 1=Household Income \$40,000 to \$59,999	0.2395
INC100K	Dummy Variable 1=Household Income \$60,000 to \$100,000	0.2934
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1357
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.9361

1. Sample size for the mailback was 501 but missing information for AGE resulted in 488 observations for estimation.

Table A.3.6. Tests of Relationships between Expenditures and Socioeconomic Factors: July - August 1995 Expenditure Mailback ¹

Independent Variables	Dependent Variables/Models					
	LODGEPPC	FOODPPC	TRANSPPC	BOATPPC	FISHPPC	DIVPPC
Constant	-63.702 (-1.10)	-5.117 (-0.16)	20.644 (0.78)	-36.906 (-2.04)**	0.058 (0.01)	28.234 (1.57)
AIR	30.622 (0.77)	88.313 (3.69)***	207.05 (5.96)***	-26.270 (-2.63)**	-5.526 (-1.04)	10.356 (1.18)
CRUISE	-40.927 (-1.86)*	-45.836 (-3.17)***	-13.071 (-1.57)	3.445 (0.50)	-7.456 (-2.54)**	-11.729 (-3.06)**
AGE	1.2076 (1.63)*	-0.2912 (-0.55)	-0.4623 (-0.76)	0.0151 (0.05)	0.018 (0.10)	-0.0184 (-0.13)
HISPANIC	2.473 (0.09)	16.693 (0.88)	-4.3888 (-0.59)	-2.281 (-0.21)	15.759 (1.11)	8.715 (0.73)
BLACK	4.938 (0.48)	-1.474 (-0.22)	7.3131 (0.73)	-7.404 (-1.71)*	7.903 (1.18)	-4.713 (-1.72)*
DAYS	32.816 (4.54)***	16.887 (4.04)***	5.477 (2.98)**	8.667 (4.53)***	1.338 (2.84)**	0.894 (1.53)
INC2MISS	32.345 (0.83)	32.047 (1.30)	-34.838 (-1.66)*	5.529 (0.58)	-4.606 (-0.42)	-9.364 (-0.57)
INC40K	57.887 (1.47)	51.938 (2.30)**	-13.827 (-0.79)	32.848 (1.60)	-3.503 (-0.32)	-13.612 (-0.98)
INC60K	13.577 (0.50)	38.911 (2.28)**	21.829 (0.92)	20.242 (2.00)**	-8.020 (-0.83)	-9.945 (-0.72)
INC100K	41.249 (1.42)	58.726 (3.08)**	4.345 (0.22)	1.178 (0.15)	-2.952 (-0.27)	-9.605 (-0.72)
INC150K	30.797 (0.83)	53.832 (2.30)**	11.189 (0.42)	6.460 (0.71)	-2.069 (-0.19)	-21.353 (-1.59)
DOMESTIC	-12.149 (-0.47)	15.151 (1.13)	7.7236 (0.84)	21.094 (3.07)**	9.300 (3.14)**	-2.720 (-0.28)
Adj. R-SQ	0.3088	0.2991	0.2725	0.1295	0.0133	0.0084
F-signif	0.0000	0.0000	0.0000	0.0000	0.0990	0.1860
N	488	488	488	488	488	488

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.3.6. Tests of Relationships Between Expenditures and Socioeconomic Factors:
July - August 1995 Expenditure Mailback ¹ (continued)

Independent Variables	Dependent Variables/Models				
	SIGHPPC	OTHACPPC	MISCPPC	SERVPPC	TOTVPPC
Constant	-0.484 (-0.10)	-7.460 (-0.55)	-6.213 (-0.46)	5.034 (0.64)	-65.913 (-0.59)
AIR	10.624 (2.52)**	33.751 (1.19)	32.959 (3.14)**	-5.167 (-0.61)	376.71 (4.24)***
CRUISE	1.491 (0.81)	-3.259 (-0.87)	20.231 (2.48)**	-4.147 (-1.06)	-101.26 (-2.26)**
AGE	0.193 (2.12)**	-0.0559 (-0.41)	0.493 (2.30)**	-0.335 (-0.88)	0.764 (0.44)
HISPANIC	-2.705 (-1.04)	10.788 (1.09)	20.733 (1.27)	-2.540 (-0.88)	63.246 (0.75)
BLACK	1.610 (0.60)	-0.287 (-0.05)	22.047 (1.10)	-0.750 (-0.39)	29.183 (1.13)
DAYS	0.518 (1.74)*	0.486 (1.02)	2.657 (3.26)***	0.900 (1.46)	70.641 (5.34)***
INC2MISS	-0.811 (-0.26)	42.029 (1.08)	-2.207 (-0.22)	21.729 (1.05)	81.853 (0.89)
INC40K	10.845 (2.89)**	2.487 (0.80)	13.875 (1.54)	0.731 (0.37)	139.67 (1.61)
INC60K	6.930 (2.03)**	-1.687 (-0.39)	10.478 (1.12)	2.739 (1.14)	95.052 (1.49)
INC100K	5.385 (2.00)**	-0.335 (-0.06)	20.568 (2.18)**	5.944 (2.07)**	124.50 (1.89)**
INC150K	5.202 (1.42)	-5.031 (-0.74)	-1.786 (-0.19)	4.519 (1.12)	81.760 (0.94)
DOMESTIC	-7.789 (-2.58)**	8.076 (0.91)	-11.075 (-1.44)	7.354 (0.85)	34.965 (0.832)
Adj. R-SQ	0.0382	0.0022	0.0655	0.0030	0.3570
F-Signif	0.0019	0.3627	0.0000	0.3355	0.0000
N	488	488	488	488	488

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.3.7. Response Rates by Socioeconomic Factors: January - April 1996
Expenditure Mailback

Socioeconomic Factor	Response Rate (%)	On-site Sample Size	Mailback Sample Size
Mode of Access			
Auto	45.89	1,643	754
Air	48.84	387	189
Cruise Ship	42.27	220	93
Age			
16-25	28.81	118	34
26-35	36.90	336	124
36-45	44.47	452	201
46-60	48.92	738	361
Over 60	52.58	561	295
Missing	46.67	45	21
Household Income			
Under \$20,000	38.61	101	39
\$20,000 - \$39,999	49.46	370	183
\$40,000 - \$59,999	49.02	461	226
\$60,000 - \$100,000	51.36	514	264
Over \$100,000	47.62	336	160
Missing	35.04	468	164
Race/Ethnicity			
American Indian	25.00	4	1
Asian/Pacific Islander	25.00	8	2
Black Not Hispanic	17.65	17	3
White Not Hispanic	46.84	2,165	1,014
Hispanic	30.61	49	15
Other	16.67	6	1
Missing	0.00	0	1
Origin of Visitor			
Domestic (U.S.)	47.52	1,917	911
Foreign	37.54	333	125
Florida	42.09	354	149
Total Sample	46.04	2,250	1,036

Table A.3.8. Univariate Non-parametric Test of Response Rates and Socioeconomic Factors: January - April 1996 Expenditure Mailback ¹

Socioeconomic Factor	Statistical Significance of KS Test ²	Significant ³
Mode of Access	0.9997	NO
Age	0.0001	YES
Household Income	0.9677	NO
Origin of Visitor		
Domestic or Foreign	0.1132	NO
Florida Resident	0.6226	NO
Race/Ethnicity	0.8198	NO
Number of people paying for	0.3391	NO

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distributions of socioeconomic factors between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socioeconomic factor for respondents to the mailback survey was different from those that did not respond at the 99 percent confidence level. Similarly, .05 significance corresponds to the 95 percent confidence level and .10 corresponds to the 90 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.3.9. Variable Definitions for Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Expenditure Mailback

Variable	Definition	Mean (N=2,246) ¹
ERESPON	Responded to Mailback 1=yes 0=no	0.4608
AUTO	Dummy Variable 1=Auto Mode of Access	0.7298
AIR	Dummy Variable 1=Air Mode of Access	0.1723
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.0979
AGE	Age of Person Interviewed	29.10
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0218
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0076
DAYS	Number of Days in Keys on interview trip	6.6400
NPEPPAY	Number of People Paying for on Trip	1.7360
FLDUM	Dummy Variable 1=Florida Resident	0.1572
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0449
INC40K	Dummy Variable 1=Household Income \$20,000 - \$39,999	0.1647
INC60K	Dummy Variable 1=Household Income \$40,000 - \$59,999	0.2053
INC100K	Dummy Variable 1=Household Income \$60,000 - \$100,000	0.2053
INC150K	Dummy Variable 1=Household Income over \$100,000	0.2289
INC2MISS	Dummy Variable 1=Household Income Missing	0.1496
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8517

1. Total sample size was 2,250 but three respondents did not provide their age, so the means presented here are for the sample of 2,246 used in the multivariate tests.

Table A.3.10. Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Expenditure Mailback ¹

Socioeconomic Factor	Ordinary Least Squares	Probit	Logit
Constant	0.318530 (5.43)***	-0.465260 (-3.07)**	-0.75354 (-3.06)**
AIR	0.022527 (0.76)	0.058714 (0.78)	0.093943 (0.77)
CRUISE	-0.034255 (-0.92)	-0.085220 (-0.89)	-0.13996 (-0.91)
AGE	-0.000029 (-0.41)	-0.000081 (-0.43)	-0.000125 (-0.41)
HISPANIC	-0.130190 (-1.76)*	-0.345420 (-1.76)*	-0.572350 (-1.76)*
BLACK	-0.292910 (-2.41)**	-0.850940 (-2.37)**	-1.4364 (-2.23)**
DAYS	-0.000618 (-0.73)	-0.001571 (-0.72)	-0.0025063 (-0.72)
NPEPPAY	0.013399 (1.18)	0.034210 (1.17)	0.055535 (1.19)
FLDUM	-0.056987 (-1.84)*	-0.144960 (-1.83)*	-0.233760 (-1.84)*
INC2MISS	-0.037360 (-0.68)	-0.101390 (-0.71)	-0.159380 (-0.69)
INC40K	0.099362 (1.79)*	0.252270 (1.76)*	0.41182 (1.78)*
INC60K	0.091260 (1.67)*	0.232430 (1.65)*	0.37834 (1.66)*
INC100K	0.110240 (2.03)**	0.28005 (2.00)**	0.45478 (2.01)**
INC150K	0.068054 (1.20)	0.172680 (1.18)	0.28367 (1.20)
DOMESTIC	0.087690 (2.81)**	0.22708 (2.82)**	0.36518 (2.80)**
Adjusted R-square	0.01947	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-likelihood	-1,623.21	-1,549.91	-1,549.91
Chi-squared Significance	N/A	0.0000	0.0000
N	2,246	2,246	2,246

1. Dependent variable (ERESPON) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is .4608. 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.3.11. Variable Definitions for Tests of Relationships Between Expenditures and Socioeconomic Factors: January - April 1996
Expenditure Mailback

Variable	Definition	Mean (N=1,015) ¹
LODGEPPC	Expenditures on Lodging Per Person Per Trip Spent in Monroe County	217.17
FOODPPC	Expenditures on Food & Beverages Per Person Per Trip Spent in Monroe County	155.43
TRANSPPC	Expenditures on Transportation Per Person Per Trip Spent in Monroe County	67.02
BOATPPC	Expenditures on Boating Per Person Per Trip Spent in Monroe County	17.22
FISHPPC	Expenditures on Fishing Per Person Per Trip Spent in Monroe County	21.12
DIVPPC	Expenditures on Diving Per Person Per Trip Spent in Monroe County	7.57
SIGHPPC	Expenditures on Sightseeing Per Person Per Trip Spent in Monroe County	13.00
OTHACPPC	Expenditures on Other Activities Per Person Per Trip Spent in Monroe County	8.19
MISCPPC	Expenditures on Miscellaneous Items Per Person Per Trip Spent in Monroe County	41.85
SERVPPC	Expenditures on Services Per Person Per Trip Spent in Monroe County	14.93
TOTVPPC	Total Expenditures (sum of LODGEPPC to SERVPPC) Per Person Per Trip Spent in Monroe County	563.50
AIR	Dummy Variable 1=Air Mode of Access	0.1833
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.0897
AGE	Age of Person Interviewed	51.15
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0118
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0029
DAYS	Number of Days in Keys on Interview Trip	6.606
INC2MISS	Dummy Variable 1=Household Income Missing	0.1537
INC40K	Dummy Variable 1=Household Income \$20,000 to \$39,999	0.1773
INC60K	Dummy Variable 1=Household Income \$40,000 to \$59,999	0.2207
INC100K	Dummy Variable 1=Household Income \$60,000 to \$100,000	0.2562
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1547
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8808

1. Sample size for the mailback was 1,036 but missing information for AGE resulted in 1,015 observations for estimation.

Table A.3.12. Tests of Relationships between Expenditures and Socioeconomic Factors: January - April 1996 Expenditure Mailback ¹

Independent Variables	Dependent Variables/Models					
	LODGEPPC	FOODPPC	TRANSPPC	BOATPPC	FISHPPC	DIVPPC
Constant	64.629 (0.91)	79.838 (2.12)**	-42.181 (-2.42)**	-29.114 (-1.43)	-43.432 (-1.20)	21.632 (3.86)***
AIR	109.66 (2.18)**	77.084 (3.78)***	134.57 (7.84)***	4.686 (0.48)	34.891 (1.22)	6.624 (0.89)
CRUISE	-163.36 (-9.76)***	-78.929 (-7.31)***	-25.781 (-3.38)***	9.130 (0.73)	-7.973 (-1.13)	-1.218 (-0.59)
AGE	1.3686 (1.42)	-0.517 (-1.13)	0.262 (0.87)	-0.135 (-0.36)	0.791 (1.00)	-0.304 (-3.67)***
HISPANIC	-74.705 (-2.18)**	-29.482 (-0.76)	-8.269 (-0.55)	171.41 (1.16)	6.429 (0.46)	-4.793 (-1.39)
BLACK	-60.188 (-1.30)	-31.137 (-1.47)	-5.839 (-0.57)	12.433 (0.89)	-7.043 (-1.18)	-4.756 (-1.27)
DAYS	10.409 (4.63)***	7.833 (7.81)***	2.052 (4.12)***	3.288 (1.55)	0.521 (2.85)**	0.092 (1.18)
INC2MISS	-9.022 (-0.13)	45.727 (1.35)	47.674 (3.15)**	20.721 (1.43)	-11.426 (-0.94)	-3.873 (-0.79)
INC40K	-82.424 (-1.31)	24.181 (0.80)	24.558 (2.27)**	15.080 (1.39)	0.481 (0.05)	-4.214 (-0.87)
INC60K	-37.376 (-0.59)	20.981 (0.72)	25.549 (2.39)**	14.132 (1.29)	2.954 (0.32)	-5.038 (-1.14)
INC100K	11.662 (0.18)	18.504 (0.65)	57.318 (4.62)***	19.123 (1.36)	-0.045 (-0.01)	-1.653 (-0.35)
INC150K	37.207 (0.57)	71.747 (2.22)**	59.799 (4.26)***	27.870 (2.10)**	38.630 (1.70)*	2.854 (0.30)
DOMESTIC	28.264 (1.09)	13.504 (0.68)	21.310 (3.09)**	10.886 (2.36)**	11.295 (2.34)**	2.576 (1.25)
Adj. R-SQ	0.1416	0.2456	0.1976	0.1473	0.0125	0.0039
F-signif	0.0000	0.0000	0.0000	0.0000	0.0166	0.1946
N	1,015	1,015	1,015	1,015	1,015	1,015

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.3.12. Tests of Relationships Between Expenditures and Socioeconomic Factors:
January -April 1996 Expenditure Mailback ¹ (continued)

Independent Variables	Dependent Variables/Models				
	SIGHPPC	OTHACPPC	MISCPPC	SERVPPC	TOTVPPC
Constant	9.607 (2.07)**	4.878 (0.94)	38.467 (3.22)**	-33.412 (-2.00)**	70.912 (0.61)
AIR	-1.099 (-0.53)	7.646 (1.71)	29.388 (3.05)**	5.627 (0.44)	409.07 (5.02)***
CRUISE	-2.050 (-0.64)	-2.883 (-1.30)	6.484 (0.80)	11.664 (1.77)*	-254.91 (-7.14)***
AGE	0.066 (1.25)	0.054 (0.72)	-0.425 (-2.24)**	-0.082 (-0.47)	1.080 (0.63)
HISPANIC	-1.532 (-0.31)	8.857 (0.88)	-2.381 (-0.14)	0.157 (0.03)	65.688 (0.41)
BLACK	-1.187 (-0.28)	-4.988 (-1.88)*	-2.047 (-0.18)	64.990 (1.44)	-39.761 (-0.39)
DAYS	0.059 (0.85)	0.078 (0.98)	0.638 (2.82)**	4.273 (3.22)***	29.242 (10.36)***
INC2MISS	4.100 (1.00)	-0.322 (-0.06)	12.785 (1.49)	26.029 (1.44)	132.39 (1.23)
INC40K	2.437 (0.61)	-0.400 (-0.06)	20.478 (2.01)**	6.675 (0.63)	6.853 (0.07)
INC60K	3.080 (0.80)	-3.345 (-0.70)	11.822 (1.60)	11.448 (0.99)	44.207 (0.46)
INC100K	0.374 (0.10)	-6.102 (-1.41)	13.082 (1.78)*	9.396 (0.85)	121.66 (1.28)
INC150K	2.024 (0.53)	-4.423 (-0.88)	31.145 (2.59)**	7.515 (0.69)	274.37 (2.61)**
DOMESTIC	-2.406 (-0.89)	2.160 (0.85)	-1.604 (-0.16)	12.207 (2.07)	98.192 (1.82)*
Adj. R-SQ	-0.0040	-0.0018	0.0267	0.1967	0.2961
F-Signif	0.7924	0.6077	0.0001	0.0000	0.0000
N	1,015	1,015	1,015	1,015	1,015

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.3.13. Response Rates by Socioeconomic Factors: July - August 1995
Satisfaction Mailback

Socioeconomic Factor	Response Rate (%)	On-site Sample Size	Mailback Sample Size
Mode of Access			
Auto	46.85	922	432
Air	46.46	198	92
Cruise Ship	48.60	214	104
Age			
16-25	30.19	106	32
26-35	37.92	298	113
36-45	50.92	434	221
46-60	52.97	370	196
Over 60	57.41	108	62
Missing	22.22	18	4
Household Income			
Under \$20,000	38.67	75	29
\$20,000 - \$39,999	49.17	240	118
\$40,000 - \$59,999	50.18	279	140
\$60,000 - \$100,000	50.43	351	177
Over \$100,000	52.23	157	82
Missing	35.34	232	82
Race/Ethnicity			
American Indian	100.00	1	1
Asian/Pacific Islander	40.00	10	4
Black Not Hispanic	29.09	55	16
White Not Hispanic	50.21	1,165	585
Hispanic	18.89	90	17
Other	33.33	3	1
Missing	40.00	10	4
Origin of Visitor			
Domestic (U.S.)	50.36	1,116	562
Foreign	30.28	218	66
Florida	50.00	538	269
Total Sample	47.08	1,334	628

Table A.3.14. Univariate Non-parametric Test of Response Rates and Socioeconomic Factors: July - August 1995 Satisfaction Mailback ¹

Socioeconomic Factor	Statistical Significance of KS Test ²	Significant ³
Mode of Access	1.0000	NO
Age	0.0001	YES
Household Income	0.9263	NO
Origin of Visitor		
Domestic or Foreign	0.0006	YES
Florida Resident	0.4462	NO
Race/Ethnicity	0.0010	YES

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distributions of socioeconomic factors between YES and NO response groups.
2. Statistical significance of .01 means that the distribution of the socioeconomic factor for respondents to the mailback survey was different from those that did not respond at the 99 percent confidence level. Similarly, .05 significance corresponds to the 95 percent confidence level and .10 corresponds to the 90 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.3.15. Variable Definitions for Multivariate Tests of Response Rates and Socioeconomic Factors: July - August 1995 Satisfaction Mailback

Variable	Definition	Mean (N=1,316) ¹
RESPONSE	Responded to Mailback 1=yes 0=no	0.4742
AUTO	Dummy Variable 1=Auto Mode of Access	0.6876
AIR	Dummy Variable 1=Air Mode of Access	0.1505
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.1619
AGE	Age of Person Interviewed	41.94
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0684
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0410
DAYS	Number of Days in Keys on Interview Trip	4.1880
FLDUM	Dummy Variable 1=Florida R-resident	0.4035
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0563
INC40K	Dummy Variable 1=Household Income \$20,000 - \$39,999	0.1816
INC60K	Dummy Variable 1=Household Income \$40,000 - \$59,999	0.2097
INC100K	Dummy Variable 1=Household Income \$60,000 - \$100,000	0.2629
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1178
INC2MISS	Dummy Variable 1=Household Income Missing	0.1717
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8374

1. Total sample size was 1,334 but three respondents did not provide their age, so the means presented here are for the sample of 1,316 used in the multivariate tests.

Table A.3.16. Multivariate Tests of Response Rates and Socioeconomic Factors: July - August 1995 Satisfaction Mailback ¹

Socioeconomic Factor	Ordinary Least Squares	Probit	Logit
Constant	0.120680 (1.60)	-1.0182 (-4.96)***	-1.6510 (-4.882)***
AIR	-0.042299 (-1.00)	-0.11249 (-1.00)	-0.17454 (-0.97)
CRUISE	0.008644 (0.20)	0.027791 (0.24)	0.043353 (0.23)
AGE	0.004878 (4.19)***	0.013075 (4.18)***	0.021183 (4.15)***
HISPANIC	-0.336090 (-6.15)***	-0.96271 (-5.92)***	-1.5920 (-5.60)***
BLACK	-0.241000 (-3.41)***	-0.65075 (-3.34)***	-1.0471 (-3.24)***
DAYS	-0.001481 (-0.69)	-0.004008 (-0.69)	-0.006386 (-0.70)
FLDUM	0.001851 (0.05)	0.000592 (0.01)	0.005540 (0.04)
INC2MISS	-0.017120 (-0.26)	-0.053442 (-0.30)	-0.078635 (-0.27)
INC40K	0.068214 (1.06)	0.18874 (1.08)	0.30930 (1.09)
INC60K	0.062391 (0.98)	0.16827 (0.98)	0.27921 (0.99)
INC100K	0.052201 (0.83)	0.14008 (0.83)	0.23330 (0.84)
INC150K	0.047166 (0.68)	0.12801 (0.69)	0.21025 (0.70)
DOMESTIC	0.17958 (3.98)***	0.47845 (3.95)***	0.76635 (3.88)***
Adjusted R-square	0.06795	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-likelihood	-953.38	-910.42	-910.42
Chi-squared Significance	N/A	0.0000	0.0000
N	1,316	1,316	1,316

1. Dependent variable (RESPONSE) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is .4742. 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.3.17. Variable Definitions for Tests of Relationships Between Importance Ratings and Socioeconomic Factors: July - August 1995 Satisfaction Mailback

Variable	Definition	Mean	N
AUTO	Dummy Variable 1=Auto Mode of Access	0.6879	628
AIR	Dummy Variable 1=Air Mode of Access	0.1465	628
CRUISE	Dummy Variable 1=Cruise Ship mode of Access	0.1656	628
AGE	Age of Person Interviewed	43.80	624
HISPANIC	Dummy Variable 1=Race/Ethnicity is Hispanic	0.0271	628
BLACK	Dummy Variable 1=Race/Ethnicity is Black	0.0255	628
INC2MISS	Dummy Variable 1=Household Income Missing	0.1306	628
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0462	628
INC40K	Dummy Variable 1=Household Income \$20,000 to \$39,999	0.1879	628
INC60K	Dummy Variable 1=Household Income \$40,000 to \$59,999	0.2229	628
INC100K	Dummy Variable 1=Household Income \$60,000 to \$100,000	0.2818	628
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1306	628
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8949	628
FLDUM	Dummy Variable 1=Florida Resident	0.4283	628
IMPWATER	Importance Rating Clear Water (scores 1 to 5)	4.2108	555
IMPCORAL	Importance Rating Amount of Living Coral on Reefs	3.9692	520
IMPTRANS	Importance Rating Public Transportation	2.1586	473
IMPSPARK	Importance Rating Parking	3.1519	520
IMPVIEW	Importance Rating Many Different Kinds of Fish and Sea Life to View	3.9670	546
IMPCATCH	Importance Rating Many Different Kinds of Fish and Sea Life to Catch	3.0539	501
IMPRAMP	Importance Rating Boat Ramps/Launching Facilities	2.7505	457
IMPMARIN	Importance Rating Marina Facilities	2.8298	476
IMPSEV	Importance Rating Service and Friendliness of People	4.1983	580
IMPHIST	Importance Rating Historic Preservation (historic landmarks, houses)	3.7316	570
IMPREST	Importance Rating Availability of Public Restrooms	3.8039	571

Table A.3.18. Tests of Relationships between Importance Ratings and Socioeconomic Factors:
July -August 1995 Satisfaction Mailback ¹

Independent Variables	Dependent Variables/Models					
	IMPWATER	IMPCORAL	IMPTRANS	IMPPARK	IMPVIEW	IMPCATCH
Constant	4.4640 (21.08)***	3.7478 (10.40)***	2.0271 (6.06)***	2.8468 (9.73)***	3.9031 (11.98)***	1.3962 (3.63)***
AIR	-0.0420 (-0.33)	-0.2080 (-1.23)	0.3162 (1.82)*	-0.2346 (-1.36)	-0.0852 (-0.59)	-0.3173 (-1.36)
CRUISE	-0.3988 (-2.99)**	-0.5477 (-3.19)***	1.1065 (6.32)***	-0.3207 (-1.70)*	-0.6533 (-4.04)***	-0.5287 (-2.26)**
AGE	-0.0022 (-0.63)	0.0029 (0.62)	0.0106 (2.09)**	0.0102 (2.24)**	-0.0023 (-0.54)	0.0090 (1.67)*
HISPANIC	-0.0788 (-0.33)	-0.1392 (-0.31)	-0.2475 (-0.87)	0.2209 (0.87)	-0.5216 (-1.38)	-0.0530 (-0.12)
BLACK	0.2235 (0.81)	0.3201 (1.11)	0.9871 (2.78)**	1.0579 (3.27)***	0.5470 (2.31)**	0.6208 (1.42)
INC2MISS	-0.1070 (-0.60)	0.0288 (0.09)	-0.1257 (-0.42)	0.2395 (0.91)	-0.1221 (-0.44)	0.0473 (0.13)
INC40K	-0.2533 (-1.47)	-0.1515 (-0.52)	-0.0694 (-0.25)	0.3310 (1.34)	0.0585 (0.24)	0.2139 (0.60)
INC60K	-0.2990 (-1.79)*	-0.0762 (-0.26)	-0.2846 (-1.01)	0.2690 (1.09)	-0.0320 (-0.13)	0.1033 (0.29)
INC100K	-0.1485 (-0.94)	0.1827 (0.65)	-0.2808 (-1.01)	0.3000 (1.23)	0.2108 (0.89)	0.1949 (0.55)
INC150K	-0.1550 (-0.90)	-0.1206 (-0.40)	-0.6780 (-2.27)**	0.0015 (0.01)	0.0327 (0.13)	0.2161 (0.57)
DOMESTIC	0.1387 (1.05)	0.2230 (1.06)	-0.2324 (-1.16)	-0.2857 (-1.59)	0.3219 (1.92)**	1.0616 (4.46)***
FLDUM	-0.0631 (-0.65)	0.02676 (0.21)	-0.2780 (-2.16)**	-0.1730 (-1.37)	-0.1561 (-1.41)	0.5511 (3.41)***
Adj. R-SQ	0.0062	0.0164	0.1692	0.0234	0.0374	0.1240
F-signif	0.2217	0.0600	0.0000	0.0203	0.0013	0.0000
N	551	516	471	516	542	497

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.3.18. Tests of Relationships Between Importance Ratings and Socioeconomic Factors: July - August 1995 Satisfaction Mailback ¹ (continued)

Independent Variables	Dependent Variables/Models				
	IMPRAMP	IMPMARIN	IMPSERV	IMPHIST	IMPREST
Constant	1.9526 (5.23)***	1.7692 (4.98)***	3.6839 (15.13)***	2.9362 (9.80)***	2.6458 (8.66)***
AIR	-0.1525 (-0.75)	-0.0385 (-0.20)	0.3313 (3.05)**	0.4433 (3.27)***	0.2480 (1.71)*
CRUISE	-0.1344 (-0.63)	0.3070 (1.39)	0.2412 (1.93)**	0.3106 (2.13)**	0.2986 (2.20)**
AGE	-0.0064 (-1.17)	0.0028 (0.53)	0.0061 (2.01)**	0.0102 (2.62)**	0.0127 (3.57)***
HISPANIC	-0.2343 (-0.69)	-0.3621 (-1.29)	-0.4038 (-1.50)	-0.4252 (-1.21)	-0.0563 (-0.23)
BLACK	1.1799 (2.31)**	0.9434 (2.21)	0.6123 (5.37)***	0.6438 (2.33)**	0.7706 (4.18)***
INC2MISS	0.2804 (0.79)	0.2397 (0.70)	0.2607 (1.26)	0.1300 (0.50)	0.3881 (1.47)
INC40K	0.6245 (1.91)*	0.3288 (1.10)	0.3413 (1.68)	0.3833 (1.60)	0.5611 (2.20)**
INC60K	0.4569 (1.34)	0.2915 (0.95)	0.3529 (1.78)*	0.2529 (1.06)	0.4425 (1.78)*
INC100K	0.6418 (1.94)**	0.2626 (0.86)	0.2377 (1.23)	0.2507 (1.09)	0.2838 (1.13)
INC150K	0.0787 (0.22)	-0.0778 (-0.24)	0.3014 (1.41)	-0.1126 (-0.45)	0.0611 (0.23)
DOMESTIC	0.3685 (1.87)*	0.4770 (2.37)**	-0.1543 (-1.17)	-0.0111 (-0.06)	0.2873 (1.68)*
FLDUM	0.6927 (4.60)***	0.5313 (3.70)***	0.0371 (0.38)	0.1004 (0.88)	-0.2146 (-1.90)*
Adj. R-SQ	0.1178	0.0741	0.0316	0.0378	0.0706
F-Signif	0.0000	0.0000	0.0027	0.0009	0.0000
N	453	472	576	566	567

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.3.19. Response Rates by Socioeconomic Factors: January - April 1996
Satisfaction Mailback

Socioeconomic Factor	Response Rate (%)	On-site Sample Size	Mailback Sample Size
Mode of Access			
Auto	52.40	1,643	861
Air	56.59	387	219
Cruise Ship	47.27	220	104
Age			
16-25	31.36	118	37
26-35	42.56	336	143
36-45	49.34	452	223
46-60	54.61	738	403
Over 60	63.64	561	357
Missing	46.67	45	21
Household Income			
Under \$20,000	45.54	101	46
\$20,000 - \$39,999	56.22	370	208
\$40,000 - \$59,999	57.70	461	266
\$60,000 - \$100,000	59.34	514	305
Over \$100,000	53.57	336	180
Missing	38.25	468	179
Race/Ethnicity			
American Indian	50.00	4	2
Asian/Pacific Islander	12.50	8	1
Black Not Hispanic	29.41	17	5
White Not Hispanic	53.72	2,165	1,163
Hispanic	24.49	49	12
Other	16.67	6	1
Missing	0.00	1	0
Origin of Visitor			
Domestic (U.S.)	54.62	1,917	1,047
Foreign	41.14	333	137
Florida	47.74	354	169
Total Sample	52.62	2,250	1,184

Table A.3.20. Univariate Non-parametric Test of Response Rates and Socioeconomic Factors: January - April 1996 Satisfaction Mailback ¹

Socioeconomic Factor	Statistical Significance of KS Test ²	Significant ³
Mode of Access	0.9659	NO
Age	0.0001	YES
Household Income	0.9170	NO
Origin of Visitor		
Domestic or Foreign	0.0109	YES
Florida Resident	0.6614	NO
Race/Ethnicity	0.4073	NO

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distributions 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. Similarly, .05 significance corresponds to the 95 percent confidence level and .10 corresponds to the 90 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.3.21. Variable Definitions for Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Satisfaction Mailback

Variable	Definition	Mean (N=2,204) ¹
RESPONSE	Responded to Mailback 1=yes 0=no	0.5277
AUTO	Dummy Variable 1=Auto Mode of Access	0.7286
AIR	Dummy Variable 1=Air Mode of Access	0.1729
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.0985
AGE	Age of Person Interviewed	49.16
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0204
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0077
DAYS	Number of Days in Keys on Interview Trip	6.5870
FLDUM	Dummy Variable 1=Florida Resident	0.1561
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0453
INC40K	Dummy Variable 1=Household Income \$20,000 - \$39,999	0.1652
INC60K	Dummy Variable 1=Household Income \$40,000 - \$59,999	0.2078
INC100K	Dummy Variable 1=Household Income \$60,000 - \$100,000	0.2296
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1502
INC2MISS	Dummy Variable 1=Household Income Missing	0.2019
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8525

1. Total sample size was 2,250 but three respondents did not provide their age, so the means presented here are for the sample of 2,204 used in the multivariate tests.

Table A.3.22. Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Satisfaction Mailback ¹

Socioeconomic Factor	Ordinary Least Squares	Probit	Logit
Constant	0.165430 (2.70)**	-0.88187 (-5.42)***	-1.4307 (-5.38)***
AIR	0.069625 (2.36)**	0.18763 (2.40)**	0.30362 (2.39)**
CRUISE	-0.080310 (-2.19)**	-0.21254 (-2.19)**	-0.34293 (-2.19)**
AGE	0.005990 (7.91)***	0.015862 (7.82)***	0.02571 (7.75)***
HISPANIC	-0.21335 (-2.82)**	-0.60332 (-2.81)**	-1.0203 (-2.76)**
BLACK	-0.20728 (-1.74)*	-0.58599 (-1.74)*	-0.93586 (-1.69)*
DAYS	-0.00064 (-0.76)	-0.001752 (-0.79)	-0.00278 (-1.37)
FLDUM	-0.042661 (-1.39)	-0.10963 (-1.36)	-0.17872 (-1.37)
INC2MISS	-0.116990 (-2.14)**	-0.31870 (-2.19)**	-0.51000 (-2.15)**
INC40K	0.067439 (1.23)	0.17143 (1.18)	0.28359 (1.20)
INC60K	0.068945 (1.27)	0.17489 (1.23)	0.28647 (1.23)
INC100K	0.085979 (1.61)	0.21787 (1.54)	0.35818 (1.56)
INC150K	0.021960 (0.39)	0.05028 (0.34)	0.08620 (0.36)
DOMESTIC	0.065214 (2.07)**	0.17261 (2.07)**	0.27430 (2.03)**
Adjusted R-square	0.06195	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-likelihood	-1,596.26	-1,524.32	-1,524.32
Chi-squared Significance	N/A	0.0000	0.0000
N	2,204	2,204	2,204

1. Dependent variable (RESPONSE) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is .5277. 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.3.23. Variable Definitions for Tests of Relationships Between Importance Ratings and Socioeconomic Factors: January - April 1996 Satisfaction Mailback

Variable	Definition	Mean	N
AUTO	Dummy Variable 1=Auto Mode of Access	0.7272	1,184
AIR	Dummy Variable 1=Air Mode of Access	0.1850	1,184
CRUISE	Dummy Variable 1=Cruise Ship Mode of Access	0.0878	1,184
AGE	Age of Person Interviewed	51.47	1,163
HISPANIC	Dummy Variable 1=Race/Ethnicity is Hispanic	0.0101	1,184
BLACK	Dummy Variable 1=Race/Ethnicity is Black	0.0042	1,184
INC2MISS	Dummy Variable 1=Household Income Missing	0.1512	1,184
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0389	1,184
INC40K	Dummy Variable 1=Household Income \$20,000 to \$39,999	0.1757	1,184
INC60K	Dummy Variable 1=Household Income \$40,000 to \$59,999	0.2247	1,184
INC100K	Dummy Variable 1=Household Income \$60,000 to \$100,000	0.2576	1,184
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1520	1,184
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8843	1,184
FLDUM	Dummy Variable 1=Florida Resident	0.1427	1,184
IMPWATER	Importance Rating Clear Water (scores 1 to 5)	4.2108	1,032
IMPCORAL	Importance Rating Amount of Living Coral on Reefs	3.7004	928
IMPTRANS	Importance Rating Public Transportation	2.3424	882
IMPSPARK	Importance Rating Parking	3.3612	1,027
IMPVIEW	Importance Rating Many Different Kinds of Fish and Sea Life to View	3.6176	1,025
IMPCATCH	Importance Rating Many Different Kinds of Fish and Sea Life to Catch	2.7908	913
IMPRAMP	Importance Rating Boat Ramps/Launching Facilities	2.3397	789
IMPMARIN	Importance Rating Marina Facilities	2.5275	817
IMPSEV	Importance Rating Service and Friendliness of People	4.1501	1,106
IMPHIST	Importance Rating Historic Preservation (Historic Landmarks, Houses)	3.7407	1,076
IMPREST	Importance Rating Availability of Public Restrooms	3.8944	1,089

Table A.3.24. Tests of Relationships between Importance Ratings and Socioeconomic Factors:
January - April 1996 Satisfaction Mailback ¹

Independent Variables	Dependent Variables/Models					
	IMPWATER	IMPCORAL	IMPTRANS	IMPPARK	IMPVIEW	IMPCATCH
Constant	4.4502 (23.72)***	4.2873 (18.23)***	2.6099 (10.32)***	2.9365 (13.04)***	4.1976 (18.32)***	1.8169 (6.27)***
AIR	-0.1414 (-1.52)	-0.1743 (-1.49)	0.3660 (3.08)**	-0.2924 (-2.90)**	-0.1156 (-1.18)	-0.0396 (-0.29)
CRUISE	0.1217 (1.06)	-0.1209 (-0.74)	1.1324 (8.56)***	-0.2102 (-1.52)	0.0670 (0.48)	-0.2241 (-1.24)
AGE	-0.0095 (-4.05)***	-0.0084 (-2.81)**	0.0059 (1.91)*	0.0127 (4.70)***	-0.0119 (-4.35)***	0.0056 (1.50)
HISPANIC	-0.4583 (-1.47)	0.1197 (0.39)	-0.0126 (-0.04)	0.1383 (0.40)	-0.2979 (-0.86)	0.6971 (2.77)**
BLACK	0.2220 (0.39)	-0.1728 (-0.36)	0.3090 (0.29)	-0.3068 (2.36)**	0.0315 (0.12)	-1.8495 (-10.77)***
INC2MISS	0.0910 (0.51)	0.2817 (1.39)	-0.2767 (-1.13)	-0.0117 (-0.56)	0.2016 (1.10)	0.0810 (0.31)
INC40K	-0.0079 (-0.04)	0.2204 (1.08)	-0.2355 (-0.97)	0.1002 (0.48)	0.1208 (0.68)	0.1607 (0.64)
INC60K	0.0442 (0.26)	0.1927 (0.99)	-0.3140 (-1.35)	0.1228 (0.61)	0.0609 (0.34)	0.1774 (0.73)
INC100K	0.0640 (0.38)	0.2130 (1.10)	-0.5240 (-2.26)**	-0.0657 (-0.33)	0.1254 (0.73)	0.0661 (0.28)
INC150K	0.0032 (0.02)	0.1009 (0.49)	-0.8651 (-3.67)***	-0.2289 (-1.11)	0.0387 (0.21)	0.0644 (0.25)
DOMESTIC	-0.1155 (-1.36)	-0.3908 (-3.48)***	-0.3096 (-2.38)**	-0.1506 (-1.47)	-0.1106 (-0.91)	0.5495 (3.47)***
FLDUM	0.2614 (3.03)**	0.2750 (2.62)**	-0.2493 (-2.20)**	-0.1117 (-1.09)	0.3035 (3.22)***	0.6269 (4.40)***
Adj. R-SQ	0.0215	0.0227	0.1082	0.0441	0.0234	0.0440
F-signif	0.0008	0.0011	0.0000	0.0000	0.0004	0.0000
N	1,011	911	865	1,008	1,006	897

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.3.24. Tests of Relationships Between Importance Ratings and Socioeconomic Factors: January - April 1996 Satisfaction Mailback ¹ (continued)

Independent Variables	Dependent Variables/Models				
	IMPRAMP	IMPMARIN	IMPSERV	IMPHIST	IMPREST
Constant	1.9291 (7.50)***	2.3633 (8.60)***	4.3938 (26.28)***	4.1451 (19.64)***	3.9053 (23.45)***
AIR	-0.0708 (-0.62)	-0.1881 (-1.61)	0.2134 (2.90)**	0.0683 (0.76)	0.0614 (0.76)
CRUISE	0.2434 (1.47)	0.1919 (1.18)	0.2043 (2.38)**	0.2607 (2.52)**	0.1471 (1.53)
AGE	0.0053 (1.61)	0.0010 (0.30)	-0.0026 (-1.28)	-0.0043 (-1.73)*	0.0058 (2.59)**
HISPANIC	1.0713 (3.26)***	1.1758 (3.48)***	-0.4578 (-1.53)	-0.0618 (-0.17)	0.2576 (1.02)
BLACK	0.1643 (0.27)	-0.3161 (-0.69)	-0.4119 (-1.25)	-0.4900 (-1.77)*	0.0156 (0.04)
INC2MISS	-0.0116 (-0.05)	-0.1024 (-0.43)	-0.0736 (-0.50)	0.0150 (0.08)	-0.2607 (-1.90)*
INC40K	-0.0236 (-0.10)	-0.0946 (-0.39)	0.0820 (0.57)	0.0132 (0.07)	-0.2516 (-1.88)*
INC60K	-0.0329 (-0.15)	-0.1543 (-0.68)	0.1037 (0.74)	0.0066 (0.04)	-0.1995 (-1.59)
INC100K	-0.0565 (-0.26)	-0.1275 (-0.56)	0.0752 (0.54)	-0.1015 (-0.56)	-0.3512 (-2.81)**
INC150K	-0.2238 (-0.98)	-0.2767 (-1.17)	0.0530 (0.36)	-0.0142 (-0.07)	-0.5416 (-4.02)***
DOMESTIC	0.0870 (0.56)	0.2214 (1.41)	-0.2458 (-3.31)***	-0.2167 (-2.38)	-0.0251 (-0.26)
FLDUM	0.6227 (4.81)***	0.3861 (3.02)**	0.0108 (0.14)	0.0215 (0.22)	-0.1250 (-1.34)
Adj. R-SQ	0.0476	0.0277	0.0169	0.0032	0.0184
F-Signif	0.0000	0.0006	0.0025	0.2211	0.0016
N	775	802	1,085	1,057	1,068

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.3.25. Response Rates by Socioeconomic Factors: January - April 1996
Ecosystem Mailback

Socioeconomic Factor	Response Rate (%)	On-site Sample Size	Mailback Sample Size
Mode of Access			
Auto	53.26	2,610	1,390
Air	58.47	183	107
Cruise Ship	50.00	4	2
Private Boat	33.33	12	4
Age			
16-25	41.02	295	121
26-35	41.79	560	234
36-45	55.75	678	378
46-60	57.61	788	454
Over 60	66.30	460	305
Missing	39.29	28	11
Household Income			
Under \$20,000	51.66	151	78
\$20,000 - \$39,999	54.36	390	212
\$40,000 - \$59,999	57.04	568	324
\$60,000 - \$100,000	60.35	575	347
Over \$100,000	53.12	401	213
Missing	45.44	724	329
Education			
8th Grade or less	60.00	5	3
9th - 11th grade	46.88	64	30
12th grade	47.45	588	279
13-15 years	53.41	616	329
16 years (college grad)	53.94	901	486
17 or more years	59.74	626	374
Race/Ethnicity			
American Indian	66.67	3	2
Asian/Pacific Islander	40.00	25	10
Black Not Hispanic	21.88	32	7
White Not Hispanic	55.63	2,594	1,443
Hispanic	27.14	140	38
Other	16.67	12	2
Missing	33.33	3	1
Origin of Visitor			
Domestic (U.S.)	54.04	2,478	1,339
Foreign	49.55	331	164
Total Sample	53.51	2,809	1,503

Table A.3.26. Univariate Non-parametric Test of Response Rates and Socioeconomic Factors: January - April 1996 Ecosystem Mailback ¹

Socioeconomic Factor	Statistical Significance of KS Test ²	Significant ³
Mode of Access	1.0000	NO
Age	0.0001	YES
Household Income	0.2554	NO
Education	0.0145	YES
Origin of Visitor		
Domestic or Foreign	0.9666	NO
Race/Ethnicity	0.0015	YES

1. The test used was the Kolmogorov - Smirnov Two-sample Test which tests the differences in the distributions 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. Similarly, .05 significance corresponds to the 95 percent confidence level and .10 corresponds to the 90 percent confidence level.
3. YES indicates distributions are different at .10 significance or the 90 percent confidence level.

Table A.3.27. Variable Definitions for Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Ecosystem Mailback

Variable	Definition	Mean (N=2,777) ¹
RESPONSE	Responded to Mailback 1=yes 0=no	0.5373
AIR	Dummy Variable 1=Air Mode of Access	0.0648
AGE	Age of Person Interviewed	44.23
EDUCIN1	Education Level of Person Interviewed	4.505
HISPANIC	Dummy Variable 1=Race/ethnicity is Hispanic	0.0493
BLACK	Dummy Variable 1=Race/ethnicity is Black	0.0115
DAYS	Number of Days in Keys on Interview Trip	7.144
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0544
INC40K	Dummy Variable 1=Household Income \$20,000 - \$39,999	0.1394
INC60K	Dummy Variable 1=Household Income \$40,000 - \$59,999	0.2031
INC100K	Dummy Variable 1=Household Income \$60,000 - \$100,000	0.2060
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1426
INCMISS	Dummy Variable 1=Household Income Missing	0.2546
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8826

1. Total sample size was 2,809 but three respondents did not provide their age, so the means presented here are for the sample of 2,777 used in the multivariate tests.

Table A.3.28. Multivariate Tests of Response Rates and Socioeconomic Factors: January - April 1996 Ecosystem Mailback ¹

Socioeconomic Factor	Ordinary Least Squares	Probit	Logit
Constant	0.17190 (2.68)**	-0.86164 (-5.06)***	-1.4072 (-5.09)***
AIR	0.031419 (0.83)	0.08078 (0.81)	0.13585 (0.84)
AGE	0.005833 (8.76)***	0.015373 (8.62)***	0.02502 (8.54)***
EDUCIN1	0.036453 (4.26)***	0.097075 (4.27)***	0.15834 (4.28)***
HISPANIC	-0.23207 (-5.37)***	-0.63448 (-5.26)***	-1.0310 (-5.11)***
BLACK	-0.28789 (-3.34)***	-0.80471 (-3.22)***	-1.3407 (-3.08)**
DAYS	0.00055 (0.89)	0.00151 (0.91)	0.00249 (0.91)
INC2MISS	-0.16108 (-3.64)***	-0.43176 (-3.65)***	-0.70143 (-3.67)***
INC40K	-0.05000 (-1.06)	-0.13627 (-1.09)	-0.22156 (-1.10)
INC60K	-0.03683 (-0.82)	-0.10535 (-0.88)	-0.16789 (-0.87)
INC100K	-0.02877 (-0.63)	-0.08364 (-0.69)	-0.13956 (-0.72)
INC150K	-0.12184 (-2.54)**	-0.32945 (-2.58)**	-0.53751 (-2.62)**
DOMESTIC	0.03477 (1.21)	0.08808 (1.16)	0.14463 (1.18)
Adjusted R-square	0.05997	N/A	N/A
F - significance	0.00000	N/A	N/A
Restricted Log-likelihood	-2,007.79	-1,917.148	-1,917.148
Chi-squared Significance	N/A	0.0000	0.0000
N	2,777	2,777	2,777

1. Dependent variable (RESPONSE) is a dummy variable indicating whether the person responded to the mailback 1=yes 0=no. Mean of the dependent variable is .5373. 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.3.29. Variable Definitions for Tests of Relationships Between Importance Ratings and Socioeconomic Factors: January - April 1996 Ecosystem Mailback

Variable	Definition	Mean	N
AIR	Dummy Variable 1=Air mode of access	0.0712	1,503
AGEIN1	Age of Person Interviewed	46.53	1,494
EDUCIN1	Education of the Person Interviewed	4.59	1,501
HISPANIC	Dummy Variable 1=Race/Ethnicity is Hispanic	0.0253	1,502
BLACK	Dummy Variable 1=Race/Ethnicity is Black	0.0047	1,502
INCMIS	Dummy Variable 1=Household Income Missing	0.2189	1,503
INC20K	Dummy Variable 1=Household Income under \$20,000	0.0519	1,503
INC40K	Dummy Variable 1=Household Income \$20,000 to \$39,999	0.1411	1,503
INC60K	Dummy Variable 1=Household Income \$40,000 to \$59,999	0.2156	1,503
INC100K	Dummy Variable 1=Household Income \$60,000 to \$100,000	0.2309	1,503
INC150K	Dummy Variable 1=Household Income over \$100,000	0.1417	1,503
DOMESTIC	Dummy Variable 1=Domestic Visitor 0=Foreign Visitor	0.8909	1,503
DAYS	Number of Days in the Keys on the Interview Trip	7.835	1,503
Ecosystem Services - How important you think ecosystems are in providing the following (scores 1 to 5)			
IMPWATER	Importance Rating Water for Use by Plants	4.1304	1,327
IMPSOLAR	Importance Rating Solar Energy to Produce Food and Nutrients	4.0015	1,313
IMPOXY	Importance Rating Oxygen for Use by Plants and Animals	4.2079	1,294
IMPCARB	Importance Rating Carbon for use by Plants and Animals	3.8649	1,044
IMPPHOS	Importance Rating Phosphorous for use by Plants and Animals	3.6718	966
IMPSULPH	Importance Rating Sulphur for use by Plants and Animals	3.5535	878
IMPNTRO	Importance Rating Nitrogen for use by Plants and Animals	3.8632	1,104
Ecosystem Services - How important are the following ecosystem services to you (scores 1 to 5)			
IMPA	Importance Rating Using Plants for Commercial Harvest	3.3367	1,304
IMPB	Importance Rating Using Plants for Recreational Harvest	2.8773	1,377
IMPC	Importance Rating Using Plants for Nature Study and Observation	3.4787	1,387
IMPD	Importance Rating Using Plants for Photographs, Paintings, Videos	2.6905	1,370

Table A.3.30. Tests of Relationships between Importance Ratings and Socioeconomic Factors:
January - April 1996 Ecosystem Mailback ¹

Independent Variables	Dependent Variables/Models					
	IMPWATER	IMPSOLAR	IMPOXY	IMPCARB	IMPPHOS	IMPSULPH
Constant	3.7049 (19.28)***	3.7603 (19.00)***	3.8919 (20.62)***	3.6217 (14.03)***	3.3428 (12.34)***	3.2090 (10.11)***
AIR	-0.0577 (-0.55)	-0.0850 (-0.75)	-0.1046 (-0.99)	-0.3757 (-2.40)**	-0.4433 (-2.78)**	-0.5533 (-3.22)***
AGEIN1	0.000038 (0.02)	-0.0051 (-2.43)**	-0.0046 (-2.40)**	-0.0071 (-2.74)**	-0.0036 (-1.35)	-0.0050 (-1.60)
EDUCIN1	0.11429 (4.79)***	0.0867 (3.24)***	0.0963 (3.96)***	0.0605 (1.84)*	0.0338 (0.97)	0.0503 (1.28)
HISPANIC	0.05032 (0.33)	0.2182 (1.36)	0.0135 (0.08)	-0.2265 (-1.00)	-0.2162 (-0.92)	-0.0531 (-0.23)
BLACK	0.09598 (0.21)	-0.0424 (-0.09)	-0.0190 (-0.04)	0.0212 (0.04)	0.5066 (1.24)	0.3377 (0.57)
INCMIS	-0.06126 (-0.45)	0.0608 (0.42)	0.0144 (0.10)	0.1739 (1.03)	0.2354 (1.24)	0.2342 (1.11)
INC40K	-0.18155 (-1.28)	-0.1131 (-0.73)	-0.1539 (-1.02)	-0.0965 (-0.56)	0.0010 (0.01)	0.0064 (0.03)
INC60K	-0.00903 (-0.07)	0.1567 (1.10)	-0.0039 (-0.03)	0.0272 (0.16)	0.0872 (0.46)	0.1779 (0.85)
INC100K	-0.04639 (-0.35)	0.0965 (0.67)	0.0150 (0.11)	0.0910 (0.55)	0.0817 (0.43)	0.0906 (0.43)
INC150K	-0.18814 (-1.30)	-0.0501 (-0.32)	-0.0332 (-0.22)	-0.0796 (-0.44)	0.0081 (0.04)	0.0694 (0.32)
DOMESTIC	-0.0175 (-0.23)	0.0266 (0.20)	0.1162 (1.33)	0.3274 (2.63)**	0.3144 (2.41)**	0.2965 (2.05)**
DAYS	-0.0011 (-0.64)	0.0010 (0.60)	0.0008 (0.63)	-0.0019 (-0.92)	0.0003 (0.14)	-0.0006 (-0.22)
Adj. R-SQ	0.0144	0.0140	0.0154	0.0242	0.0114	0.0135
F-signif	0.0020	0.0027	0.0015	0.0002	0.0283	0.0223
N	1,316	1,302	1,283	1,034	958	869

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.3.30. Tests of Relationships Between Importance Ratings and Socioeconomic Factors: January - April 1996 Ecosystem Mailback ¹ (continued)

Independent Variables	Dependent Variables/Models				
	IMPNTRO	IMPA	IMPB	IMPC	IMPD
Constant	3.2399 (12.55)***	2.3678 (9.90)***	2.8668 (12.50)***	3.3745 (15.40)***	2.0436 (8.36)***
AIR	-0.2643 (-1.87)*	-0.0020 (-0.02)	-0.2220 (-1.81)*	-0.2349 (-2.03)**	-0.0714 (-0.56)
AGEIN1	-0.0001 (-0.05)	0.0101 (4.43)***	-0.0020 (-0.90)	-0.0081 (-3.92)***	-0.0042 (-1.77)*
EDUCIN1	0.0870 (2.86)**	0.0363 (1.20)	-0.0214 (-0.73)	0.0792 (2.82)**	0.0844 (2.69)**
HISPANIC	-0.0996 (-0.46)	-0.4149 (-1.76)*	-0.1264 (-0.58)	-0.0403 (-0.22)	-0.0297 (-0.15)
BLACK	0.3335 (0.74)	-0.9325 (-1.86)*	-0.6695 (-1.68)*	-0.7656 (-1.75)*	-0.9452 (-3.15)**
INCMIS	0.0003 (0.00)	0.2834 (1.76)*	0.1781 (1.16)	-0.0138 (-0.09)	0.2806 (1.68)*
INC40K	-0.0872 (-0.49)	0.2423 (1.42)	0.0649 (0.41)	-0.0306 (-0.19)	0.1469 (0.86)
INC60K	0.0253 (0.15)	0.3747 (2.35)**	0.1106 (0.74)	0.0415 (0.28)	0.1498 (0.92)
INC100K	0.0026 (0.02)	0.4022 (2.50)**	0.0544 (0.36)	-0.0651 (-0.43)	0.2082 (1.29)
INC150K	-0.1630 (-0.91)	0.4054 (2.40)**	0.0829 (0.52)	-0.1800 (-1.14)	0.0366 (0.21)
DOMESTIC	0.2896 (2.41)**	0.0394 (0.36)	0.1395 (1.37)	0.1938 (2.15)**	0.3221 (3.06)**
DAYS	0.0024 (1.52)	-0.0028 (-1.33)	0.0007 (0.48)	0.0005 (0.30)	0.0016 (0.77)
Adj. R-SQ	0.0109	0.0249	-0.0004	0.0188	0.0112
F-Signif	0.0209	0.0000	0.4870	0.0002	0.0074
N	1,095	1,295	1,368	1,378	1,360

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.3.31. A Comparison of Weighted and Unweighted Means for Selected Responses from the Mailback Questionnaires

Season/Variable	Weighted Mean	Unweighted Mean	Weighted vs Unweighted Percent Difference
Expenditure Mailback June - November 1995			
TOTVPPC	413.02	464.63	-12.50
LODGEPPC	150.38	154.41	-2.68
FOODPPC	112.01	124.11	-10.80
Expenditure Mailback Dec. 1995 - May 1996			
TOTVPPC	490.05	559.73	-14.22
LODGEPPC	187.38	214.11	-14.26
FOODPPC	138.93	155.82	-12.16
Satisfaction Mailback June - Nov. 1995			
IMPWATER	4.2121	4.2108	0.03
IMPCORAL	3.9638	3.9692	-0.14
IMPTRANS	2.0714	2.1586	-4.21
IMPPARK	3.1980	3.1519	1.44
IMPVIEW	3.9428	3.9670	-0.61
IMPCATCH	3.0250	3.0539	-0.96
IMPRAMP	2.7571	2.7505	0.24
IMPMARIN	2.7855	2.8298	-1.59
IMPSERV	4.1282	4.1983	-1.70
IMPHIST	3.6536	3.7316	-2.13
IMPREST	3.7189	3.8039	-2.28
Satisfaction Mailback Dec. 1995 - May 1996			
IMPWATER	3.9402	3.9128	0.69
IMPCORAL	3.7206	3.7004	0.54
IMPTRANS	2.4481	2.3424	4.32
IMPPARK	3.3694	3.3612	0.24
IMPVIEW	3.6252	3.6176	0.21
IMPCATCH	2.7528	2.7908	-1.38
IMPRAMP	2.3635	2.3397	1.01
IMPMARIN	2.5528	2.5275	0.99
IMPSERV	4.1432	4.1501	-0.17
IMPHIST	3.7757	3.7407	0.93
IMPREST	3.9118	3.8944	0.44
Ecosystem Mailback Dec. 1995 - May 1996			
IMPWATER	4.0539	4.1303	-1.89
IMPSOLAR	3.9714	4.0015	-0.76
IMPOXY	4.1898	4.2079	-0.43
IMPCARB	3.8284	3.8649	-0.95
IMPPHOS	3.6113	3.6718	-1.67
IMPSULPH	3.4983	3.5535	-1.58
IMPNITRO	3.7668	3.8632	-2.56
IMPA	3.3021	3.3366	-1.03
IMPB	2.8547	2.8772	-0.79
IMPC	3.4464	3.4787	-0.94
IMPD	2.6479	2.6905	-1.61

Chapter 4. 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 visitors who did an activity) and the number of visitors who did the activity. Estimates are made by activity, region and season. Intensity of use includes estimates of the number of different days of activity and the number of hours of activity. As with participation, estimates are made by activity, region and season. The results of this estimation are presented in "Visitor Profiles: Florida Keys/Key West" (Leeworthy and Wiley, 1996). Here the methods used to derive those estimates are documented and the estimation is extended to cover activities not reported in the Visitor Profile report.

Activity Participation

For activity participation, information was obtained on the activities participated in by each person of a traveling/recreation group on their visit to the Florida Keys/Key West. So, although there were 3,584 visitors age 16 or older that were randomly chosen and interviewed in the Auto, Air and Cruise Ship Survey during the two sampling seasons (July - August 1995 and January - April 1996), information on activity participation was obtained on 9,299 visitors of all ages.

Participation in 68 activities (see Exhibit 13) in four regions (Upper Keys, Middle Keys, Lower Keys, Key West, (see Exhibit 14 for a map showing the region definitions) for the two seasons was obtained. Two types of participation rates were calculated. The first was the percent of all visitors to the Florida Keys/Key West who did an activity in a region. This was calculated by summing across all visitors in the sample who did the activity in the region divided by the sum of all visitors in the sample. When this participation rate is multiplied by the number of all visitors to the Florida Keys/Key West (see Chapter 1 for the estimate of all visitors) an estimate is obtained for the number of visitors who did an activity in the region. Again, this was done for two seasons. The July-August 1995 sample was used for estimating the June-November 1995 season and the January-April 1996 sample was used for estimating the December 1995 - May 1996 season.

The second type of participation rate calculated was the "within region participate rate". These participation rates are the percent of visitors to a region who did an activity in the region. These participation rates were calculated by summing the number of sampled visitors who did the activity in the region by the sum of sampled visitors who visited the region.

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 visitors of all ages were representative of the population of visitors. Chapter 2 discussed the derivation of these activity sample weights.

Estimates for activity participation by season and region for the complete list of 68 activities can be found in the appendix of "Visitor Profiles: Florida Keys/Key West" (Leeworthy and Wiley, 1996). Also, presented in this report were participation rates for 41 Aggregated Activities formulated from the list of 68 activities. Estimates for the 41 aggregated activities were done ensuring against double-counting. One cannot add either participation rates or number of participants by activity because visitors 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 (Days and Hours)

Participation rates combined with estimates of the number of visitors allowed for the estimation of the number of visitors who did an activity, in a given region, during a given season. For some purposes, measurements of the intensity of activities are also needed. For example, assessing the need for recreation facilities. Two measures of intensity of use were obtained from the CUSTOMER on-site survey: the number of separate days the person did the activity and the number of hours they did the activity during the interview trip.

The general approach used was to first estimate the average number of days of a given activity in each region during each season. The average number of days was then multiplied by the number of visitors who did the activity in the region during that season. The same method was followed for hours of activity.

Days and hours information was obtained from the on-site component of the CUSTOMER Survey. During the July - August 1995 sampling period, 1,781 visitors were interviewed and 2,809 were interviewed during the January - April 1996

sampling period. Days and hours were asked for only 39 of the 68 activities for which participation was estimated. These 39 activities are identified by an “A” suffix attached to the activity number (see Exhibit 13).

In the CUSTOMER Survey sample design, a quota of at least 25 interviews was targeted for each of the 39 activities, in each region and during each season. It was determined that this number of observations would yield statistically reliable estimates of the average number of days and hours. This was considered a planning minimum, but the way in which information was gathered was expected to yield greater number of observations since each interview gathered information on all of the 39 activities for which the visitor participated. However, the minimum sample size of 25 observations per activity, per region, per season was not achieved for many activities. Generally, we were not able to achieve the minimum sample size for activities that had low participation rates. In fact, despite attempts to oversample for selected activities, the general CUSTOMER Survey sample was not significantly different with respect to sample activity participation than the Auto, Air and Cruise Ship Survey, except for slightly higher participation in water-based activities because the CUSTOMER Survey did not generally include the Cruise Ship passenger visitors.

In the report “Visitor Profiles: Florida Keys/Key West” (Leeworthy and Wiley, 1996), estimates were provided for only those activities, by region and by season, for which statistically reliable estimates could be made (25 observations or more). Presentation of the results was limited to 24 of the 39 activities. But even among that list of 24 activities, there were some missing estimates for a particular activity, in a particular region, in a particular season. For example, the average number of days visitors engaged in snorkeling from a rental boat, in the Upper Keys, during the December 1995 - May 1996 season was listed as missing in Table A.2.29 of the Visitor Profiles report (pg. 85). Most of the missing values in that report were for boat related activities where the activity was disaggregated by type of boat (e.g. Charter/party, private, and rental). The consequence of this was that it made it impossible to sum across type of boat used for a given activity to get an estimate of the total for the activity.

Here the constraint, that there had to be at least 25 observations from which to estimate an average for a particular activity, in a particular region, during a particular season, was relaxed. Estimates have been made for all 39 activities, in each region, during each season. Sample averages were used irrespective of sample size and when there was no information available a value of one (1.00) day was used for the average days and a value of four (4.00) hours was used for the average hours. Also, estimates of the average number of hours for several activities were relatively high and had relatively high standard errors indicating that these estimates were extremely unreliable. In these cases, four (4) hours was used instead of the means in Tables A.4.5 to A.4.8. The sample averages, standard errors of the mean, and the number of observations for each of the 39 activities, for each region, and for each season are summarized in Tables A.4.1 to A.4.4 for days and in Tables A.4.5 to A.4.8 for hours. Table A.4.9 summarizes the total number of days by region and season and Table A.4.10 summarizes the total annual number of days by region. Table A.4.11 summarizes the total number of hours by region and season and Table A.4.12 summarizes the annual number of hours by region.

Aggregation Issues. In adding days and/or hours across activities, especially within regions, there may be a certain amount of double-counting. This would be a greater problem for the number of days than the number of hours, 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. And, the problem would be virtually nonexistent when adding across seasons. 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 and in a given season 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 during a given season 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.

Table A.4.1. Average Number of Days of Activity Per Trip: Upper and Middle Keys, June - Nov. 1995

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	1.27	0.0610	78	1.47	0.0864	54
Rental Boat	1.43	0.1573	28	1.92	0.2267	52
Private Boat	2.45	0.2980	64	3.80	0.3422	136
Shore	2.05	0.2039	56	2.76	0.2598	145
Scuba Diving						
Charter/Party Boat	2.03	0.1377	58	2.04	0.1877	37
Rental Boat	1.63	0.3550	8	1.97	0.3258	16
Private Boat	2.95	0.4724	25	3.35	0.3999	56
Shore	1.20	0.1894	5	1.57	0.1913	7
Offshore Fishing						
Charter Boat	1.29	0.1746	7	1.54	0.1988	27
Party Boat	1.33	0.3156	3	1.47	0.2238	15
Rental Boat	3.00	1.8936	3	1.92	0.4026	18
Private Boat	1.79	0.2853	44	4.90	0.8789	94
Flats/Backcountry Fishing						
Guided	1.00	0.0000	3	1.80	0.3500	10
Rental Boat	3.00	0.9468	3	2.50	0.4383	8
Private Boat	2.25	0.4754	11	3.13	0.3751	31
Other Fishing						
Charter Boat	1.00	0.0000	2	1.00	0.0000	2
Party Boat	1.00	-	0	1.00	0.0000	4
Rental Boat	4.00	-	1	1.00	0.0000	4
Private Boat	3.50	1.2525	4	2.34	0.2714	35
Fishing from Shore	1.38	0.1056	55	2.33	0.2815	120
Personal Watercraft						
Rental Boat	1.04	0.0379	25	1.13	0.0580	31
Private Boat	3.69	0.8797	22	3.93	0.8978	26
Sailing						
Charter/Party Boat	1.00	0.0000	3	1.12	0.1183	8
Rental Boat	7.63	3.9811	3	6.95	2.5989	5
Private Boat	2.00	-	1	3.00	0.7731	6

Table A.4.1. Average Number of Days of Activity Per Trip: Upper and Middle Keys, June - Nov. 1995
(continued)

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	1.09	0.1481	13	1.00	0.0000	7
Rental Boat	2.00	0.9468	3	11.69	5.7907	4
Private Boat	4.09	1.9605	10	4.24	1.0288	19
Viewing Nature & Wildlife						
Glass-bottom Boat	1.05	0.0308	43	1.06	0.0412	32
Guided Backcountry Excursion	1.67	0.4852	12	2.16	0.4782	12
Private/Rental Boat	2.60	0.2750	45	4.06	0.6732	78
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	1.62	0.2077	34	3.22	0.9050	112
Other Nature Study	2.22	0.3421	31	4.51	2.6577	35
All Beach Activities						
Swimming at Beaches	2.34	0.2042	117	3.61	0.2686	255
Other Beach Activities	1.73	0.1976	38	5.09	0.7215	134
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	1.00	-	0	2.85	0.6596	5
	2.27	0.1844	95	7.37	1.4526	159
Museum & Historic Sites						
Museums	1.10	0.0798	50	1.48	0.2121	78
Historic Areas	1.35	0.1815	26	1.64	0.2744	88

Table A.4.2. Average Number of Days of Activity Per Trip: Lower Keys & Key West, June - Nov. 1995

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	1.31	0.1025	50	1.08	0.0264	120
Rental Boat	1.75	0.2649	20	1.24	0.1132	25
Private Boat	2.82	0.3012	78	2.00	0.3347	17
Shore	1.77	0.1616	80	2.07	0.1355	99
Scuba Diving						
Charter/Party Boat	1.48	0.1659	17	2.21	0.1895	46
Rental Boat	1.86	0.4348	7	2.13	0.3373	9
Private Boat	3.03	0.6892	30	2.11	0.4586	9
Shore	1.25	0.2367	4	1.82	0.2802	11
Offshore Fishing						
Charter Boat	1.22	0.1392	9	1.34	0.1666	19
Party Boat	1.00	0.0000	6	1.60	0.4732	18
Rental Boat	1.33	0.3156	3	1.59	0.2335	9
Private Boat	1.57	0.1409	54	1.60	0.2093	10
Flats/Backcountry Fishing						
Guided	1.33	0.3156	3	1.40	0.1954	7
Rental Boat	1.00	-	0	2.00	0.6695	4
Private Boat	2.44	0.5762	17	1.00	-	1
Other Fishing						
Charter Boat	1.00	-	1	1.00	0.0000	3
Party Boat	1.00	-	0	1.00	0.0000	4
Rental Boat	1.00	0.0000	4	1.00	-	1
Private Boat	1.33	0.1996	6	1.88	0.2148	8
Fishing from Shore	1.80	0.4371	46	2.00	0.1985	27
Personal Watercraft						
Rental Boat	1.00	0.0000	8	1.17	0.1022	35
Private Boat	1.77	0.3975	10	1.50	0.4734	2
Sailing						
Charter/Party Boat	1.00	0.0000	3	1.05	0.0527	18
Rental Boat	1.00	-	1	1.51	0.5464	7
Private Boat	3.40	2.0439	5	1.67	0.3156	3

Table A.4.2. Average Number of Days of Activity Per Trip: Lower Keys & Key West, June - Nov. 1995
(continued)

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	1.00	0.0000	4	1.08	0.0498	29
Rental Boat	1.00	0.0000	2	1.00	0.0000	4
Private Boat	1.50	0.4734	2	1.37	0.2380	5
Viewing Nature & Wildlife						
Glass-bottom Boat	1.00	0.0000	14	1.01	0.0104	91
Guided Backcountry Excursion	1.33	0.3156	6	1.18	0.1902	10
Private/Rental Boat	2.27	0.4352	39	1.28	0.1785	28
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	2.02	0.2936	52	2.04	0.1922	46
Other Nature Study	1.96	0.3724	28	1.54	0.2294	21
All Beach Activities						
Swimming at Beaches	2.04	0.1849	135	2.49	0.1706	203
Other Beach Activities	2.22	0.3804	53	2.56	0.2630	91
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	1.00	0.0000	3	1.00	0.0000	4
	2.13	0.2114	46	3.01	0.1558	173
Museum & Historic Sites						
Museums	1.71	0.6072	14	1.27	0.0467	135
Historic Areas	1.64	0.3519	28	1.77	0.0689	313

Table A.4.3. Average Number of Days of Activity Per Trip: Upper & Middle Keys, Dec. '95 - May '96

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	1.11	0.0432	140	1.07	0.0378	40
Rental Boat	2.10	0.2889	20	1.14	0.0931	21
Private Boat	2.16	0.4977	45	1.60	0.3506	34
Shore	1.77	0.1421	96	1.64	0.1182	117
Scuba Diving						
Charter/Party Boat	1.81	0.1453	93	1.96	0.2942	23
Rental Boat	1.00	0.0000	13	1.00	0.0000	2
Private Boat	3.79	0.8789	14	1.20	0.1786	5
Shore	1.08	0.0815	11	1.27	0.1257	11
Offshore Fishing						
Charter Boat	1.28	0.0980	29	1.13	0.0597	48
Party Boat	1.15	0.0686	33	1.44	0.2282	52
Rental Boat	2.82	0.4221	22	1.33	0.2165	17
Private Boat	9.32	2.1874	57	2.78	0.8244	55
Flats/Backcountry Fishing						
Guided	1.44	0.3017	9	1.15	0.1493	12
Rental Boat	2.88	0.4185	17	1.50	0.3050	6
Private Boat	9.30	1.4922	44	5.54	1.7381	24
Other Fishing						
Charter Boat	1.33	0.2976	3	1.33	0.2976	6
Party Boat	1.00	0.0000	2	1.00	0.0000	4
Rental Boat	3.50	0.4464	2	1.00	0.0000	2
Private Boat	2.00	0.8424	20	3.00	0.8928	9
Fishing from Shore	2.76	0.6746	87	1.75	0.1095	159
Personal Watercraft						
Rental Boat	1.15	0.0633	38	1.12	0.1146	39
Private Boat	2.93	0.4474	28	4.18	1.0049	19
Sailing						
Charter/Party Boat	1.83	0.7440	6	1.13	0.1501	12
Rental Boat	1.27	0.1741	11	1.00	0.0000	8
Private Boat	2.22	0.8371	14	10.2	4.5897	27

Table A.4.3. Average Number of Days of Activity Per Trip: Upper & Middle Keys, Dec. '95 - May '96
(continued)

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	1.17	0.1488	12	1.00	0.0000	11
Rental Boat	1.43	0.1804	7	1.00	0.0000	14
Private Boat	1.76	0.7900	16	1.52	0.9012	16
Viewing Nature & Wildlife						
Glass-bottom Boat	1.01	0.0095	132	1.00	0.0000	37
Guided Backcountry Excursion	1.74	0.6300	34	1.00	0.0000	11
Private/Rental Boat	3.16	0.5918	109	1.87	0.9008	95
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	5.03	1.1183	207	1.35	0.0589	306
Other Nature Study	8.70	2.2500	100	1.54	0.1131	142
All Beach Activities						
Swimming at Beaches	2.78	0.3101	222	2.35	0.1239	377
Other Beach Activities	2.46	0.2979	163	2.45	0.1478	417
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	2.69	0.9558	3	2.30	0.7049	10
	6.97	1.0192	179	2.75	0.2543	220
Museum & Historic Sites						
Museums	1.22	0.1332	133	1.05	0.0394	175
Historic Areas	1.51	0.1699	106	1.10	0.0428	221

Table A.4.4. Average Number of Days of Activity Per Trip: Lower Keys & Key West, Dec. '95 - May '96

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	1.00	0.0000	58	1.12	0.0616	109
Rental Boat	1.25	0.1461	8	1.33	0.1948	7
Private Boat	2.72	1.0443	31	2.14	0.5656	7
Shore	1.58	0.1042	86	1.58	0.1106	72
Scuba Diving						
Charter/Party Boat	1.60	0.4454	10	1.52	0.2938	36
Rental Boat	0.00	-	0	5.66	3.6078	2
Private Boat	1.22	0.1488	8	1.00	-	0
Shore	0.00	0.0000	0	1.80	0.3341	5
Offshore Fishing						
Charter Boat	2.27	1.1610	10	1.87	0.4777	33
Party Boat	3.33	1.7095	5	1.81	0.2611	76
Rental Boat	1.47	0.2835	13	1.25	0.2232	4
Private Boat	4.83	1.1173	43	2.67	0.9692	8
Flats/Backcountry Fishing						
Guided	2.71	1.3582	6	1.00	0.0000	7
Rental Boat	1.00	-	1	3.33	1.6132	5
Private Boat	5.96	1.6276	27	3.25	1.2143	6
Other Fishing						
Charter Boat	1.00	-	0	1.25	0.3156	3
Party Boat	1.00	-	0	1.00	-	1
Rental Boat	1.00	-	1	2.00	-	1
Private Boat	1.60	0.3571	5	3.00	0.5155	3
Fishing from Shore	1.81	0.1235	107	2.58	0.7578	35
Personal Watercraft						
Rental Boat	1.00	0.0000	8	1.37	0.1467	27
Private Boat	1.89	0.2592	18	2.10	1.0186	8
Sailing						
Charter/Party Boat	1.00	0.0000	2	1.11	0.0711	37
Rental Boat	1.00	-	0	1.00	0.0901	10
Private Boat	1.20	0.1786	5	1.96	1.1803	7

Table A.4.4. Average Number of Days of Activity Per Trip: Lower Keys & Key West, Dec. '95 - May '96
(continued)

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	1.00	0.0000	5	1.06	0.0444	28
Rental Boat	1.00	0.0000	3	1.00	0.0000	5
Private Boat	1.75	0.9469	3	2.80	2.0746	4
Viewing Nature & Wildlife						
Glass-bottom Boat	1.00	0.0000	6	1.00	0.0000	139
Guided Backcountry Excursion	1.00	0.0000	5	1.00	0.0000	8
Private/Rental Boat	2.19	0.5094	37	1.61	0.3588	27
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	2.13	0.3205	184	1.83	0.1408	119
Other Nature Study	1.89	0.4822	73	1.72	0.2258	57
All Beach Activities						
Swimming at Beaches	1.88	0.1408	156	2.08	0.0957	306
Other Beach Activities	2.16	0.2134	176	1.92	0.0953	263
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	2.00	0.8928	3	1.20	0.1509	8
Swimming in Outdoor Pools	5.18	0.9367	74	2.75	0.1216	234
Museum & Historic Sites						
Museums	1.04	0.0331	27	1.09	0.0168	426
Historic Areas	1.36	0.1347	71	1.41	0.0331	776

Table A.4.5. Average Number of Hours of Activity Per Trip: Upper and Middle Keys, June - Nov. 1995

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	4.05	0.1985	87	4.51	0.4222	61
Rental Boat	6.62	0.9153	29	5.80	0.6724	54
Private Boat	5.36	0.7502	65	13.2	1.7338	144
Shore	3.89	0.3722	58	6.91	0.8210	161
Scuba Diving						
Charter/Party Boat	7.43	0.6897	62	7.42	0.9818	37
Rental Boat	6.37	1.8589	8	6.18	1.0479	17
Private Boat	6.66	1.6531	24	7.30	0.9783	62
Shore	3.20	0.5521	5	2.30	0.4246	10
Offshore Fishing						
Charter Boat	4.43	0.7691	7	9.22	1.2157	30
Party Boat	3.50	0.4734	4	8.37	2.6313	16
Rental Boat	13.3	7.0288	3	7.10	1.5808	20
Private Boat	5.78	1.0586	42	27.0	6.5653	101
Flats/Backcountry Fishing						
Guided	5.67	1.1379	3	7.06	1.8976	11
Rental Boat	14.7	5.0496	3	10.1	1.8500	9
Private Boat	5.32	1.8987	11	18.5	3.4479	36
Other Fishing						
Charter Boat	3.50	0.4734	2	3.33	1.1379	3
Party Boat	4.00	-	0	3.82	0.1912	5
Rental Boat	10.0	-	1	6.00	0.9468	6
Private Boat	8.80	4.6519	5	8.65	1.1172	40
Fishing from Shore	4.51	0.4892	56	7.50	0.8179	138
Personal Watercraft						
Rental Boat	1.84	0.2486	25	2.76	0.3478	35
Private Boat	8.55	1.2226	20	11.5	2.4126	26
Sailing						
Charter/Party Boat	4.67	0.8350	3	8.62	5.3378	8
Rental Boat	2.50	1.4202	2	5.50	3.0312	4
Private Boat	12.0	-	1	10.4	3.5783	8

Table A.4.5. Average Number of Hours of Activity Per Trip: Upper & Middle Keys, June - Nov. 1995
(continued)

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	3.60	0.5848	14	3.36	0.8462	8
Rental Boat	2.33	0.8350	3	43.0	20.754	5
Private Boat	4.34	1.3845	9	8.76	1.5081	20
Viewing Nature & Wildlife						
Glass-bottom Boat	2.96	0.1315	46	2.26	0.1711	34
Guided Backcountry Excursion	4.23	0.9416	13	7.05	2.2941	13
Private/Rental Boat	7.06	0.8468	47	10.7	2.0728	86
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	3.21	0.4169	34	10.7	6.0945	124
Other Nature Study	3.91	0.9822	33	16.8	15.127	50
All Beach Activities						
Swimming at Beaches	5.74	0.6144	123	8.84	0.7374	284
Other Beach Activities	6.18	1.1565	43	14.8	1.7596	153
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	4.00	-	0	5.32	2.2217	6
	4.85	0.5442	94	12.2	4.1578	171
Museum & Historic Sites						
Museums	1.88	0.2936	57	2.47	0.3642	87
Historic Areas	3.74	0.7504	32	4.40	0.6094	98

Table A.4.6. Average Number of Hours of Activity Per Trip: Lower Keys & Key West, June - Nov. 1995

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	4.85	0.5449	66	4.79	0.2148	125
Rental Boat	7.44	1.6557	27	4.83	0.7553	28
Private Boat	17.1	2.2544	87	7.00	1.4132	17
Shore	4.34	0.3936	101	4.42	0.3378	101
Scuba Diving						
Charter/Party Boat	4.83	0.4540	20	6.40	0.6136	48
Rental Boat	10.0	3.9809	8	5.32	0.6336	9
Private Boat	12.3	2.7308	33	8.50	3.6844	8
Shore	2.60	0.3787	5	3.54	0.3692	11
Offshore Fishing						
Charter Boat	10.0	4.5900	9	6.57	0.7260	21
Party Boat	4.71	1.0271	7	7.74	2.2745	19
Rental Boat	7.67	2.5129	6	5.93	0.7556	9
Private Boat	8.28	0.9965	63	8.18	1.4713	11
Flats/Backcountry Fishing						
Guided	6.50	0.8199	4	6.96	1.1212	7
Rental Boat	4.00	-	0	6.50	3.0312	4
Private Boat	16.4	4.9576	19	8.00	-	1
Other Fishing						
Charter Boat	5.00	-	1	5.58	1.1489	3
Party Boat	4.00	-	0	5.75	0.8085	4
Rental Boat	8.40	2.8341	5	4.00	-	1
Private Boat	5.83	2.0514	6	9.54	4.2133	8
Fishing from Shore	8.32	2.0751	60	5.85	1.2132	25
Personal Watercraft						
Rental Boat	2.19	0.6716	25	2.49	0.3088	40
Private Boat	7.56	1.7218	17	6.00	3.7872	2
Sailing						
Charter/Party Boat	8.00	5.0840	4	5.85	2.5039	17
Rental Boat	4.00	-	1	2.53	0.8331	10
Private Boat	7.00	2.9869	7	10.3	2.5833	3

Table A.4.6. Average Number of Hours of Activity Per Trip: Lower Keys & Key West, June - Nov. 1995
(continued)

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	2.00	0.3457	6	3.48	0.3646	34
Rental Boat	2.33	0.3156	3	2.15	0.3805	6
Private Boat	10.2	4.3452	4	6.37	2.3505	5
Viewing Nature & Wildlife						
Glass-bottom Boat	3.27	0.3397	20	2.86	0.0978	92
Guided Backcountry Excursion	4.83	1.0202	6	4.63	0.6574	10
Private/Rental Boat	8.22	2.9173	45	4.12	0.7698	32
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	5.38	1.1914	70	3.81	0.4618	45
Other Nature Study	7.12	1.9547	38	3.80	0.8646	24
All Beach Activities						
Swimming at Beaches	6.55	0.7540	167	6.20	0.5629	214
Other Beach Activities	9.08	1.5474	80	6.93	0.9009	96
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	2.58	1.1580	4	2.41	0.6721	4
	6.25	0.8919	58	5.72	0.4141	177
Museum & Historic Sites						
Museums	3.05	0.5282	26	2.66	0.1464	144
Historic Areas	5.72	0.8594	43	5.02	0.1799	335

Table A.4.7. Average Number of Hours of Activity Per Trip: Upper and Middle Keys,
Dec. '95 - May '96

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	4.54	0.2534	139	3.73	0.1332	40
Rental Boat	4.10	0.5500	19	4.10	0.3421	20
Private Boat	4.96	1.0707	43	2.82	0.7165	34
Shore	3.30	0.2128	96	2.71	0.2571	116
Scuba Diving						
Charter/Party Boat	6.10	0.7000	92	6.23	0.8849	22
Rental Boat	3.85	0.4271	13	3.00	0.8928	2
Private Boat	7.29	1.1818	14	4.00	1.1293	5
Shore	2.42	0.2813	11	1.82	0.3960	11
Offshore Fishing						
Charter Boat	4.90	0.3972	29	5.96	0.4566	45
Party Boat	5.73	0.5430	33	6.02	0.3487	51
Rental Boat	16.8	5.8561	22	5.78	0.4368	17
Private Boat	45.1	11.685	56	12.3	3.3232	54
Flats/Backcountry Fishing						
Guided	7.22	2.8146	9	4.15	0.3619	12
Rental Boat	7.76	1.1573	17	5.33	0.7529	6
Private Boat	35.6	5.7381	43	27.3	9.6615	24
Other Fishing						
Charter Boat	3.33	0.5952	3	6.33	1.4880	6
Party Boat	5.00	0.8928	2	5.00	0.8928	4
Rental Boat	17.5	6.6962	2	2.00	0.0000	2
Private Boat	6.86	4.4982	20	10.3	2.7236	9
Fishing from Shore	6.30	1.0816	85	6.41	0.6086	159
Personal Watercraft						
Rental Boat	2.33	0.2217	38	1.91	0.1886	40
Private Boat	8.81	1.4619	27	15.0	4.5641	19
Sailing						
Charter/Party Boat	31.2	24.434	6	3.60	0.4368	12
Rental Boat	4.00	0.8253	11	2.56	0.3814	8
Private Boat	8.42	2.7639	12	10.1	3.6138	23

Table A.4.7. Average Number of Hours of Activity Per Trip: Upper & Middle Keys, Dec. '95 - May '96
(continued)

Activity	Upper Keys			Middle Keys		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	3.18	0.4788	11	2.92	0.4304	10
Rental Boat	11.2	6.5949	6	3.29	0.4332	14
Private Boat	3.83	2.9526	16	3.05	1.2927	16
Viewing Nature & Wildlife						
Glass-bottom Boat	2.70	0.0781	129	3.71	0.1464	37
Guided Backcountry Excursion	4.15	0.6033	34	3.64	0.5553	11
Private/Rental Boat	9.79	1.7960	106	4.46	1.8463	93
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	6.99	2.1244	196	2.51	0.1287	300
Other Nature Study	21.6	7.1493	93	3.24	0.1918	137
All Beach Activities						
Swimming at Beaches	4.94	0.4136	220	5.54	0.2962	363
Other Beach Activities	5.50	0.4300	160	6.46	0.4344	408
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	5.15	0.9312	13	4.20	0.9297	10
	10.6	1.5625	174	6.33	0.6930	213
Museum & Historic Sites						
Museums	1.78	0.1512	132	2.21	0.0693	174
Historic Areas	2.60	0.3972	29	2.38	0.1082	218

Table A.4.8. Average Number of Hours of Activity Per Trip: Lower Keys & Key West,
Dec. '95 - May '96

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Snorkeling						
Charter/Party Boat	3.47	0.1023	58	4.04	0.2979	109
Rental Boat	3.37	0.5044	8	5.11	0.6590	7
Private Boat	4.72	0.8785	31	6.00	0.8928	6
Shore	4.93	0.5374	85	3.02	0.2416	71
Scuba Diving						
Charter/Party Boat	3.70	0.5163	20	4.28	0.5519	36
Rental Boat	4.00	-	0	3.00	1.5462	2
Private Boat	4.56	0.9854	8	4.00	-	0
Shore	1.50	0.4464	2	2.80	0.5206	5
Offshore Fishing						
Charter Boat	8.00	3.2053	10	9.60	2.3681	33
Party Boat	13.6	6.6171	4	9.72	1.5292	74
Rental Boat	7.60	1.6940	13	5.25	0.4274	4
Private Boat	17.0	3.7011	42	16.8	5.8710	8
Flats/Backcountry Fishing						
Guided	11.1	4.4367	6	5.33	0.8492	7
Rental Boat	8.00	-	1	4.33	0.2305	5
Private Boat	19.2	4.9572	26	17.9	7.7023	6
Other Fishing						
Charter Boat	4.00	-	0	6.00	1.4577	3
Party Boat	4.00	-	0	5.00	-	1
Rental Boat	2.00	-	1	8.00	-	1
Private Boat	8.40	3.4991	5	15.7	6.5271	3
Fishing from Shore	6.46	0.5652	107	6.50	1.6356	35
Personal Watercraft						
Rental Boat	2.25	0.4697	8	3.17	0.6553	27
Private Boat	7.58	1.9169	18	7.40	4.1610	8
Sailing						
Charter/Party Boat	3.00	0.0000	2	3.96	0.4018	37
Rental Boat	4.00	-	0	2.75	0.3794	10
Private Boat	3.60	1.0022	5	35.4	12.346	6

Table A.4.8. Average Number of Hours of Activity Per Trip: Lower Keys & Key West,
Dec. '95 - May '96 (continued)

Activity	Lower Keys			Key West		
	Mean	Std. Error	N	Mean	Std. Error	N
Other Boating						
Charter/Party	2.80	0.1786	5	3.48	0.1822	27
Rental Boat	3.33	1.1904	3	2.15	1.0788	5
Private Boat	5.00	1.2626	3	6.37	13.032	4
Viewing Nature & Wildlife						
Glass-bottom Boat	3.17	0.5365	6	2.86	0.0600	137
Guided Backcountry Excursion	3.97	0.8224	5	4.63	1.6199	8
Private/Rental Boat	4.69	0.7218	36	4.12	2.2923	26
Wildlife & Nature Study-Land Based						
Wildlife Observation/photography	3.97	0.4441	182	3.81	0.2706	112
Other Nature Study	3.79	0.5264	68	3.80	0.6207	53
All Beach Activities						
Swimming at Beaches	5.70	0.7940	155	6.20	0.3868	301
Other Beach Activities	5.74	0.5767	175	6.93	0.3671	259
Windsurfing or Sailboarding						
Swimming in Outdoor Pools	10.0	5.3569	2	2.41	0.4542	8
	7.65	1.0577	73	5.72	0.2916	229
Museum & Historic Sites						
Museums	2.07	0.2693	27	2.66	0.0886	422
Historic Areas	3.71	0.4910	70	5.02	0.1181	763

Table A.4.9. Total Number of Days of Activity by Region and Season (Thousands of Days)

Activity	Region/Season							
	Upper Keys		Middle Keys		Lower Keys		Key West	
	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96
All Snorkeling	414.5	168.6	546.1	74.1	140.2	48.3	160.2	150.5
Charter/Party Boat	126.9	55.3	20.4	12.4	9.6	11.2	60.7	58.3
Rental Boat	25.9	11.7	32.6	4.4	15.7	5.4	16.6	6.6
Private Boat	154.0	30.3	350.9	18.4	88.1	14.3	3.4	21.3
Snorkeling from Boat	306.8	97.3	403.9	35.2	113.4	30.9	80.7	86.2
Shore	107.7	71.3	142.2	38.9	26.8	17.4	79.5	64.3
All Scuba Diving	158.0	75.5	140.2	21.8	70.6	7.4	40.0	21.3
Charter/Party Boat	71.4	41.6	28.0	12.6	6.9	4.5	23.9	12.5
Rental Boat	3.0	0.8	3.7	1.5	4.2	0.0	2.4	0.0
Private Boat	78.4	30.1	95.3	4.7	56.7	2.9	7.9	0.5
Scuba from Boat	152.8	72.5	127.0	18.8	67.8	7.4	34.2	13.0
Shore	5.2	3.0	13.2	3.0	2.8	0.0	5.8	8.3
Offshore Fishing	123.1	234.5	397.3	123.1	42.6	56.4	36.6	73.8
Charter Boat	20.8	14.2	15.0	14.1	1.8	5.0	20.3	30.2
Party Boat	4.5	8.6	13.6	12.5	4.1	7.0	4.6	12.1
Rental Boat	6.7	17.4	22.0	8.4	2.0	4.2	2.7	4.2
Private Boat	91.1	194.3	346.7	88.1	34.7	40.2	9.0	27.3
Flats/Backcountry Fishing	43.9	19.7	84.4	62.9	27.7	27.2	9.8	28.8
Guided	0.7	2.6	8.3	9.9	3.5	10.7	3.1	4.6
Rental Boat	0.3	5.9	0.0	4.8	0.0	1.4	2.2	6.8
Private Boat	42.9	11.2	76.1	48.2	24.2	15.1	4.5	17.4
Other Fishing	68.5	23.4	43.8	27.3	9.5	5.9	6.4	13.3
Charter Boat	0.4	0.0	2.2	1.9	0.0	0.5	0.7	0.0
Party Boat	1.1	0.2	1.1	1.3	0.0	0.0	0.4	1.8
Rental Boat	1.5	4.4	4.9	0.6	1.5	0.1	0.4	0.0
Private Boat	65.5	18.8	35.6	23.5	8.0	5.3	4.9	11.5
Fishing from Shore	36.2	68.8	87.8	51.6	19.9	21.9	17.6	56.1
All Fishing	271.7	346.4	613.3	264.9	99.7	111.4	70.4	172.0
Personal Watercraft	108.5	38.4	81.3	57.1	12.8	9.3	35.4	35.6
Rental Boat	43.6	14.0	19.5	15.4	1.5	1.1	32.6	25.4
Private Boat	64.9	24.4	61.8	41.7	11.3	8.2	2.8	10.2
Sailing	29.7	23.4	25.6	48.4	3.0	2.2	22.3	63.1
Charter/Party Boat	3.2	14.9	2.8	4.3	0.0	1.3	15.1	32.1
Rental Boat	22.8	0.6	10.4	2.0	3.0	0.3	2.5	2.3
Private Boat	3.7	7.9	12.4	42.1	0.0	0.6	4.7	28.7
Other Boating	101.8	28.7	61.3	15.3	3.4	4.2	24.1	21.9
Charter/Party Boat	11.0	9.2	3.9	5.3	0.0	1.5	14.3	15.7
Rental Boat	12.7	6.5	26.2	4.3	0.0	0.0	3.5	2.6
Private Boat	78.1	13.0	31.2	5.7	3.4	2.7	6.3	3.6

Table A.4.9. Total Number of Days of Activity by Region and Season (Thousands of Days) - (continued)

Activity	Region/Season							
	Upper Keys		Middle Keys		Lower Keys		Key West	
	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96
Viewing Nature & Wildlife	152.4	218.1	189.9	57.8	54.4	34.4	64.3	84.1
Glass-bottom Boat	53.8	72.0	6.5	7.8	2.2	5.8	40.3	48.2
Guided Backcountry Excursion	16.9	16.8	8.6	4.9	0.0	2.3	5.3	4.6
Private/Rental Boat	81.7	129.3	174.8	45.1	52.2	26.3	18.7	31.3
Wildlife & Nature Study - Land	124.5	780.2	253.3	126.0	77.8	113.6	115.2	199.2
Wildlife Observation/photography	40.6	373.3	77.2	69.9	39.7	70.0	57.6	112.0
Other Nature Study	83.9	406.9	176.1	56.1	38.1	43.6	57.6	87.2
All Viewing Wildlife & Nature	276.9	998.3	443.2	183.8	132.2	148.0	179.5	283.3
All Beach Activities	338.9	393.4	514.5	352.1	48.8	133.6	419.7	487.6
Swimming at beaches	253.4	231.1	323.9	188.3	35.5	60.0	288.5	264.8
Other Beach Activities	85.5	162.3	190.6	163.8	13.3	73.6	131.2	222.8
Windsurfing or Sailboarding	0.0	7.5	4.3	3.7	0.0	1.5	3.7	3.7
Swimming in Outdoor Pools	220.3	537.7	596.9	169.0	28.3	134.3	435.8	366.9
Museums & Historic Sites	67.5	125.2	80.7	72.3	48.6	42.6	539.9	718.5
Museums	28.1	44.2	30.9	31.4	19.8	9.6	120.7	215.9
Historic Areas	39.4	81.0	49.8	40.9	28.8	33.0	419.2	502.6

Table A.4.10. Total Annual Number of Days of Activity by Region (Thousands of Days)

Activity	Region				
	Upper Keys	Middle Keys	Lower Keys	Key West	All Keys
All Snorkeling	583.1	620.2	188.5	310.7	1,702.5
Charter/Party Boat	182.2	32.8	20.8	119.0	354.8
Rental Boat	37.6	37.0	21.1	23.2	118.9
Private Boat	184.3	369.3	102.4	24.7	680.7
Snorkeling from Boat	404.1	439.1	144.3	166.9	1,154.4
Shore	179.0	181.1	44.2	143.8	548.1
All Scuba Diving	233.5	162.0	78.0	61.0	534.5
Charter/Party Boat	113.0	40.6	11.4	36.4	201.4
Rental Boat	3.8	5.2	4.2	2.4	15.6
Private Boat	108.5	100.0	59.6	8.4	276.5
Scuba from Boat	225.3	145.8	75.2	47.2	493.5
Shore	8.2	16.2	2.8	13.8	41.0
Offshore Fishing	357.6	520.4	99.0	110.4	1,087.4
Charter Boat	35.0	29.1	6.8	50.5	121.4
Party Boat	13.1	26.1	11.1	16.7	67.0
Rental Boat	24.1	36.4	6.2	6.9	67.6
Private Boat	285.4	434.8	74.9	36.3	831.4
Flats/Backcountry Fishing	63.6	147.3	54.9	38.6	304.4
Guided	3.3	18.2	14.2	7.7	43.4
Rental Boat	6.2	4.8	1.4	9.0	21.4
Private Boat	54.1	124.3	39.3	21.9	239.6
Other Fishing	91.9	71.1	15.4	19.7	198.1
Charter Boat	0.4	4.1	0.5	0.7	5.7
Party Boat	1.3	2.4	0.0	2.2	5.9
Rental Boat	5.9	5.5	1.6	0.4	13.4
Private Boat	84.3	59.1	13.3	16.4	173.1
Fishing from Shore	105.0	139.4	41.8	73.7	359.9
All Fishing	618.1	878.2	211.1	242.4	1,949.8
Personal Watercraft	146.9	188.4	22.1	71.0	378.4
Rental Boat	57.6	34.9	2.6	58.0	153.1
Private Boat	89.3	103.5	19.5	13.0	225.3
Sailing	53.1	74.0	5.2	85.4	217.7
Charter/Party	18.1	7.1	1.3	47.2	73.7
Rental Boat	23.4	12.4	3.3	4.8	43.9
Private Boat	11.6	54.5	0.6	33.4	100.1

Table A.4.10. Total Annual Number of Days of Activity by Region (Thousands of Days) - (continued)

Activity	Region				
	Upper Keys	Middle Keys	Lower Keys	Key West	All Keys
Other Boating	130.5	76.6	7.6	46.0	260.7
Charter/Party Boat	20.2	9.2	1.5	30.0	60.9
Rental Boat	19.2	30.5	0.0	6.1	55.8
Private Boat	91.1	36.9	6.1	9.9	107.1
Viewing Nature & Wildlife	370.5	247.7	88.8	148.4	855.4
Glass-bottom Boat	125.8	14.3	8.0	88.5	236.6
Guided Backcountry Excursion	33.7	13.5	2.3	9.9	59.4
Private/Rental Boat	211.0	219.9	78.5	50.0	559.4
Wildlife & Nature Study - Land	904.7	379.3	191.4	314.4	1,789.8
Wildlife Observation/Photography	413.9	147.1	109.7	169.6	840.3
Other Nature Study	490.8	232.2	81.7	144.8	949.5
All Viewing Wildlife & Nature	1,275.2	627.0	280.2	462.8	2,645.2
All Beach Activities	732.3	866.6	182.4	907.3	2,688.6
Swimming at beaches	484.5	512.2	95.5	553.3	1,645.5
Other Beach Activities	247.8	354.4	86.9	354.0	1,043.1
Windsurfing or Sailboarding	7.5	8.0	1.5	7.4	24.4
Swimming in Outdoor Pools	758.0	765.9	162.9	802.7	2,489.2
Museums & Historic Sites	192.7	153.0	91.2	1,258.4	1,695.3
Museums	72.3	62.3	29.4	336.6	500.6
Historic Areas	120.4	90.7	61.8	921.8	1,194.7

Table A.4.11. Number of Hours of Activity by Region and Season (Thousands of Hours)

Activity	Region/Season							
	Upper Keys		Middle Keys		Lower Keys		Key West	
	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96
All Snorkeling	1,065.8	451.8	1,735.9	155.6	701.4	131.6	623.7	418.1
Charter/Party Boat	404.7	226.2	62.5	43.1	35.4	38.8	269.0	210.2
Rental Boat	119.8	22.9	98.4	15.9	66.8	13.7	64.7	25.3
Private Boat	337.0	69.7	1,218.9	32.4	533.4	24.9	120.3	59.8
Snorkeling from Boat	861.5	318.8	1,379.8	91.4	635.6	77.4	454.0	295.3
Shore	204.3	133.0	356.1	64.2	65.8	54.2	169.7	122.8
All Scuba Diving	464.0	210.6	340.6	64.8	73.9	21.0	118.2	50.2
Charter/Party Boat	261.4	140.3	101.9	40.0	22.6	10.3	69.3	35.3
Rental Boat	11.9	2.9	11.6	4.6	22.5	0.0	5.9	0.0
Private Boat	176.9	57.9	207.7	15.8	23.0	10.7	31.8	2.0
Scuba Diving from Boat	450.2	201.1	321.2	60.4	68.1	21.0	107.0	37.3
Shore	13.8	9.5	19.4	4.4	5.8	0.0	11.2	12.9
Offshore Fishing	386.3	1,061.5	2,157.5	553.9	228.7	209.2	177.5	409.4
Charter Boat	71.3	54.2	89.7	74.6	15.0	17.8	99.5	155.2
Party Boat	11.8	43.0	77.3	52.4	19.4	28.5	22.2	64.9
Rental Boat	9.0	24.7	81.5	36.7	11.5	21.7	10.0	17.5
Private Boat	294.2	939.6	1,909.0	390.2	182.8	141.2	45.8	171.8
Flats/Backcountry Fishing	110.2	77.4	129.9	87.3	56.7	65.2	58.8	54.7
Guided	4.2	12.8	32.6	35.6	17.0	43.8	15.6	24.5
Rental Boat	4.5	15.8	0.0	16.9	0.0	11.2	7.3	8.8
Private Boat	101.5	48.8	97.3	34.8	39.7	10.2	35.9	21.4
Other Fishing	172.0	73.7	172.7	97.4	56.5	29.9	18.2	24.3
Charter Boat	1.3	0.0	7.5	8.8	0.0	2.0	4.2	0.0
Party Boat	4.5	4.2	4.3	6.7	0.0	0.0	2.1	9.0
Rental Boat	1.5	5.0	29.2	1.1	12.6	0.1	1.5	0.0
Private Boat	164.7	64.5	131.7	80.8	43.9	27.8	10.4	15.3
Fishing from Shore	118.2	156.9	282.6	189.0	91.8	89.5	51.4	141.3
All Fishing	786.7	1,369.5	2,742.7	927.6	433.7	393.8	305.9	629.7
Personal Watercraft	227.5	91.1	227.8	175.8	51.4	35.4	80.6	94.8
Rental Boat	77.1	19.4	47.5	26.2	3.3	2.6	69.4	58.9
Private Boat	150.4	71.7	180.3	149.6	48.1	32.8	11.2	35.9
Sailing	30.2	46.2	46.2	35.4	12.0	6.6	99.6	180.3
Charter/Party Boat	15.2	2.0	21.5	13.7	0.0	3.8	84.1	114.6
Rental Boat	7.5	14.2	8.2	5.2	12.0	1.0	4.3	6.3
Private Boat	7.5	30.0	16.5	16.5	0.0	1.8	11.2	59.4
Other Boating	134.0	197.6	86.5	41.2	9.0	11.9	67.8	208.8
Charter/Party Boat	36.4	25.0	13.0	15.6	0.0	4.3	46.0	37.4
Rental Boat	14.8	18.3	9.0	14.2	0.0	0.0	7.6	8.7
Private Boat	82.8	154.3	64.5	11.4	9.0	7.6	14.2	162.7

Table A.4.11. Number of Hours of Activity by Region and Season (Thousands of Hours) - (continued)

Activity	Region/Season							
	Upper Keys		Middle Keys		Lower Keys		Key West	
	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96	June - Nov. '95	Dec. '95 - May '96
Viewing Nature & Wildlife	416.4	481.9	503.1	154.5	196.5	84.2	195.0	320.1
Glass-bottom Boat	151.8	192.6	13.8	28.8	7.3	18.5	114.2	154.2
Guided Backcountry Excursion	42.7	169.8	28.2	18.0	0.0	9.3	20.8	25.8
Private/Rental Boat	221.9	119.5	461.1	107.7	189.2	56.4	60.0	140.1
Wildlife & Nature Study - Land	228.3	1,527.7	914.9	247.9	244.3	218.0	249.7	389.5
Wildlife Observation/Photography	80.5	518.8	256.9	129.9	105.7	130.5	107.6	210.5
Other Nature Study	147.8	1,008.9	658.0	118.0	138.6	87.5	142.1	179.0
All Viewing Wildlife & Nature	644.7	2,009.6	1,418.0	402.4	440.8	302.2	444.7	709.6
All Beach Activities	926.9	773.4	1,346.2	875.9	168.4	377.4	1,073.5	1,554.5
Swimming at Beaches	621.6	410.6	793.2	444.0	114.0	181.9	718.4	846.7
Other Beach Activities	305.3	362.8	553.0	431.9	54.4	195.5	355.1	707.8
Windsurfing or Sailboarding	0.0	14.4	8.0	6.7	0.0	3.0	9.0	7.6
Swimming in Outdoor Pools	470.8	813.9	984.8	389.0	83.0	198.3	828.2	687.1
Museums & Historic Areas	156.4	204.0	185.0	154.7	136.0	109.2	1,441.9	2,254.5
Museums	47.2	64.5	51.5	66.2	35.2	19.1	252.9	622.0
Historic Areas	109.2	139.5	133.5	88.5	100.6	90.1	1,189.0	1,632.5

Table A.4.12. Total Annual Number of Hours of Activity by Region (Thousands of Hours)

Activity	Region				
	Upper Keys	Middle Keys	Lower Keys	Key West	All Keys
All Snorkeling	1,517.6	1,891.5	833.0	1,041.8	5,283.9
Charter/Party Boat	630.9	105.6	74.2	479.2	1,289.9
Rental Boat	142.7	114.3	80.5	90.0	427.5
Private Boat	406.7	1,251.3	558.3	180.1	2,396.4
Snorkeling from Boat	1,180.3	1,471.2	713.0	749.3	4,113.8
Shore	337.3	420.3	120.0	292.5	1,170.1
All Scuba Diving	674.6	405.4	94.9	168.4	1,343.3
Charter/Party Boat	401.7	141.9	32.9	104.6	681.1
Rental Boat	14.8	16.2	22.5	5.9	59.4
Private Boat	234.8	223.5	33.7	33.8	525.8
Scuba Diving from Boat	651.3	381.6	89.1	144.3	1,266.3
Shore	23.3	23.8	5.8	24.1	77.0
Offshore Fishing	1,447.8	2,711.4	437.9	586.9	5,184.0
Charter Boat	125.5	164.3	32.8	254.7	577.3
Party Boat	54.8	129.7	47.9	87.1	712.3
Rental Boat	33.7	118.2	33.2	27.5	212.6
Private Boat	1,233.8	2,299.2	324.0	217.6	4,074.6
Flats/Backcountry Fishing	187.6	217.2	121.9	113.5	640.2
Guided	17.0	68.2	60.8	40.1	186.1
Rental Boat	20.3	16.9	11.2	16.1	64.5
Private Boat	150.3	132.1	49.9	57.3	389.6
Other Fishing	245.7	270.1	86.4	42.5	644.7
Charter Boat	1.3	16.3	2.0	4.2	23.8
Party Boat	8.7	11.0	0.0	11.1	30.8
Rental Boat	6.5	30.3	12.7	1.5	51.0
Private Boat	229.2	212.5	71.7	25.7	539.1
Fishing from Shore	275.1	471.6	181.3	192.7	1,120.7
All Fishing	2,152.2	3,670.3	827.5	935.6	7,589.6
Personal Watercraft	318.6	403.6	86.8	175.4	984.4
Rental Boat	96.5	73.7	5.9	128.3	304.4
Private Boat	222.1	329.9	80.9	47.1	680.0
Sailing	76.4	81.6	18.6	279.9	456.5
Charter/Party Boat	17.2	35.2	3.8	198.7	254.9
Rental Boat	21.7	13.4	13.0	10.6	58.7
Private Boat	37.5	33.0	1.8	70.6	142.9

Table A.4.12. Total Annual Number of Hours of Activity by Region (Thousands of Hours)
(continued)

Activity	Region				
	Upper Keys	Middle Keys	Lower Keys	Key West	All Keys
Other Boating	331.6	127.7	20.9	276.6	756.8
Charter Boat	61.4	28.6	4.3	83.4	177.7
Rental Boat	33.1	23.2	0.0	16.3	72.6
Private Boat	237.1	75.9	16.6	176.9	506.5
Viewing Nature & Wildlife	898.3	657.6	280.7	515.1	2,351.7
Glass-bottom Boat	344.4	42.6	25.8	268.4	681.2
Guided Backcountry Excursion	212.5	46.2	9.3	46.6	314.6
Private/Rental Boat	341.4	568.8	245.6	200.1	1,355.9
Wildlife & Nature Study - Land	1,756.0	1,162.8	462.3	639.2	4,020.3
Wildlife Observation/Photography	599.3	386.8	236.2	318.1	1,540.4
Other Nature Study	1,156.7	776.0	226.1	321.1	2,479.9
All Viewing Wildlife & Nature	2,654.3	1,820.4	743.0	1,154.3	6,372.0
All Beach Activities	1,700.3	2,222.1	545.8	2,628.0	7,096.2
Swimming at Beaches	1,032.2	1,237.2	295.9	1,565.1	4,130.4
Other Beach Activities	668.1	984.9	249.9	1,062.9	2,965.8
Windsurfing or Sailboarding	14.4	14.7	3.0	16.6	48.7
Swimming in Outdoor Pools	1,284.7	1,373.8	281.3	1,515.3	4,455.1
Museums & Historic Sites	360.4	339.7	245.2	3,696.4	4,641.7
Museums	111.7	117.7	54.5	874.9	1,158.8
Historic Areas	248.7	222.0	190.7	2,821.5	3,482.9

Chapter 5. Methods of Estimating the Economic Contribution to Monroe County

This Chapter provides the details on how we estimated the economic contribution that recreating visitors had on Monroe County. The results of this estimation are reported in “Economic Contribution of Recreating Visitors to the Florida Keys/ Key West” (English et al 1996). In this report, estimates of the economic contribution of recreating visitors was reported for Monroe County and for the three South Florida counties (Dade, Broward, and Monroe). The IMPLAN input-output model was used for estimating the economic contribution for the South Florida economy. A more simplified approach was used for the Monroe County economy because the IMPLAN input-output model for Monroe County could not be properly calibrated due to the many interconnections with the larger South Florida economy. Here, the more simplified approach for Monroe County is documented.

The Use of Census Ratios. The simplified approach for Monroe County used several types of ratios on economic measurements for the Monroe County economy from the U.S. Department of Commerce, Census Bureau, Census of Business 1992 and from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System 1994. Table A.5.1 shows the wages-to-sales and wages-to-employment ratios by standard industrial classification (SIC). Table A.5.2 shows the derivation of the total income to wages & salaries ratio and the proprietor’s income to proprietors employment ratios. These ratios are fundamental to estimating the direct income and employment impacts from visitor expenditures.

Direct Wages & Salaries and Employment. To estimate the direct wages & salaries and wages & salaries related employment impacts in Monroe County, first required estimating the total expenditures by spending category and then matching each spending category to the appropriate SIC from Table A.5.1. Total expenditures are equal to total visitation (measured in person-trips or visits) times the average expenditure per person per trip. This was done for each category of spending for each season. There were 1,172,004 person-trips of visitation during the June - November 1995 season and 1,368,484 person-trips of visitation during the December 1995 - May 1996 season (see Chapter 1). Direct wages & salaries are first derived by multiplying total expenditures by category by the appropriate wages-to-sales ratio. Direct wages & salaries employment is then equal to the direct wages & salaries divided by the wages-to-employment ratios. Table A.5.3 shows these calculations for the June - November 1995 season and Table A.5.4 shows the same calculations for the December 1995 - May 1996 season.

Total Output, Income and Employment. To estimate total output required two steps. In step one, the total expenditures from Tables A.5.3 and A.5.4 are multiplied by the percent of inputs purchased locally (.70). This percent was taken from the Monroe County IMPLAN input-output model tables and revised downwards from .77 to .70 using information about the percent of wages & salaries to nonresidents (commuter workers) to Monroe County. Total output was then equal to direct output times an output multiplier of 1.6. Table A.5.5 shows these calculations.

Total estimate total income also required two steps. In step one, the direct wages & salaries derived and reported in Tables A.5.3 and A.5.4 are multiplied by the total income-to-wages & salaries ratio (1.2222) from Table A.5.2. This yields an estimate of total direct income, that is, income to wages & salary workers and income to proprietors. In step two, total direct income was multiplied by an income multiplier of 1.6 to get the total income impact on Monroe County. These calculations are shown in Table A.5.5.

Finally, to estimate the total employment impact required several steps. First, direct wages & salaries employment from Tables A.5.3 and A.5.4 were multiplied by the employment multiplier of 1.6 to get the total wages & salaries employment. Second, direct proprietors income was divided by the proprietors income-to-employment ratio from Table 1.5.2 (18,690) to yield an estimate of direct proprietors employment. Direct proprietors employment was then multiplied by the employment multiplier of 1.6 to get an estimate of the total proprietors employment. Total wages & salaries employment was then added to the total proprietors employment to get an estimate of the total employment impact. These calculations are all shown in Table A.5.6.

Percent of Monroe County Economy. The economic contribution of recreating visitors to Monroe County can be put into perspective by estimating the proportion of the economy dependent on recreating visitors. We obtained actual reported gross sales for Monroe County for the June - November 1995 season and for the December 1995 - May 1996 season from the Florida Department of Revenue. The percent of output/sales accounted for by recreating visitors is estimated by dividing the total output by the total reported gross sales in Monroe County. These calculations are presented in Table A.5.5.

For income, the latest available information for Monroe County was from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System 1994. We took the ratio of reported income for 1994 to reported sales for 1994 for Monroe County and multiplied it by the reported sales for the June - November 1995 season and for the December 1995 - May 1996 season, and for the year June 1995 - May 1996 to get estimates of total Monroe County reported income. Our estimates of total income from visitor spending was then divided by these reported incomes to get estimates of the percent of Monroe County's income dependent on recreating visitors. These calculations are shown in Table A.5.5.

For employment, we obtained an estimate of total Monroe County employment from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System 1994 and projected it to the time period of our study June - May 1996. We estimated this to be approximately 47,000. We also used the relationship between summer and winter employment to estimate total employment during the June - November 1995 season. The percent of Monroe County employment dependent on recreating visitors was then calculated as the total employment from visitor spending divided by the total Monroe County employment. These calculations are presented in Table A.5.6.

Table A.5.1. Wages-to-Sales and Wages-to-Employment Ratios for Monroe County

SIC	Industry	Wages-to-Sales	Wages-to-Employment
70	Hotels and Motels	.2418	14,874
72	Personal Services	.2673	10,083
73	Business Services	.3077	14,416
80	Health Services	.3689	24,081
89	Other Services	.3556	48,643
75	Automotive Repair, Services and Parking	.2213	18,036
751	Automotive Rental and Leasing	.1542	19,577
753	Automotive Repair	.2191	19,188
54	Food Stores	.1024	12,492
554	Gasoline Service Stations	.0644	13,951
58	Eating and Drinking Places	.2415	8,902
56	Apparel and Accessory Stores	.1413	12,621
53	General Merchandise Stores	.1116	10,636
591	Drug and Proprietary Stores	.1023	16,197
59	Miscellaneous Retail Stores	.1666	13,528
78,79,84	Amusement and Recreation Services including Motion Pictures and Museums	.2806	14,398
79 ex. 792, 793, 84	Commercial Sports and Other Recreation Services, including Museums	.2927	15,273

Source: U.S. Department of Commerce, Census Bureau, Census of Business 1992

Table A.5.2. Derivation of Total Income to Wages & Salaries Ratio for Monroe County

Employment by Place of Work	46,784
Wage and Salary Employment	36,621
Proprietors Employment	10,163
Wages & Salaries and other Labor Income	854,877 (000's)
Proprietor's Income	189,947 (000's)
Total Income by Place of Work	1,044,824 (000's)
Total Income-to-Wages & Salaries Ratio	1.2222
Proprietor's Income-to-Proprietor's Employment	18,690

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System 1994

Table A.5.3. Derivation of Direct Wages and Salaries Income and Employment for Monroe County, June - November 1995

Category	Expenditures Per Person Per Trip	Estimated Expenditures	Wages to Sales Ratio	Total Wages	Wages to Employment Ratio	Estimated Employment
Lodging	150.38	176,245,961.52	0.242	42,616,273.50	14874	2,865.15
Publicly Owned						
Hotel/motel/bed & breakfast/cabin, etc.	19.66	23,041,598.64	0.2418	5,571,458.55	14874	374.58
Camping site (RV/tent/camper)	2.10	2,461,208.40	0.2418	595,120.19	14874	40.01
Privately Owned						
Hotel/motel/bed & breakfast/cabin, etc.	91.10	106,769,564.40	0.2418	25,816,880.67	14874	1,735.71
Rental home, cottage, cabin, condo	30.17	35,359,360.68	0.2418	8,549,893.41	14874	574.82
Camping site (RV/tent/camper)	7.35	8,614,229.40	0.2418	2,082,920.67	14874	140.04
Food and Beverages	112.01	131,276,168.04		24,334,961.07		2,886.94
Food & drinks consumed at restuarants & bars	81.61	95,647,246.44	0.2415	23,098,810.02	8902	2,594.79
Beverages purchased at a store for carry-out	10.30	12,071,641.20	0.1024	1,236,136.06	12492	98.95
Food purchased at a store for carry-out	20.11	23,569,000.44	0.1024	2,413,465.65	12492	193.20
Transportation	39.53	46,329,318.12		7,313,081.11		436.58
Rental automobile, motor home, trailer, motor-cycle or other recreation vehicle	8.66	10,149,554.64	0.1542	1,565,061.33	19577	79.94
Gas & Oil - auto or RV	12.64	14,814,130.56	0.0644	954,030.01	13951	68.38
Repair & Service - auto or RV	0.91	1,066,523.64	0.2191	233,675.33	19188	12.18
Parking fees & tolls	1.82	2,133,047.28	0.2213	472,043.36	18036	26.17
Taxi fare	0.39	457,081.56	0.2213	101,152.15	18036	5.61
Bus Fare						
a) Package tour	0.57	668,042.28	0.2418	161,532.62	14874	10.86
b) Any other bus fare	0.28	328,161.12	0.2213	72,622.06	18036	4.03
Airline fares						
a) Package tours	5.18	6,070,980.72	0.2418	1,467,963.14	14874	98.69
b) Any other airline fare	9.09	10,653,516.36	0.2213	2,357,623.17	18036	130.72
		0.00				
Boating	28.32	33,191,153.28		6,776,609.17		438.60
Boat, jet ski, and wave runner rental	10.37	12,153,681.48	0.2927	3,557,382.57	15273	232.92
Boat fuel and oil	10.06	11,790,360.24	0.0644	759,299.20	13951	54.43
Boat repairs	2.86	3,351,931.44	0.2191	734,408.18	19188	38.27
Boat launch fees	0.48	562,561.92	0.2927	164,661.87	15273	10.78
Boat slip or marina fees (this trip only)	0.33	386,761.32	0.2927	113,205.04	15273	7.41
Sailing charters or sunset cruises	4.22	4,945,856.88	0.2927	1,447,652.31	15273	94.79
Fishing	10.14	11,884,120.56	0.293	3,478,482.09	15273	227.75
Cut bait	1.59	1,863,486.36	0.2927	545,442.46	15273	35.71
Live bait	0.47	550,841.88	0.2927	161,231.42	15273	10.56
Daily or special fishing permits	0.71	832,122.84	0.2927	243,562.36	15273	15.95
Fishing lines, fly lines, fish nets, traps	1.41	1,652,525.64	0.2927	483,694.25	15273	31.67
Charter/party boat/guide service	5.97	6,996,863.88	0.2927	2,047,982.06	15273	134.09

Table A.5.3. Derivation of Direct Wages and Salaries Income and Employment for Monroe County, June - November 1995 (Continued)

Category	Expenditures Per Person Per Trip	Estimated Expenditures	Wages to Sales Ratio	Total Wages	Wages to Employment Ratio	Estimated Employment
Scuba Diving/Snorkeling	18.51	21,693,794.04	0.293	6,349,773.52	15273	415.75
Rental fee for equipment	7.47	8,754,869.88	0.2927	2,562,550.41	15273	167.78
Charter/party boat/guide service	11.05	12,950,644.20	0.2927	3,790,653.56	15273	248.19
Sightseeing	9.84	11,532,519.36	0.293	3,375,568.42	15273	221.02
Sightseeing tours	3.36	3,937,933.44	0.2927	1,152,633.12	15273	75.47
Glass-bottom boat rides	1.70	1,992,406.80	0.2927	583,177.47	15273	38.18
Backcountry excursions, kayak tours	0.34	398,481.36	0.2927	116,635.49	15273	7.64
Park entrance fees	1.04	1,218,884.16	0.2927	356,767.39	15273	23.36
Admission to tourist, amusement, festivals and other commercial attractions	3.39	3,973,093.56	0.2927	1,162,924.49	15273	76.14
Other Activity Expenditures	5.36	6,281,941.44	0.293	1,838,724.26	15273	120.39
Rental fee for recreation equipment (bicycles, golf carts or others not listed above)	2.66	3,117,530.64	0.2927	912,501.22	15273	59.75
Guide service, tour, or outfitters (not listed above, like parasailing)	1.25	1,465,005.00	0.2927	428,806.96	15273	28.08
Admission to motion pictures, theaters, museums, etc.	1.46	1,711,125.84	0.2927	500,846.53	15273	32.79
Miscellaneous Expenditures	33.62	39,402,774.48		5,886,799.12		446.76
Film purchases	1.72	2,015,846.88	0.1023	206,221.14	16197	12.73
Film development	0.58	679,762.32	0.1023	69,539.69	16197	4.29
Footware	1.94	2,273,687.76	0.1413	321,272.08	12621	25.46
Clothing	15.07	17,662,100.28	0.1413	2,495,654.77	12621	197.74
Souvenirs and gifts (not clothing)	14.31	16,771,377.24	0.1666	2,794,111.45	13528	206.54
Services	5.29	6,199,901.16		2,112,260.62		108.62
Barber, laundry, and other personal services	0.65	761,802.60	0.2673	203,629.83	10083	20.20
Telephone, fax, and other business services	1.27	1,488,445.08	0.3077	457,994.55	14416	31.77
Physician, dentist, and other medical services	2.96	3,469,131.84	0.3689	1,279,762.74	24081	53.14
Other Services	0.41	480,521.64	0.3556	170,873.50	48643	3.51
Total - Trip	413.02	484,061,092.08		104,082,532.86		8,167.57
Annual Boat Storage/Marina	0.33	386,761.32	0.2927	113,205.04	15273	7.41
Annual Condo/Time Share	4.36	5,109,937.44	0.2418	1,235,582.87	14874	83.07
Annual RV/Trailer Park	4.82	5,649,059.28	0.2418	1,365,942.53	14874	91.83
Total Annual Expense Items	9.51	11,145,758.04		2,714,730.45		182.32
Total All	422.53	495,206,850.12		106,797,263.31		8,349.89

Table A.5.4. Derivation of Direct Wages and Salaries Income and Employment for Monroe County, December 1995 - May 1996

Category	Expenditures Per Person Per Trip	Estimated Expenditures	Wages to Sales Ratio	Total Wages	Wages to Employment Ratio	Estimated Employment
Lodging	187.38	256,426,531.92	0.242	62,003,935.42	14874	4,168.61
Publicly Owned						
Hotel/motel/bed & breakfast/cabin, etc.	18.71	25,604,335.64	0.2418	6,191,128.36	14874	416.24
Camping site (RV/tent/camper)	3.80	5,200,239.20	0.2418	1,257,417.84	14874	84.54
Privately Owned						
Hotel/motel/bed & breakfast/cabin, etc.	110.57	151,313,275.88	0.2418	36,587,550.11	14874	2,459.83
Rental home, cottage, cabin, condo	34.10	46,665,304.40	0.2418	11,283,670.60	14874	758.62
Camping site (RV/tent/camper)	20.20	27,643,376.80	0.2418	6,684,168.51	14874	449.39
Food and Beverages	138.93	190,123,482.12		35,803,332.09		4,255.19
Food & drinks consumed at restuarants & bars	104.09	142,445,499.56	0.2415	34,400,588.14	8902	3,864.37
Beverages purchased at a store for carry-out	10.01	13,698,524.84	0.1024	1,402,728.94	12492	112.29
Food purchased at a store for carry-out	24.83	33,979,457.72	0.1024	3,479,496.47	12492	278.54
Transportation	52.42	71,735,931.28		11,650,327.15		678.16
Rental automobile, motor home, trailer, motor-cycle or other recreation vehicle	16.09	22,018,907.56	0.1542	3,395,315.55	19577	173.43
Gas & Oil - auto or RV	13.00	17,790,292.00	0.0644	1,145,694.80	13951	82.12
Repair & Service - auto or RV	3.15	4,310,724.60	0.2191	944,479.76	19188	49.22
Parking fees & tolls	1.28	1,751,659.52	0.2213	387,642.25	18036	21.49
Taxi fare	1.09	1,491,647.56	0.2213	330,101.61	18036	18.30
Bus Fare						
a) Package tour	0.57	780,035.88	0.2418	188,612.68	14874	12.68
b) Any other bus fare	0.41	561,078.44	0.2213	124,166.66	18036	6.88
Airline fares						
a) Package tours	5.76	7,882,467.84	0.2418	1,905,980.72	14874	128.14
b) Any other airline fare	11.07	15,149,117.88	0.2213	3,352,499.79	18036	185.88
Boating	15.88	21,731,525.92		5,056,343.11		316.29
Boat, jet ski, and wave runner rental	3.66	5,008,651.44	0.2927	1,466,032.28	15273	95.99
Boat fuel and oil	2.86	3,913,864.24	0.0644	252,052.86	13951	18.07
Boat repairs	4.08	5,583,414.72	0.2191	1,223,326.17	19188	63.75
Boat launch fees	0.09	123,163.56	0.2927	36,049.97	15273	2.36
Boat slip or marina fees (this trip only)	1.26	1,724,289.84	0.2927	504,699.64	15273	33.05
Sailing charters or sunset cruises	3.93	5,378,142.12	0.2927	1,574,182.20	15273	103.07
Fishing	16.36	22,388,398.24	0.2927	6,553,084.16	15273	429.06
Cut bait	1.17	1,601,126.28	0.2927	468,649.66	15273	30.68
Live bait	0.78	1,067,417.52	0.2927	312,433.11	15273	20.46
Daily or special fishing permits	0.72	985,308.48	0.2927	288,399.79	15273	18.88
Fishing lines, fly lines, fish nets, traps	0.61	834,775.24	0.2927	244,338.71	15273	16.00
Charter/party boat/guide service	13.08	17,899,770.72	0.2927	5,239,262.89	15273	343.04

Table A.5.4. Derivation of Direct Wages and Salaries Income and Employment for Monroe County, December 1995 - May 1996 (Continued)

Category	Expenditures Per Person Per Trip	Estimated Expenditures	Wages to Sales Ratio	Total Wages	Wages to Employment Ratio	Estimated Employment
Scuba Diving/Snorkeling	6.72	9,196,212.48	0.293	2,691,731.39	15273	176.24
Rental fee for equipment	1.47	2,011,671.48	0.2927	588,816.24	15273	38.55
Charter/party boat/guide service	5.24	7,170,856.16	0.2927	2,098,909.60	15273	137.43
Sightseeing	13.04	17,845,031.36	0.293	5,223,240.68	15273	341.99
Sightseeing tours	4.78	6,541,353.52	0.2927	1,914,654.18	15273	125.36
Glass-bottom boat rides	2.39	3,270,676.76	0.2927	957,327.09	15273	62.68
Backcountry excursions, kayak tours	0.46	629,502.64	0.2927	184,255.42	15273	12.06
Park entrance fees	1.38	1,888,507.92	0.2927	552,766.27	15273	36.19
Admission to tourist, amusement, festivals and other commercial attractions	4.03	5,514,990.52	0.2927	1,614,237.73	15273	105.69
Other Activity Expenditures	7.34	10,044,672.56	0.293	2,940,075.66	15273	192.50
Rental fee for recreation equipment (bicycles, golf carts or others not listed above)	3.20	4,379,148.80	0.2927	1,281,776.85	15273	83.92
Guide service, tour, or outfitters (not listed above,like parasailing)	2.18	2,983,295.12	0.2927	873,210.48	15273	57.17
Admission to motion pictures, theaters, museums, etc.	1.95	2,668,543.80	0.2927	781,082.77	15273	51.14
Miscellaneous Expenditures	38.99	53,357,191.16		7,980,994.58		608.60
Film purchases	1.34	1,833,768.56	0.1023	187,594.52	16197	11.58
Film development	0.60	821,090.40	0.1023	83,997.55	16197	5.19
Footware	2.42	3,311,731.28	0.1413	467,947.63	12621	37.08
Clothing	18.95	25,932,771.80	0.1413	3,664,300.66	12621	290.33
Souvenirs and gifts (not clothing)	15.69	21,471,513.96	0.1666	3,577,154.23	13528	264.43
Services	12.98	17,762,922.32		5,895,953.20		268.03
Barber, laundry, and other personal services	1.83	2,504,325.72	0.2673	669,406.26	10083	66.39
Telephone, fax, and other business services	3.63	4,967,596.92	0.3077	1,528,529.57	14416	106.03
Physician, dentist, and other medical services	1.85	2,531,695.40	0.3689	933,942.43	24081	38.78
Other Services	5.68	7,772,989.12	0.3556	2,764,074.93	48643	56.82
Total - Trip	490.05	670,625,584.20		145,799,017.45		11,434.68
Annual Boat Storage/Marina	1.76	2,408,531.84	0.2927	704,977.27	15273	46.16
Annual Condo/Time Share	13.78	18,857,709.52	0.2418	4,559,794.16	14874	306.56
Annual RV/Trailer Park	2.72	3,722,276.48	0.2418	900,046.45	14874	60.51
Total Annual Expense Items	18.26	24,988,517.84		6,164,817.88		413.23
Total All	508.31	695,614,102.04		151,963,835.33		11,847.91

Table A.5.5. Derivation of Total Output and Income Impacts for Monroe County

	June - Nov '95	Dec '95 - May '96	Annual
Person-Trips	1,172,004	1,368,484	2,540,488
x Expenditures Per Person Per Trip	\$422.53	\$508.31	
= Total Expenditures (Tables A.5.3 & A.5.4)	\$495,206,850	\$695,614,102	\$1,190,820,952
x Percent of Inputs Purchased Locally	.70	.70	.70
= Direct Output	\$346,644,795	\$486,929,871	\$833,574,666
x Output Multiplier	1.6	1.6	1.6
= Total Output	\$554,631,672	\$779,087,794	\$1,333,719,466
Reported Gross Sales	\$984,995,584	\$1,218,309,773	\$2,203,305,357
Percent of Gross Sales	56.31 %	63.95%	60.53%
Wages & Salaries Income (Direct) (from Tables A.5.3 and A.5.4)	\$106,797,263	\$151,963,835	\$258,761,098
x Total Income-to-Wages & Salaries (from Table A.5.2)	1.2222	1.2222	1.2222
= Direct Income	\$130,527,615	\$185,730,200	\$316,257,815
x Income Multiplier	1.60	1.60	1.60
= Total Income	\$208,844,184	\$297,168,320	\$506,012,504
Reported Income (.51 * Reported Sales)	\$502,347,748	\$621,337,984	\$1,123,685,732
Percent of Income	41.57%	47.83%	45.03%

Table A.5.6. Derivation of Total Employment Impacts for Monroe County

Wage & Salaries Employment	Jun - Nov '95	Dec '95 - May '96
Employment (Direct) (from Tables A.5.3 and A.5.4)	8,350	11,848
Employment Multiplier	1.6	1.6
Employment (Total)	13,360	18,957
Proprietor's Employment		
Proprietors Income (Direct) (Wages & Salaries * 1.2222)- Wages & Salaries	23,730,352	33,766,365
Proprietors Income-to-Employment Ratio (from Table A.5.2)	18,690	18,690
Proprietors Employment (Direct)	1,270	1,807
Employment Multiplier	1.6	1.6
Proprietors Employment (Total)	2,032	2,891
Total Employment (Wages & Salaries Plus Proprietors)		
Direct	9,620	13,655
Total	15,392	21,848
Total Monroe County Employment (Estimate form BEA, summer .863 of winter employment)	40,543	47,000
Tourist Impact as percent of Monroe County Employment	37.96%	46.49%

References

- Bell, F. W. 1991. An Analysis of the Economic Base of Monroe County, Florida with Implications for Oil and Gas Exploration, 1969 - 1988. Working Paper. Department of Economics, Florida State University. Tallahassee, FL: FSU
- English, D. B. K., W. Kriesel, V. R. Leeworthy, and P. C. Wiley. 1996. Economic Contribution of Recreating Visitors to the Florida Keys/Key West. Silver Spring, MD: National Oceanic and Atmospheric Administration.
- Kearney/Centaur. 1990. Impacts of Oil and Gas Development on the Recreation and Tourism off the Florida Straits. Herndon, VA: U.S. Department of the Interior.
- Leeworthy, Vernon R. and Wiley, Peter C. 1996. Visitor Profiles: Florida Keys/Key West. Silver Spring, MD: National Oceanic and Atmospheric Administration.
- Matthews, Bernard. 1996. Guest Editorial: Don't Eliminate --- Regulate! [Solares Hill](#).

Exhibits

**Talley Sheet
Auto Survey
U.S. 1**

1. Are you a permanent resident of Monroe County?

Yes Thank you. We are only interviewing nonresidents of Monroe County.
(Place tic mark in column 4)

No 2. Are you ending your trip to The Florida Keys Today?

Yes No Thank you. We are only interviewing people at the end of their trip to the Florida Keys. (Place tic mark in column 5)

→ Did you do any recreation/tourist activities on this visit to the Florida Keys?
(show recreation/tourist activity Blue Card)

No Thank you. We are only interviewing visitors that did recreation/tourist activities. (Place tic mark in column 6.)

Will you participate in a short 5-10 minute interview about your visit to the Florida Keys? ← Yes

No Thank you. (Place tic mark in column 7)
 Yes Please pull up in the parking lot where our interviewers are set-up. (Place tic mark in column 8)

1	2	3	4	5	6	7	8
Site	Date	Time Period	Permanent Resident	Non Exit Visitor	Non Recreating Tourist Visitor	Recreating Visitor Refusal or Language Barrier	Recreating Visitor Interviewed

Blue Card - Activities List

Recreation/Tourist Activities

Snorkeling
Scuba Diving
Fishing
Swimming
Boating (including personal watercraft, jet skis)
Nature Study or Viewing Wildlife
Windsurfing, Parasailing or Hang gliding
Beach Activities
Visiting Museums and Historic Areas
Sightseeing or Tourist Attractions
Attending Outdoor Festival and Events
Attending Concerts, Events and Performances
Camping, Picnicking, Hiking
Horseback riding, Bicycling
Participation in Outdoor Sports (Tennis, Golf, or other sports)
Sunset Cruises

July 1995

Exhibit 4 Auto Survey Calendar

Sun Mon Tue Wed Thu Fri Sat

**Thom Thumb 7 days
Key Largo Elementary
School 8 days**

**15 days Auto Survey
8 mornings
7 afternoons**

1

2 Auto 8:30 am to 12:30 Thom Thumb Store	3	4	5 Auto 2:00 to 6:00 pm Key Largo Elementary School	6 Auto 8:30 am to 12:30 Thom Thumb Store	7	8 Auto 2:00 to 6:00 pm Key Largo Elementary School Cancelled Officers Pulled
9	10 Auto 8:30 am to 12:30 Thom Thumb Store Cancelled Officers Pulled	11 Auto 2:00 to 6:00 pm Key Largo Elementary School Cancelled Officers Pulled	12	13	14 Auto 8:30 am to 12:30 Thom Thumb Store	15
16 Auto 2:00 to 6:00 pm Key Largo Elementary School	17	18	19 Auto 8:30 am to 12:30 Thom Thumb Store	20 Auto 2:00 to 6:00 pm Key Largo Elementary School	21	22 Auto 8:30 am to 12:30 Thom Thumb Store
23	24 Auto 2:00 to 6:00 pm Key Largo Elementary School	25 Auto 8:30 am to 12:30 Thom Thumb Store	26	27	28 Auto 2:00 to 6:00 pm Key Largo Elementary School	29
30 Auto 2:00 to 6:00 pm Key Largo Elementary School	31					

August 1995

Exhibit 4 Auto Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
<p align="center">Thom Thumb 2 days Key Largo Elementary School 12 days</p> <p align="center">14 day Auto Survey 7 mornings 7 afternoons</p>		1	2 Auto 8:30 am - 12:30 Key Largo Elementary School Cancelled Storm Evacuation	3 Auto 1:00 - 5:00 pm Key Largo Elementary School Cancelled Storm Evacuation	4	5 Auto 8:30 am - 12:30 Key Largo Elementary School Cancelled Storm Evacuation
	6	7 Auto 8:30 am - 12:30 Key Largo Elementary School	8 Auto 1:00 - 5:00 pm Key Largo Elementary School	9	10	11 Auto 8:30 am - 12:30 Key Largo Elementary School
13 Auto 8:30 am - 12:30 Key Largo Elementary School	14	15	16 Auto 1:00 - 5:00 pm Key Largo Elementary School	17 Auto 8:30 am - 12:30 Key Largo Elementary School	18	19 Auto 1:00 - 5:00 pm Key Largo Elementary School
20	21 Auto 1:00 - 5:00 pm Key Largo Elementary School	22 Auto 8:30 am - 12:30 Thom Thumb Store	23	24	25 Auto 1:00 - 5:00 pm Thom Thumb Store Auto 1:00 - 5:00 pm Key Largo Elementary School	26
27 Auto 2:00 - 4:00 pm Key Largo Elementary School Make-up day	28	29	30	31		

January 1996

Exhibit 4 Auto Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
	Thom Thumb 9 days		9 days auto Survey 4 mornings 5 afternoons			
7	8	9	10	11	12	13
14	15 Auto 12:00 - 2:30 pm Thom Thumb Store	16 Auto 9:00 - 11:30 am Thom Thumb Store	17	18	19 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	20
21 Auto 9:00 - 11:30 am Thom Thumb Store	22	23	24 Auto 12:00 - 2:30 pm Thom Thumb Store	25 Auto 9:00 - 11:30 am Thom Thumb Store	26	27 Auto 2:00 - 4:30 pm Thom Thumb Store
28	29 Auto 9:00 - 11:30 am Thom Thumb Store	30 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	31			

February 1996

Exhibit 4 Auto Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Thom Thumb 10 days </div>		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> 10 days auto Survey 5 mornings 5 afternoons </div>		1	2 Auto 9:30 - 11:30 am Thom Thumb Store	3
4	5	6	7	8	9	10
11	12 Auto 12:00 - 2:30 pm Thom Thumb Store	13 Auto 9:30 - 11:30 am Thom Thumb Store	14	15	16 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	17
18 Auto 2:00 - 4:30 pm Thom Thumb Store	19	20	21 Auto 9:30 - 11:30 am Thom Thumb Store	22 Auto 12:00 - 2:30 pm Thom Thumb Store	23	24 Auto 9:30 - 11:30 am Thom Thumb Store
25	26 Auto 9:30 - 11:30 am Thom Thumb Store	27 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	28	29		

March 1996

Exhibit 4 Auto Survey Calendar

Sun Mon Tue Wed Thu Fri Sat

**Thom Thumb
13 days**

**13 days Auto Survey
7 mornings
6 afternoons**

1 Auto 9:00 - 11:30 am Thom Thumb Store	2
--	----------

3 Auto 9:00 - 11:30 am Thom Thumb Store	4	5	6 Auto 12:00 - 2:30 pm Thom Thumb Store Cancelled due to fires on U.S. 1	7 Auto 9:00 - 11:30 am Thom Thumb Store	8	9 Auto 2:00 - 4:30 pm Thom Thumb Store
--	----------	----------	---	--	----------	---

10	11	12	13	14	15	16
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17 Auto 2:00 - 4:30 pm Thom Thumb Store	18	19	20 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	21 Auto 9:00 - 11:30 am Thom Thumb Store	22	23 Auto 9:00 - 11:30 am Thom Thumb Store
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24	25 Auto 12:00 - 2:30 pm Thom Thumb Store	26 Auto 9:00 - 11:30 am Thom Thumb Store	27	28	29 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	30
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31 Auto 9:00 - 11:30 am Thom Thumb Store

April 1996

Exhibit 4 Auto Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3 Auto 9:00 - 11:30 am Thom Thumb Store	4 Auto 12:00 - 2:30 pm Thom Thumb Store	5	6 Auto 2:00 - 4:30 pm Thom Thumb Store
7	8 Auto 9:00 - 11:30 am Thom Thumb Store Rain-out	9 Auto 1:00 - 2:30 pm 3:30 - 4:30 pm Thom Thumb Store	10	11	12 Auto 9:00 - 11:30 am Thom Thumb Store	13
14	15	16	17	18	19	20
	Thom Thumb 6 days		6 days Auto Survey 3 mornings 3 afternoons			
21	22	23	24	25	26	27
28	29	30				

Florida Department of Transportation
Traffic Counts
 Hourly Continuous Counts Final Report
 July 1995

County Name: MONROE Station: 0164 Direction: N
 Description: SR 5/US 1, 800 feet S JCT CR 905 in Key Largo

<u>Day</u>	<u>Dof</u>	<u>HR1</u>	<u>HR2</u>	<u>HR3</u>	<u>HR4</u>	<u>HR5</u>	<u>HR6</u>	<u>HR7</u>	<u>HR8</u>	<u>HR9</u>	<u>HR10</u>	<u>HR11</u>	<u>HR12</u>
1	A	147	120	68	57	75	100	171	321	429	590	711	738
2	S	259	197	158	144	111	95	138	234	354	481	643	776
3	M	284	188	97	81	80	218	399	564	595	655	799	889
4	T	200	122	102	84	75	85	155	274	497	598	727	1004
5	W	239	123	63	59	72	294	575	709	699	798	935	932
6	R	81	61	38	24	63	190	375	516	547	612	630	706
7	F	70	48	39	47	58	181	343	504	541	558	663	717
8	A	144	69	67	73	56	101	209	337	456	645	768	836
9	S	202	133	93	70	70	86	131	241	339	540	732	957
10	M	113	61	30	29	74	217	436	566	574	630	682	692
11	T	85	37	41	33	58	170	366	506	512	549	553	593
12	W	63	54	36	24	64	198	350	463	536	562	534	648
13	R	83	52	28	31	46	181	354	457	537	586	626	632
14	F	87	69	41	37	67	167	342	509	539	513	636	685
15	A	122	78	58	39	69	107	174	308	486	609	758	787
16	S	191	129	73	53	53	86	120	235	373	551	749	984
17	M	125	55	42	44	80	214	432	566	565	622	703	691
18	T	48	34	22	23	74	197	360	487	466	547	579	636
19	W	85	46	23	27	54	196	348	501	500	532	592	602
20	R	74	63	47	26	64	165	386	500	499	596	612	644
21	F	67	40	34	31	66	159	359	451	539	581	665	685
22	A	108	106	66	54	63	104	183	358	455	634	724	771
23	S	274	231	91	72	81	107	133	241	349	554	777	1012
24	M	138	46	53	38	80	243	469	562	649	616	690	713
25	T	92	43	29	30	76	174	351	471	526	569	598	638
26	W	81	67	34	42	69	199	358	419	491	519	617	620
27	R	79	46	26	31	71	178	354	481	533	587	649	695
28	F	98	48	43	29	58	198	400	577	664	726	914	919
29	A	116	76	48	38	55	109	179	308	516	720	979	1111
30	S	197	107	68	45	60	80	116	229	373	592	856	1156
31	M	105	52	46	26	84	208	433	510	551	614	764	820

** Dof=Day of week.

Exhibit 5
(Continued)

Florida Department of Transportation
Traffic Counts
Hourly Continuous Counts Final Report
July 1995

County Name: MONROE Station: 0164 Direction: N
Description: SR 5/US 1, 800 feet S JCT CR 905 in Key Largo

Day	Dof	HR13	HR14	HR15	HR16	HR17	HR18	HR19	HR20	HR21	HR22	HR23	HR24	Total
1	A	721	659	622	644	756	735	749	650	533	557	415	323	10891
2	S	833	846	936	1022	1162	1256	1369	1373	1308	1152	736	465	16048
3	M	880	960	985	989	961	1005	827	674	534	459	361	284	13768
4	T	1085	1041	1095	1039	1112	1084	1094	912	790	810	743	459	15187
5	W	848	827	839	777	783	745	613	422	356	259	212	132	12311
6	R	623	674	700	726	700	713	558	469	360	319	205	151	10041
7	F	719	658	776	750	743	775	659	508	305	295	205	188	10350
8	A	812	814	724	735	823	769	698	654	538	498	371	291	11488
9	S	1064	1097	1253	1304	1308	1420	1381	1271	932	719	447	223	16013
10	M	679	617	682	667	638	626	523	367	300	245	146	106	9700
11	T	573	628	581	604	629	633	434	352	251	217	187	126	8718
12	W	658	660	661	630	640	614	497	377	280	210	175	128	9062
13	R	615	628	657	623	599	625	580	381	337	263	159	124	9204
14	F	712	687	697	702	717	721	597	462	385	284	189	178	10023
15	A	797	733	683	742	797	764	749	642	479	444	385	287	11097
16	S	1027	1052	1170	1249	1282	1365	1354	1149	918	707	396	237	15503
17	M	678	590	615	646	597	612	508	344	267	173	164	121	9454
18	T	642	617	609	566	552	601	452	316	249	211	167	99	8554
19	W	651	640	618	615	594	627	461	350	289	229	159	120	8859
20	R	644	647	660	677	641	656	498	409	317	239	187	130	9381
21	F	734	671	686	646	698	732	654	495	396	287	213	158	10047
22	A	826	743	745	751	844	863	757	672	654	561	445	362	11849
23	S	1030	1198	1383	1292	1485	1436	1530	1381	1155	847	507	285	17451
24	M	772	675	659	680	676	659	517	420	341	266	176	121	10259
25	T	627	676	649	635	585	649	534	399	326	266	165	118	9226
26	W	681	674	743	668	691	735	598	460	377	292	240	139	9814
27	R	724	789	903	954	953	864	686	522	423	323	252	165	11288
28	F	906	901	866	792	822	768	673	490	361	273	210	152	11888
29	A	1168	1128	978	842	863	806	653	581	526	399	323	262	12784
30	S	1287	1215	1299	1104	1154	1139	1039	869	796	565	329	209	14884
31	M	908	1139	1308	1449	1435	1277	1268	989	799	687	473	299	16244

** Dof=Day of week.

Screening Criteria: 1) **NOT** a resident of Monroe County
 (See Tally Sheet) 2) Visiting Keys and did some recreation/tourist activity

OMB Approval #: 0596-0110
 Expiration Date: 06/30/96
 On-Site Survey Number: _____

Auto: U.S. 1

Time of interview:

Air: Key West
 Marathon

_____/_____/_____
 Month Day Time

Cruise Ship: Mallory Square
 Truman Annex

Number of people in Vehicle or Party:

 # People

1. How many People in your vehicle (party) are age 16 or older? _____
 # people

2. Where is your primary residence?

_____/_____/_____/_____
 City or Nearest City County State Zipcode

Country: _____

- U.S.A.
- Canada
- Mexico
- Central Am./South Am.
- Australia/Oceania
- Japan
- Other Far East
- United Kingdom
- Other Europe
- Middle East
- Africa
- Other

3. On this trip to the Florida Keys, when did you first arrive? _____
 Month Day Time

4. Including this trip, how many times have you visited the Florida Keys for all recreation/tourist activities in the last 12 months, that is since (date last year)?

 Times

5. Including this trip, how many days have you spent in the Florida Keys where you did some recreation/tourist activity in the last 12 months?

_____/_____/_____
 Days

If overnight visitor, hand respondent map of Florida Keys. If not overnight visitor skip to next section.

6. Looking at the map, could you tell me how many nights you spent **on this trip** to the Florida Keys in the

Upper Keys _____ Middle Keys _____ Lower Keys _____ Key West _____
 # nights # nights # nights # nights

Interviewer: Make sure if answer to Q.4. is greater than one, that answer to Q.6. is not equal to Q.5.

10. Please refer to the yellow Events Card. The events are listed by date to help you skip down the list. Events are listed on both sides of the card.

Did you attend any of these events on this trip to the Florida Keys?

- Yes (continue) No (skip to Q. 12)

11. Please refer to Section 1 on your green card and tell me how important was the event in planning your trip to the Florida Keys?

- DK Don't know
- A Not important
- B Somewhat important
- C Important
- D Very important
- E Extremely important

12. Please refer to Section 2 on your green card and tell me which reason best describes the primary purpose of your trip to the Florida Keys.

- A Recreation or vacation
- B Visit family or friends
- C Business trip
- D Business/pleasure
- E Other (specify)

Finally, for statistical purposes, we need to know a few things about yourself.

13. In what year were you born? (code last two digits) ____ ____

14. Sex male female

15. Race/Ethnicity

- American Indian or Alaskan native
- Asian or pacific Islander
- Black, not of Hispanic origin
- Hispanic
- White, not of Hispanic origin
- Other (specify) _____

16. Please refer to Section 3 of your green card again and tell me which of the income categories best describes your annual household income last year before taxes. Please give me the letter on the card that is the closest.

- a b c d e f g h i j k l m n o refused
 don't know

17. Do you own a second home or time share in the Florida Keys?
 Yes No

18. On this trip, are you paying your own expenses, sharing expenses or is someone else paying your expenses?

- own expenses _____ →
- shared expenses _____ →
- someone else paying expenses _____ →

Beside your own expenses, how many other people are you paying for on this trip? _____

With how many people are you sharing expenses? _____

Interviewer: Mailback Information

We would like to collect some additional information on your (expenditures or satisfaction) with the Florida Keys during your trip. Please take this (satisfaction or expenditure) questionnaire and return it to us in the mail. The questionnaire has a business reply page and postage is pre-paid. It will cost you nothing to return to us. The information gained from these questions are very important to all those responsible for making your trip to the Florida Keys an enjoyable experience. As an incentive to return your questionnaires, a sweepstakes has been organized by the local business community. Hand brochure describing sweepstakes By returning your questionnaire with your name and address, we will enter you in the sweepstakes.

Reminder: Your name and address and all personal information collected in this project are protected under the Privacy Act. After the survey is completed and the sweepstakes prizes awarded, all name and address information will be destroyed. No one will be allowed to use this information for contacting you about any promotions.

19. Will you complete this questionnaire?
- Yes
- No —————> This concludes our interview. Thank you for your time. In appreciation for your participation we would like to offer you this gift.

Satisfaction

We suggest completing the satisfaction questionnaire on your way home while your thoughts about your trip to the Florida Keys are fresh.

Expenditure

The expenditure survey should be completed after your trip is over and you have returned home.

Interviewer: Code on-site survey number and location on mailback

Show example of mailback questionnaire, where to start, the types of questions that are asked, and how to seal it to mail back

20. Please give us your name and address. In the event that we do not receive the take home questionnaire we will send you another.

Satisfaction name and address

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

21. If someone other than yourself paid for all your expenses on this trip to the Florida Keys, we would like that person to answer the questionnaire. Will you please give us the name and address of that person?

Expenditure name and address Same as satisfaction

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

This concludes our interview. Thank you for your time. In appreciation for your participation, we would like to offer you this gift.

July 1995

Exhibit 7 Airport Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat																																																																																				
						1																																																																																				
2	3	4	5	6	7	8 Key West Morning																																																																																				
9 Key West Afternoon	10 Key West Morning	11 Key West Morning Afternoon	12	13	14	15																																																																																				
16 Key West Afternoon Marathon Morning Afternoon	17 Marathon Afternoon	18 Marathon Morning Afternoon	19	20	21	22																																																																																				
23 Key West Afternoon Marathon Morning Afternoon	24 Key West Morning Afternoon	25 Key West Morning	26 Marathon Morning Afternoon	27	28 Key West Afternoon	29 Key West Afternoon																																																																																				
30	31	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>June 1995</p> <table style="margin: auto;"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td></td></tr> </table> </div> <div style="text-align: center;"> <p>August 1995</p> <table style="margin: auto;"> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table> </div> </div>					S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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25	26	27	28	29	30	31																																																																																				

August 1995

Exhibit 7 Airport Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5 Key West Afternoon
6	7 Key West Afternoon	8 Key West Afternoon	9	10	11	12 Key West Afternoon
13	14 Key West Afternoon	15	16	17	18 Key West Afternoon	19 Key West Afternoon
20	21	22	23	24	25	26
27	28	29	30	31		

July 1995

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September 1995

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

January 1996

Exhibit 7 Airport Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22 Key West Afternoon Marathon Morning	23 Key West Afternoon Marathon Afternoon	24	25	26 Key West Morning Marathon Morning	27
28 Key West Morning	29	30 Key West Morning	31			

December 1995

S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February 1996

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

February 1996

Exhibit 7 Airport Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 Key West Afternoon	3 Key West Morning
4 Marathon Afternoon	5 Key West Morning	6 Key West Morning Marathon Morning	7	8	9 Key West Afternoon Marathon Afternoon	10 Marathon Morning
11	12	13	14	15	16	17
18	19	20 Marathon Morning	21 Marathon Afternoon	22	23 Marathon Afternoon	24
25 Key West Morning	26	27 Key West Afternoon	28	29		

January 1996

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

March 1996

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

March 1996

Exhibit 7 Airport Survey Calendar

Sun Mon Tue Wed Thu Fri Sat

					1	2
3 Marathon Morning	4	5 Marathon Afternoon	6	7	8 Marathon Morning	9 Key West Afternoon Marathon Afternoon
10	11	12 Key West Afternoon	13	14	15 Key West Morning	16
17	18 Key West Morning Marathon Morning	19 Marathon Afternoon	20	21	22 Marathon Morning	23
24 Key West Afternoon	25	26	27	28	29 Key West Afternoon	30

31 Marathon Afternoon

February 1996

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

April 1996

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

April 1996

Exhibit 7 Airport Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4 Key West Morning	5	6 Key West Morning Marathon Morning
7 Key West Morning	8	9 Key West Morning Marathon Morning	10	11	12 Key West Afternoon Marathon Afternoon	13
14 Key West Morning	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

March 1996

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

May 1996

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Tally Sheet
Air Survey

Sites

- Key West (KW)
- Marathon (M)

1. Are you a permanent resident of Monroe County?
 - YES Thank you. We are only interviewing nonresidents of Monroe County. (Place tic mark in Column 3)
 - NO →
2. Did you do any recreation/tourist activities on this visit to the Florida Keys? (show recreation/tourist activity Blue Card)
 - NO Thank you. We are only interviewing visitors that did recreation activities
 - YES →
3. Will you participate in a short 5-10 minute interview about your visit to the Florida Keys?
 - No Thank you. (Place tic mark in column 5)
 - Yes (Place tic mark in column 6)
Begin interview.

1	2	3	4	5	6
Site	Date	Permanent Resedent	Non Recreating/ Tourist Visitor	Visitor Refusal or Language Barrier	Visitor Interviewed

Air Enplanement Counts

KEYWEST AIRPORT ENPLANEMENTS (ENP) AND DEPLANEMENTS (DEP) 1993-1996

	1993		1994		1995		1996	
	ENP	DEP	ENP	DEP	ENP	DEP	ENP	DEP
January	18,856	16,803	22,911	20,550	22,605	19,751	27,119	24,444
February	18,559	18,565	22,310	22,903	22,367	21,451	28,927	28,905
March	20,956	19,785	26,707	25,613	26,203	25,913	32,861	30,166
April	19,254	19,072	24,954	23,450	24,100	22,331	30,227	26,663
May	19,563	18,436	24,240	22,273	22,759	20,984	25,932	24,657
June	16,580	16,429	19,467	18,383	18,347	18,555		
July	16,793	16,810	19,582	19,241	17,755	16,533		
August	17,330	16,600	19,033	18,670	15,955	15,822		
September	15,443	15,754	16,843	16,840	14,361	14,598		
October	17,081	18,919	18,744	18,856	19,438	20,137		
November	19,755	18,012	17,184	15,632	22,835	22,160		
December	18,647	21,184	18,322	20,993	21,171	23,912		
TOTAL	218,817	216,369	250,297	243,404	247,896	242,147	145,066	134,835

MARATHON AIRPORT ENPLANEMENTS (ENP) AND DEPLANEMENTS (DEP) 1993-1996

	1993		1994		1995		1996	
	ENP	DEP	ENP	DEP	ENP	DEP	ENP	DEP
January	2,913	2,701	2,889	2,657	3,695	3,286	4,288	3,878
February	2,884	2,874	3,007	2,796	3,920	4,006	4,469	4,646
March	3,308	3,008	3,474	3,169	4,889	4,596	4,896	4,357
April	2,989	2,767	3,090	2,724	3,841	3,517	4,651	3,744
May	2,685	2,511	2,830	2,667	3,239	2,872	3,037	2,747
June	2,140	2,085	2,185	2,040	2,337	2,317		
July	2,078	2,005	2,071	1,925	2,451	2,148		
August	1,917	1,843	2,109	1,993	2,165	2,007		
September	1,565	1,509	1,700	1,519	1,748	1,500		
October	1,750	1,928	1,887	1,924	2,271	2,493		
November	2,170	1,946	2,493	2,300	2,950	2,769		
December	2,226	2,486	2,459	2,646	2,865	2,996		
TOTAL	28,625	27,663	30,194	28,360	36,371	34,507	21,341	19,372

SOURCE: Monroe County Airport Authority

July 1995

Exhibit 10 Cruise Ship Survey Calendar

Sun Mon Tue Wed Thu Fri Sat

**Sample (8)
Interview
Passengers**

**Count (3)
Count Number of
passengers getting off
ships**

						1
2	3	4	5	6	7 Count Zenith Sample Annex Truman Annex	8
9	10 Sample Truman Annex	11 Count Dolphin Sample Truman Annex	12	13	14	15
16 Sample Truman Annex	17	18 Count Dolphin Sample Malory Square Truman Annex	19	20	21 Sample Truman Annex	22
23	24	25 Sample Truman Annex	26	27	28	29
30 Sample Truman Annex	31					

August 1995

**Sample (6)
Interview Passengers**

Exhibit 10 Cruise Ship Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
<p>Count (2) Count Number of passengers getting off ships</p>		<p>1 Cancelled due to storm</p>	2	3	<p>4 Sample Truman Annex</p>	5
		6	7	<p>8 Sample Truman Annex</p>	9	10
13	14	<p>15 Sample Truman Annex</p>	16	17	<p>18 Count Zenith Sample Mallory Square</p>	19
20	<p>21 Sample Truman Annex</p>	<p>22 Count Ecstasy Sample Truman Annex</p>	23	24	25	26
27	28	29	30	31		

January 1996

Exhibit 10 Cruise Ship Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
	Count (0) Count Number of passengers getting off ships					
	Sample (3) Interview Passengers					
7	8	9	10	11	12	13
14	15	16	17	18	19 Sample Truman Annex	20
21	22 Sample Truman Annex	23 Sample Truman Annex	24	25	26	27
28 Sample Truman Annex	29	30	31			

February 1996

Exhibit 10 Cruise Ship Survey Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat	
Sample (3) Interview Passengers				Count (5) Count Number of passengers getting off ships			
				1	2	3	
4	5	6	7	8	9	10	
11 Count Noordam	12	13	14	15	16	17 Count Leeward Sample Truman Annex	
18	19 Count Momantica Costa	20	21	22	23 Count Crown Dynasty Sample Truman Annex	24	
25 Count Royal Majesty Sample Truman Annex	26	27	28	29			

March 1996

Exhibit 10 Cruise Ship Survey Calendar

Sun Mon Tue Wed Thu Fri Sat

**Sample (3)
Interview
Passengers**

**Count (4)
Count Number of
passengers getting
off ships**

					1	2
3	4	5 Sample Truman Annex	6	7	8	9
10	11	12 Count Ecstasy Sample Navy Mole	13	14 Sample Truman Annex	15	16 Count Stella Solaris
17	18	19	20 Count Royal Majesty	21	22	23
24	25	26	27	28 Count Regal Empress	29 Count Century	30
31						

Tally Sheet
Cruise Ships

Sites

- Mallory Square (MS)
- Truman Annex (TA)

1. Are you a permanent resident of Monroe County?

YES Thank you. We are only interviewing nonresidents of Monroe County. (Place tic mark in Column 3)

NO →

2. Will you participate in a short 5-10 minute interview about your visit to the Florida Keys?

No Thank you. (Place tic mark in column 4)

Yes (Place tic mark in column 5)

Begin interview.

1	2	3	4	5
Site	Date	Permanent Resedent	Visitor Refusal or Language Barrier	Visitor Interviewed

Cruise Ship Passenger Counts

Key West Cruise Ship Passenger Arrivals

MONTH	FY 92-93		FY 93-94		FY 94-95		FY 95-96		ARRIVALS
	TRIPS	ARRIVALS	TRIPS	ARRIVALS	TRIPS	ARRIVALS	TRIPS	ARRIVALS	
October	17	13,021	22	18,713	33	30,915	26	25,695	
November	21	16,848	42	37,941	42	40,540	31	29,456	
December	19	15,207	39	37,871	49	47,200	37	39,495	
January	29	25,361	19	33,028	47	46,282	32	38,921	
February	27	22,330	36	41,626	40	41,668	31	37,575	
March	33	29,151	49	50,620	44	50,823	38	48,067	
April	25	29,419	50	48,614	44	50,858	40	46,745	
May	30	20,914	41	42,322	23	24,187	23	24,382	
June	25	21,930	30	36,248	10	14,605			
July	26	23,722	33	38,388	13	20,358			
August	29	25,177	35	42,030	10	15,529			
September	19	12,497	24	24,901	13	15,405			
TOTAL	300	255,577	420	452,302	368	398,370	157	171,142	
Change From Previous Year		83.0%		77.0%		-11.9%		-12.9%	

YTD

FISCAL YEAR: OCTOBER 1 THROUGH SEPTEMBER 30

SOURCE: CITY OF KEY WEST TRANSPORTATION DEPARTMENT

Number	Activities Using Boats and Personal Watercraft
	<u>Snorkeling</u>
100 A	Snorkeling from charter/party boat (pay operation)
101 A	Snorkeling from Rental boat
102 A	Snorkeling from private boat
	<u>Scuba Diving</u>
200 A	Scuba diving from charter/party boat (pay operation)
201 A	Scuba diving from rental boat
202 A	Scuba diving from private boat
	<u>Special Activities while Snorkeling or Scuba Diving</u>
300	Diving for lobsters
301	Underwater photography
302	Wreck diving
303	Spear fishing
	<u>Fishing - Offshore</u>
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
	<u>Fishing - Flats or Back Country</u>
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
	<u>Other Fishing</u>
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
	<u>Viewing Nature and Wildlife</u>
500 A	Glass bottom boat rides (pay operation)
501 A	Back country boating excursions (pay operation/guided service/ <u>NOT FISHING</u>)
502 A	Viewing nature and wildlife from private or rental boat
	<u>Personal Watercraft (jet skis, wave runners, etc.)</u>
600 A	Personal watercraft - rental
601 A	Personal watercraft - private
	<u>Sailing</u>
700 A	Sailing charter/party boat (pay operation)
701 A	Sailing rental boat
702 A	Sailing private boat
	<u>Other Activities NOT MENTIONED ABOVE</u> (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

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)
- 45 Sunbathing (not at beach)

