

# **Economic Analysis of Beach Spending and the Recreational Benefits of Beaches in the City of Carpinteria**

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<sup>1</sup> I would like to thank a number of people who helped in preparing this report. Douglas Symes, my principal research assistant, did an excellent job collecting and analyzing a good portion of the data. Rebecca Lee assisted with the survey instrument and collection. Many people from the City of Carpinteria (public and private sector) were cooperative. In particular, Matt Roberts served as my principal contact with the City. Matt was helpful at numerous points throughout this project.

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## Executive Summary

- A survey of visitors to Carpinteria's beaches was conducted in the summer of 2001. The survey was sponsored by the City.
- Visitors to Carpinteria come from a wide variety of destinations, with 82.8% arriving from out of town.
- The composition of visitors was split evenly between people on day-trips (48.5%) and those staying overnight in the area (50.2%). [1.3% did not respond.]
- Of those visitors staying overnight, 26.9% were campers, 25.2% stayed at a hotel, 35.3% stayed in house/condo rentals and 12.6% stayed with friends.
- A significant majority of people replied that clean beaches, restrooms, and lifeguards were important to them.
- Almost half (46.3%) of all respondents reported going to downtown Carpinteria everyday, with 21.2% going every other day or twice a week; only 19.6% reported never going downtown.
- The average respondent reported spending **\$127.58** per day on travel costs, food, lodging, and other daily spending related to their trip to the beach. Of this, **79.5% (\$101.38) was spent in Carpinteria and 20.5% spent elsewhere.** Interestingly, **except for lodging, most respondents reported that the majority of their spending was outside Carpinteria, but most people who stay overnight lodge in Carpinteria.** Since lodging constitutes the largest portion of spending, the City does benefit from the taxes generated here. However, the data indicates that a significant number of day trippers from out of town as well as those who lodge elsewhere, constituting around half of all visitors, spend little in the city (generating few tax dollars for the city) and, in essence "free ride" off of the city of Carpinteria.
- Many visitors (70%) thought a map with information would be helpful. Just over 40% thought a kiosk would be helpful.
- Just over half of respondents indicated that they would use a food concession to buy snacks, while about a quarter indicated they would buy meals there. Only 10% opposed the idea of a food concession. Some commented that trash could be an issue and others mentioned they would go there if prices were reasonable.
- Including indirect and induced effects, the City's beaches generate \$6.89 per beach visitor in direct State taxes and \$17.10 in direct Federal taxes; this result is in stark contrast to the amount generated in parking fees, ToT's, and sales tax revenue, which, after expenses are deducted, amounts to 98 cents per person (57 cents after City expenses are deducted).
- Overnight visitors generate substantially more revenue per visitor, \$12.96 (most of it ToT's), than do day-trippers: \$.09.

- The value of one beach day is estimated at \$23.38 per person during high season. This value is consistent with other values estimated for Southern California beaches as well as figures used by the U.S. National Parks service<sup>2</sup>, but is substantially higher than the value used by the USACE, which is limited to \$9 per day. The number reflects the fact that a substantial number of people are willing to travel quite far to spend a day at Carpinteria's beaches, which provide more amenities than many other beaches. Overall, we estimate the economic value of Carpinteria's beaches at \$30.7 million per year.
- This study indicates that a substantial portion of the economic and tax benefit from the beach tourism and recreation in the City of Carpinteria does not flow to the City. For a successful nourishment project the City should receive support from the State and from the Federal government.

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<sup>2</sup> See, for example, Chapman, D., Hanemann, M., and Ruud, P., 1998, "The American Trader Oil Spill," and National Park Service. *Benefits Estimation*.

## 1. Introduction

Beach erosion is a serious problem at many of California's beaches. Sandy beaches, which are valued so highly by residents and visitors alike, are inherently unstable in many locations, and most beaches are best viewed as part of a dynamic process which carries these fine particles on and off the beach often moving sand up or down the coast, as well as onshore and offshore. Periodic storms on the coast, in particular El Nino storms, also play an important role in the life cycle of a beach, stripping the beach of sand.

In the typical life cycle of a beach, sand leaves the beach and migrates offshore or to adjacent beaches, but sand is also replenished by rivers and other fresh water transportation of sediment as well as (to a much lesser extent) bluff erosion. Thus in a world with no human intervention, beaches are created and destroyed by nature as sediment shifts. Beaches with rich flows of sediment and low levels of transport offshore are wide; on the other hand, areas where sand is easily transported offshore and with few sources to replenish sand are narrow or non-existent.

Human intervention in the 20<sup>th</sup> century has played a major role in the life cycle of beaches in California. The construction of dams, reservoirs and other structures that block fresh water has significantly reduced the flow of sediment to the coastline. Similarly the construction of certain harbors, breakwaters, and other coastal structures has altered, and in some cases impeded, the flow of sand along the coast. It is widely recognized today by geologists that the construction of these systems is a major factor in the erosion of many of California's beaches.

Human intervention has also played a role in creating and maintaining some of California's beaches. For over seventy years, the U.S. Army Corps of Engineers (and most recently other agencies such as BEACON or SANDAG) have played a role in countering erosion by enhancing existing beaches, by dredging natural sand from offshore or other nearby sites and placing this sand on beaches. Indeed many of these beaches, most notable Venice beach and other adjacent beaches, are essentially man made, sometimes also including (in the case of Venice beach) man made structures such as groins to reduce the transport of sand offshore and thus maintain a beach that is healthy both for human recreation as well as for habitation and spawning for such threatened species as the grunion, the least tern, and the snowy plover.

Currently, Carpinteria is under consideration for a shoreline protection project by the US Army Corps of Engineers (USACE). This project will almost certainly involve the addition of sand to the beach ("beach nourishment"). Under current USACE and OMB (Office of Management and Budget) policy, the primary purpose of shoreline protection projects is to create a buffer to minimize the likelihood of storm damage prevention to onshore structures, both public and private (but especially public). Current USACE policy limits the enumeration of the recreational benefits to be no more than those due to storm damage prevention, even though it is widely recognized that for most beaches, especially in Southern California, the main benefit is recreational.

This study has been sponsored and funded by the City of Carpinteria. Current OMB and USACE policy requires state and local funding to match federal participation and allows some or all local funding to be in-kind, that is, localities may fund their own economic and engineering studies provided that these studies are recent and relevant to the shore protection project under consideration. This study is designed to help the City evaluate its own participation (which is costly) in a USACE project. Specifically this study will focus on the recreational value of Carpinteria's beaches as well as provide a brief fiscal analysis of these beaches.

The purpose of this study is to provide the following:

- an economic analysis of the value of Carpinteria's beaches,
- a profile of visitors to Carpinteria's beach during high season,
- a fiscal impact analysis for the City—that is how much tax revenue Carpinteria's beaches bring to the city compared to the City's own beach-related costs including public safety,
- a series of questions pertaining to amenities the City is considering offering as well as several questions pertaining to the use of downtown Carpinteria by beach visitors.

## 2. Overview and Methodology Employed in the Project

The project was initiated during the summer of 2001. Philip King, the Principal in this project, met with Matt Roberts, Director of Parks and Recreation for the City of Carpinteria, Kevin Silk, Assistant to the City Manager, and other officials from the City of Carpinteria. Dr. King proposed a survey of the City's beaches during high season. The survey would ascertain the following:

- the primary residence of Carpinteria's beach visitors;
- beach attendance patterns at Carpinteria's beaches as well as California's beaches in general;
- the amount spent on beach visits broken down by type of expenditure and whether the expenditures took place within Carpinteria or elsewhere;
- total attendance broken down by different types of visitors: local visitors, day-trippers, and the demographics of beach visitors;
- how important the beach was in the visitors' decision to come to Carpinteria;
- whether alternate forms of outdoor recreation (e.g., parks) were considered close substitutes for beaches;
- at what point visitors would stop going if beaches eroded;
- how important lifeguard services were in their decision to attend Carpinteria's beaches;
- the relative importance of certain recreational amenities (e.g., restrooms)
- a series of questions pertaining to amenities the City is considering offering as well as several questions pertaining to the use of downtown Carpinteria by beach visitors.

The survey was pre-tested in early July and then a full-scale survey was conducted in late July and August. Surveyors were carefully trained to zigzag along the beach and choose respondents in a random fashion (i.e., choosing every nth group). Weekday/weekend and morning/afternoon times were chosen to reflect actual visitation patterns as well. The results of the survey are presented in the next section.

In addition, Dr. King agreed to provide an economic valuation of Carpinteria's beaches using standard methods approved by both the economics profession and the USACE. In this case, the travel cost method was used. The analysis is useful since the data collected in the Carpinteria beach visitor profile can also be used. Finally, it was agreed that Dr. King would provide a brief fiscal analysis. Details of this part of the investigation will be presented later in the report.

### 3. Results from the Survey

A written questionnaire was composed, and the questions were vetted by Matt Roberts, and other officials in Carpinteria. The questions were then pre-tested on the beach, problematic questions were re-written, and again the questionnaire was sent to Matt for comments. Respondents were given a choice of filling out the written questionnaire themselves or having the questions read to them. The vast majority (roughly 90%) chose to fill out the survey themselves. All respondents were told that the survey was conducted under the auspices of the City of Carpinteria through a professor at San Francisco State University and that the purpose was to learn more about beach attendance. Surveyors were told not to say that the survey was designed to “help” the beach since this type of pre-survey discussion is known to bias results. A high percentage of people approached (over 85%) agreed to answer the questions. A high participation rate is reassuring since it also reduces the possibility of bias (if people who choose not to respond have different characteristics from people who do). Overall 283 groups participated in the survey representing over 1100 visitors.

The results of the survey are presented in appendix 2, with the questions exactly as they appeared in the survey. Answers are given in frequencies (percentages). Note that in some cases respondents were allowed to check more than one answer so that in some cases the frequencies add up to more than 100%. Briefly, the main points of the survey are as follows:

- Visitors to Carpinteria come from a wide variety of destination with 82.8% from out of town.
- The composition of visitors was split evenly between people on day-trips (48.5%) and those staying overnight in the area (50.2%) [1.3% did not respond.]
- For those who stayed overnight, the mode was 5-7 days (32.1% of respondents).
- Most respondents replied that alternative forms of recreation such as swimming or camping were NOT equivalent to a day at the beach.
- Of those staying overnight, 26.9% were campers, 25.2% stayed at a hotel, 35.3% stayed in house/condo rentals and 12.6% stayed with friends.
- A significant majority of people replied that clean beaches, restrooms, and lifeguards were important to them.
- Almost half (46.3%) of all respondents reported going to downtown Carpinteria everyday, with 21.2% going every other day or twice a week; only 19.6% reported never going downtown.
- The average respondent reported spending **\$127.58** per day on travel costs, food, lodging and other daily spending related to their trip to the beach. Of this, **79.5% (\$101.38) was spent in Carpinteria and 20.5% spent elsewhere.** Interestingly, **except for lodging, most respondents reported that the majority of their spending was outside Carpinteria, but most people who stay overnight lodge**



**in Carpinteria.** Since lodging constitutes the largest portion of spending, the City does benefit from the Transient Occupancy Taxes taxes generated here. However, the data indicates that a significant number of day trippers from out of town (as well as those who lodge elsewhere or who camp) constituting around half of all visitors, spend little in Carpinteria generating few local tax dollars. These visitors, in essence, “free ride” off of the city of Carpinteria.

- Many visitors (70%) thought a map with information would be helpful. Just over 40% thought a kiosk would be helpful.
- Just over half of respondents indicated that they would use a food concession to buy snacks, while about a quarter indicated they would buy meals there. Only 10% opposed the idea of a food concession. Some commented that trash could be an issue and others mentioned they would go there if prices were reasonable.

## 4. The Fiscal Impact of Carpinteria’s Beaches

### 4.1 Cost of Beach to the City of Carpinteria

The City spends a significant amount of money to maintain its beaches. To obtain these figures, we contacted City officials to obtain detailed budget information. These City officials were generally cooperative. The two main budget cost items are the City’s direct expenditures on beach maintenance (including lifeguard services) and police. The police department was contacted and asked what portion of their time (in particular beat cop time) was devoted to patrolling and maintaining safety at the beach. The police department estimated that 12.5% of the total budget for the City (\$1.8 million) was devoted to patrols at or immediately adjacent to the beach. Please note that the State Beach is supervised by State employees, though the State Beach may benefit from some City policies.

Table 4.1.1

City Beach Expenditures Beach--Carpinteria		
Item		Cost to the City
Beach Safety and Maintenance excl. Police	\$	300,000.00
Police	\$	225,000.00
<b>Total</b>	<b>\$</b>	<b>525,000.00</b>

As one can see in table 4.1.1 above, the City of Carpinteria spends \$525,000 providing maintenance and public safety for beaches.

### 4.2 Transient Occupancy Taxes

Transient Occupancy Taxes (TOTs) represent a substantial form of revenues for the City, just over \$1 million in the last fiscal year. While substantial portions of these revenues are beach related, not all are, since visitors to Carpinteria may also come on business, to visit friends and relatives, or for other reasons. To estimate the percentage of TOTs generated by beach tourism, we decided to conduct interviews with hotel managers and realtors (for condos) to estimate the percentage of their total revenue generated by beach tourism and weight their estimated percentage of the total of Transient Occupancy Taxes for hotels collected by the City.<sup>3</sup> The estimates ranged from 39% (e.g., Motel 6) to 100%. Overall the average, weighted by ToT collected for beach visitors, was 54%. The results are provided in table 4.2.1 below.

<sup>3</sup> We also checked these numbers with our survey data, and they are consistent. We used this technique since it is likely to be the most accurate.

Table 4.2.1

<b>Transient Occupancy Taxes Generated by Beach Tourism</b>			
	TOT from City	Beach Weight	Beach TOT
Small Motels, Campgrounds, Inns, Rentals: Carpinteria Shores, Sunset Shores, Solimar Sands	\$95,319	90%	\$85,788
Motel 6, Casa Del Sol, Eugenia	\$355,477	39%	\$137,570
Best Western and Comfort Suites	\$522,599	50%	\$258,686
<b>Total TOT</b>	<b>\$1,069,935</b>	<b>54%</b>	<b>\$578,584</b>

### 4.3 Sales Taxes

The City takes in a small percentage of the sales tax levied by the State of California equal to 1% of sales. In addition, 0.75% of the tax goes to the County (much of it for transportation). We have assumed that any additions in sales tax revenues accruing to the County are distributed to County residents roughly according to population. Since Carpinteria represents only 2-3 % of the population of Santa Barbara County, the amount that the City receives from additional County revenues is so small—on the order of a few hundredth of one percent of total sales, that it is not meaningful to calculate.

We used the survey data on spending per day to calculate the sales tax generated for the City. Recall that our survey estimated that the average person spends \$101 per day in the City of Carpinteria. However, much of this spending is either tax-exempt (most food from grocery and convenience stores is tax exempt and we estimate about 30% of items purchased will represent soda and candy, and other items which are taxed), or taxed in a different way (lodging). Overall, we estimate that \$53 of the expenditure is subject to sales tax. The main categories that are subject to sales tax are listed in the table below. We estimate that sales taxes generate just over 53 cents per person per day in the high season.

Table 4.3.1

<b>Estimated Spending Subject to Sales Tax</b>		
Expenditure Item	Amount Spent per person per day	
Beer, liquor	\$	5.00
Gas	\$	12.00
Restaurant Food	\$	26.00
Grocery food subj sales tax	\$	6.00
Miscellaneous	\$	4.00
<b>Total</b>	<b>\$</b>	<b>53.00</b>
<b>Est. Sales Tax Generated</b>	<b>\$</b>	<b>0.53</b>

### 4.3.1 Attendance

To compute the total amount of sales tax generated per year during high season, we need to weight the above estimates by attendance. The City estimates attendance every year using a methodology developed a number of years ago. We used an average of the last five years available (1996-2000) and estimate that the City’s beaches have 1.9 million visitors per year and that 60% of visitors attend during high season, that we define as Memorial Day to late September. In other words, in a typical year 1.3 million people visit Carpinteria during high season and 100 thousand visit during the rest of the year. For low season visitation, we have used the value for Carpinteria visitors only, that generate 2.3 cents per visit.

Table 4.3.2

Sales Tax Generated for the City in High and Low Season				
Season	Sales Tax per visitor	# Visitors	Est. Sales Tax Generated	
High	\$0.53	\$ 1,300,000	\$	689,000
Low	\$0.02	\$ 100,000	\$	2,300
<b>Total</b>		\$ 1,400,000	\$	<b>691,300</b>

Overall, we estimate that Carpinteria’s beaches generate \$691,300 in Sales tax for the City.

### 4.4 Parking

The City does not charge parking fees but does fine those who park for longer than the designated time. We interviewed City officials and obtained the parking fines collected, by quarter, for the last several years. The City can expect to generate \$60-\$70,000 in parking fines over the course of the year. We estimate 65% of these fines are beach related. (Note that parking fees and fines at the State beach go to the State). However, the City employs one full time person and another official is estimated to spend half his/her time collecting fines. We have not attempted to estimate precisely the expense of collecting these fines, but when one adds in salary, benefits, the cost of vehicles, and administrative overhead including the costs of disputed fines, **it is clear that the City spends more collecting parking fines than it generates in revenue.** Indeed, although we have not attempted to precisely estimate the amount, it most likely costs the City \$30,000 to \$60,000.<sup>4</sup> The City may want to consider charging for parking or raising its fines so that the City at least breaks even, especially since a substantial number of fines are levied on nonresidents. Overall we will not consider parking as a source of revenue for the City; indeed it should be considered a cost.

<sup>4</sup> Our estimate is based on the cost of collecting fines at other small cities.

#### 4.5 Day-Trippers, Overnighters and Carpinteria Residents

One final way to examine the fiscal impact of Carpinteria’s beaches is to look at the effect of day-trippers versus overnight visitors (excluding residents). The table below (4.5.1) summarizes the impact per person per day of each different type of visitor. Overnight visitors generate substantially more revenue per visitor, \$12.96 (most of it TOT’s), than do day-trippers: \$.09.

Table 4.5.1

<b>Revenues Generated by Day Trippers and Overnighters to Carpinteria (non-Residents)</b>				
<b>Item</b>	<b>Day Trippers</b>		<b>Overnighters</b>	
Transient Occupancy Tax	\$	-	\$	12.59
City portion of Sales Tax	\$	0.09	\$	0.36
Parking	\$	-	\$	-
<b>Total</b>	\$	0.09	\$	12.96

#### 4.6 The Fiscal Impact of Beach Tourism

Table 4.6.1 below itemizes the total estimated revenues generated by beach tourism and compares this to the costs to the City.<sup>5</sup> Beach tourism does generate revenue for the City, but it is not as substantial a benefit as some claim. In particular, the Office of Management and Budget and many beach “experts” quoted in the national press have claimed that most benefits of beach tourism go to local Cities. However, after accounting for costs, the net benefits to the City of Carpinteria are relatively small: \$744,844, or roughly 57 cents per visitor. Keep in mind that overnight visitors, especially those who stay in motels and condos, generate almost all of this amount. Day-trippers generate no TOT’s and very little sales tax revenue, since most of the items they purchase are not subject to sales tax or are purchased outside the City.

<sup>5</sup> Please note that the calculation here only estimates taxes that are directly generated by beach tourism and does not include other taxes that are indirectly linked to beach tourism. For example, we have not estimated property taxes generated by beach tourism for a number of reasons.

Table 4.6.1

<b>Source of Revenue/Expense</b>		
Sales Tax	\$	691,300.00
Transient Occupanct Tax	\$	578,584.00
Net Parking	\$	-
<b>Total Revenue Generated</b>	<b>\$</b>	<b>1,269,884.00</b>
<b>Est. revenue per visitor</b>	<b>\$</b>	<b>0.98</b>
Beach Safety and Maintenance (excl. Police)	\$	300,000.00
Police	\$	225,000.00
<b>Total City Cost</b>	<b>\$</b>	<b>525,000.00</b>
<b>Net Revenue from Beaches</b>	<b>\$</b>	<b>744,884.00</b>
Net Revenue per visitor	\$	0.57

### 5.1 Tax Revenue Impact on the State of California and the Federal Government

A useful comparison for the City is to contrast the amount of tax revenue collected by the State and Federal government including the indirect and induced effects.<sup>6</sup> These figures should be taken as general indicators and cannot, strictly speaking, be directly compared to the City numbers since we are looking at direct and indirect effects. Nevertheless, the numbers are instructive. **Including indirect and induced effects, the City's beaches generate \$6.90 per beach visitor in direct State taxes and \$17.07 in direct Federal taxes; this result is in stark contrast to the amount generated in parking fees, TOT's, and sales tax revenue, which, after expenses are deducted, amounts to 98 cents per person (57 cents after City expenses are deducted).**

Our estimates indicate that while the City of Carpinteria gains some benefits from its beaches, the tax benefits to the State and Federal governments are significantly greater. The fact that half of visitors are day trippers from out of town who generate little tax for the City also provides a rationale for State and Federal participation.

<sup>6</sup> Please note that the spending values differ. The \$77 per day represents the total amount visitors said they spend on a typical beach day. We assumed that 90% of this value is captured within State and 95% within the US.

Table 5.1.1

<b>Impact of Carpinteria Beach Direct, Indirect and Induced Expenditure on Federal Tax Receipts</b>		
	Estimated 2001 Carpinteria Beach Direct Expenditure per Person per Visit	\$ 121
A.	Ratio of Income Tax Receipts to GDP	0.109
	Estimated 2001 Federal Income Tax Revenue Generated By Direct California Beach Spending	\$ 13.19
B.	Ratio of Corporate Tax Receipts to GDP	0.0250
	Estimated 2001 Federal Corporate Tax Revenue Generated By Direct California Beach Spending	\$ 3.03
C.	Ratio of Excise Tax Receipts to GDP	0.0070
	Estimated 2001 Federal Corporate Tax Revenue Generated By Direct California Beach Spending	\$ 0.85
<b>Estimated 2001 Federal Tax Revenue Generated per Person per Visit</b>		<b>\$ 17.07</b>

<b>Impact of Carpinteria Beach Direct, Indirect, and Induced Expenditure on California Tax Receipts</b>		
	Estimated 2001 Carpinteria Beach Direct, Indirect, and Induced Expenditure per Person per Visit	\$ 115
A.	Ratio of CA State Income Tax Receipts to GSP	0.028
	Estimated 2001 CA State Income Tax Revenue Generated	\$ 3.22
B.	Ratio of CA Sales Tax Receipts to GSP	0.0320
	Estimated 2001 CA Sales Tax Revenue Generated	\$ 3.68
<b>Estimated 2001 CA State Tax Revenue Generated per Person per Visit</b>		<b>\$ 6.90</b>

## 6. The Economic Value of Carpinteria's Beaches

Non-economists often wonder at the difference between “economic value” and “economic impact” although the conceptual difference is straightforward. Economic impact numbers estimate how much people spend on a particular activity including complementary spending (lodging at beach hotels, gas, etc.), whereas the economic value tries to estimate how much people are willing to pay to enjoy the activity. While the difference may seem academic, it is not in the case of public beaches simply because access to beaches is free—it is quite possible for someone to spend very little (or nothing) and still enjoy the pleasures of a day at the beach. Indeed, beaches (below the mean high tide line) are free by law in the State of California. Further, if one spends a week at the beach and goes out to dinner, or stays in a nice hotel, this generates income for businesses and for the City (calculated above) but one cannot necessarily count all of this income towards the economic value of a beach since many people would go out to dinner even if there was no beach.

For this reason, economists have devised a number of standard ways to calculate the economic value of what we refer to as “non-market goods,” that is, goods that are free. In the case of beaches, it is clear that people place a value on the beach (even if they resent paying parking fees) as demonstrated by their willingness to fly or drive substantial distances to get to a beach, often in heavy traffic. One widely accepted and used method of calculating the economic value of a day at the beach is the “travel cost method” which estimates the cost of traveling to and from the beach as a measure of the willingness of visitors to pay. The USACE has officially approved the travel cost method as a legitimate way to measure ability to pay, and it is widely used in the economic profession to value recreational sites like beaches.

To calculate the willingness to pay for a day at the beach we used information provided by the survey coupled with attendance data to estimate consumer surplus for the beaches at Carpinteria. The complete details of the calculations are rather technical and hence are presented in appendix 1. Suffice to say, we did the following:

- Estimated the demand curve for beach visits using the travel cost method;
- Estimated consumer surplus by integrating the demand curve.

The value of one beach day is estimated at \$23.38 per person per day during high season. For low season (October through early May) we use a conservative estimate of \$3 per day.<sup>7</sup> This value is consistent with other values estimated for Southern California beaches as well as figures used by the U.S. National Parks service<sup>8</sup>, but is substantially higher than the value used by the USACE, which is limited to \$9 per day. The number reflects the fact that a substantial number of people are willing to travel quite far to spend a day at Carpinteria's beaches, which provide more amenities than many other beaches.

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<sup>7</sup> Low season visits are considered less valuable by economists since they involve local visitors, who have a low travel cost, and who typically use the beach for lower value uses, such as walking.

<sup>8</sup> See, for example, Chapman, D., Hanemann, M., and Ruud, P., 1998, “The American Trader Oil Spill,” and National Park Service. *Benefits Estimation*.



As table 6.1 below shows, we estimate the economic value of Carpinteria’s beaches at just over \$30.7 million per year.

Table 6.1

<b>Economic Value per Year of Carpinteria’s Beaches</b>				
		<b>High Season</b>	<b>Low Season</b>	<b>Total</b>
Value of Beach Day	\$	23.38	\$ 3.00	
Est. Attendance (millions)		1,300,000	100,000	2,500,000
<b>Total Value</b>	<b>\$</b>	<b>30,394,000.00</b>	<b>\$ 300,000.00</b>	<b>\$ 30,694,000.00</b>

## 7. Conclusion

The main purpose of this report is to allow policy makers at the City, State, and Federal level to analyze the economic value and the fiscal impact of Carpinteria’s beaches to the City, State and National economies. Currently, the Office of Management and Budget has claimed that most of the benefits accruing from beaches go to local residents and City governments. While there is no doubt that Carpinteria benefits from its beautiful location on the coast, its pier, and its beaches, the specific economic benefits and tax revenues accruing to the City from beach tourism are far smaller than is often claimed. Indeed, given the City’s relatively high expenditures on Marine Safety, the expense of police and public safety, and even the cost of collecting parking tickets, the City actually nets a small amount of revenue from its beaches: \$745 thousand, or 57 cents per visitor annually.

Much of the reason for this result is due to the fact that 50% of beach visitors to Carpinteria are day-trippers who spend a relatively small amount in the City; much of this (i.e., food from grocery stores) is not subject to any tax.

One conclusion that should **NOT** follow from this study is that Carpinteria should spend less on maintaining its beaches or on public safety. Indeed, the City should be applauded for its efforts. Instead, the results from this study are best viewed as a rationale for other entities, notably the State and Federal governments, to become more involved.

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## Appendix 1: The Travel Cost Methodology

### The Model

Individuals travel to the beach as part of a household (which varies in size), and the model estimates the number of household trips to the subject beach as a function of the total cost to the household of gaining access to that beach, including travel cost (airline tickets, car expense, parking expense) and the opportunity cost of the time spent traveling:

Households walking or biking to the beach are assumed to have zero transportation cost. Travel cost for households traveling by car was calculated as the product of distance times \$0.49 per mile, a composite national average cost per mile for four door sedans.<sup>9</sup> The data did not include exact routes or fares paid for air travel, so an airfare function<sup>10</sup> was estimated from 14 day advance purchase airfares as a function of distance, and this function was used to calculate airfares. Households traveling by air are assumed to travel from Los Angeles (which is far cheaper to fly to than Santa Barbara) to Carpinteria by rental car using the cost per mile from the composite national average as a proxy for total rental car cost (economic theory suggests that the cost of renting or owning a car should be approximately equal). However, cost of driving from home to the airport was ignored in the absence of any data, possibly underestimating surplus for air travelers.

This study uses “the convention that the opportunity cost of time is 33% of the respondents wage rate,”<sup>11</sup> although in this instance, we use household income instead of individual income. While there is much controversy surrounding the opportunity cost of time, we believe the approach used here is conservative and well supported in the literature.

The model was estimated using the regression:

$$\ln(\text{TRIPS}) = \alpha + \beta \ln(\text{RTCOSTs})$$

where TRIPS is the annual number of trips a household makes to the subject beach, and RTCOST is the round trip cost of visiting that beach, including both travel cost and the opportunity cost of time.

Linear and log-linear forms were also estimated to test sensitivity to functional form. Typically, the linear regression were quite disappointing, giving  $R^2$  values of less than 5%, while log-linear regressions produced somewhat better results, but still under 15%. Log-log regressions produced  $R^2$  values between 43% and 59%.

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<sup>9</sup> <http://www.nctr.usf.edu/clearinghouse/costtodrive.htm>

(Center for Urban Transportation Research at the University of South Florida).

<sup>10</sup> Linear, log-linear and linear-log functions were estimated. The linear log function,  $\text{Fare} = (131.6 * \ln(\text{Distance})) - 720.8$  was used since it produced the best “fit” --  $R^2 = 0.9639$ .

<sup>11</sup> Garrod, Guy, and Willis, Kenneth G. (1999) *Economic Valuation of the Environment*. Edward Elgar, Northampton, MA. pp. 70-73.

## Regression Results

Carpinteria				
Dependent Variable: LOG(TRIPS)				
Method: Least Squares				
Date: 03/20/02 Time: 10:23				
Sample(adjusted): 2 227				
Included observations: 183				
Excluded observations: 43 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.086408	0.204552	19.97738	0.0000
LOG(RTCOST)	-0.620676	0.045086	-13.76662	0.0000
R-squared	0.511497	Mean dependent var		1.494816
Adjusted R-squared	0.508798	S.D. dependent var		1.544454
S.E. of regression	1.082443	Akaike info criterion		3.007187
Sum squared resid	212.0746	Schwarz criterion		3.042263
Log likelihood	-273.1576	F-statistic		189.5198
Durbin-Watson stat	1.709331	Prob(F-statistic)		0.000000

## Estimating Consumer Surplus

While the log-log form was clearly the most appropriate method to estimate the relationship between the number of trips and the total round trip cost, it does present certain challenges in estimating consumer surplus. Integrating under the demand curve from zero trips to the mean number of trips gives a surplus of infinite. This difficulty “may be alleviated by adding unity or some other positive value to the dependent value,” but this technique is “entirely arbitrary, and gives different answers depending on the unit in which the rate is measured.”<sup>12</sup>

Our approach (method 1), which also has the advantage of treating the dependent variable as a discrete random variable rather than a continuous variable, is to calculate consumer surplus as the sum of a series of rectangles, each one day wide (except for the fractional amount), touching the demand curve at its upper right corner. As an alternative (method 2), we have also calculated the surplus as the sum of a rectangle for the area under the curve between zero and one, and the definite integral for the area between one and the average number of trips. Neither method is arbitrary, nor are they likely to overstate the surplus for day one.

Once annual household surplus has been calculated, average daily individual surplus is calculated by dividing the average annual household surplus by the average number of individuals per household, the average number of trips per year, and by the average number of days per trip.

<sup>12</sup> Garrod & Willis. pp 65.

<b>Individual Surplus/Day</b>	<b>Carpinteria</b>	<b>Encinitas</b>	<b>San Clemente</b>	<b>Solana Beach</b>
Method1	19.62	18.841	25.697	14.578
Method 2	23.38	22.174	30.581	17.353

### **Driving Cost, Household Size and Vehicle Size**

We have used \$0.49/mile as the expense rate for all drivers, regardless of family size. This is probably lower than it should be for a number of reasons. We have not adjusted this figure for large households, even though it is clearly unreasonable to expect a family of eight or ten to travel in a single four-door sedan type car. More generally, the recent proliferation of large SUVs for families both large and small is not acknowledged by our assumptions. It seems likely that both these factors will tend to cause consumer surplus to be understated for beach visitors who travel by road, and also for airline travelers, to the extent that they rent SUVs out of preference or necessity.

## **Appendix 2: Survey Questions and Summary Statistics**

See attached pages.

Question 1: How far away from this beach do you live (your **primary** residence)?

Location	In Carpinteria	Outside Carpinteria, but within 20 miles	Within 60 miles	More than 60 miles but in California	In the US, but not in California	Outside the US
Frequency	17.2%	8.8%	24.7%	41.0%	7.0%	1.3%

Question 2: We'd like to know how many people are in your group today (friends and family member) who have approximately the same beach attendance as you and live with or near you.

Number of People	Frequency
1	8.8%
2	14.1%
3	12.8%
4	21.1%
5 to 6	19.4%
7 to 9	15.0%
10 to 12	3.1%
13 or more	5.3%
Non response	0.4%

Question 2a: Of these people, how many are under 16?

Number of People	Frequency
0	28.2%
1	13.2%
2	22.9%
3	12.8%
4	6.6%
5 to 6	8.8%
7 to 9	2.6%
10 to 12	1.3%
13 or more	0.4%
Non response	3.1%

Question 3: How many days this year will you go to **this** (Carpinteria City or State) **Beach**?

Number of Days	Frequency
1 to 3	20.3%
4 to 7	25.6%
8 to 10	9.7%
11 to 14	11.5%
15 to 21	8.8%
21 to 28	6.6%
28 to 50	7.5%
50 to 100	4.4%
More than 100	5.3%
Non response	0.4%

Question 4: How many additional days this year will you go to **other beaches in California**?

Number of Days	Frequency
0	19.8%
1 to 3	28.6%
4 to 7	18.9%
8 to 10	13.2%
11 to 14	7.0%
15 to 21	4.0%
21 to 28	3.1%
28 to 50	3.1%
50 to 100	1.3%
More than 100	0.9%

Question 5: How did you get to Carpinteria Beach **today**?

Mode of Transportation	Car	Foot	RV	Staying at Beach Condo	Bicycle
Frequency	74.0%	20.0%	3.7%	0.9%	1.3%



Question 6: How long did it take you to get to this beach **today**?

Time	Less than 20 minutes	20 - 45 minutes	45 minutes - 1 1/2 hours	1 1/2 hours - 3 hours	3 - 5 hours	More than 8 hours
Frequency	42.9%	11.7%	14.2%	10.6%	0.7%	0.4%

Question 7: Please check the most appropriate box.

	Day Trip from home	Trip or Vacation to the area	Non response
Frequency	48.5%	50.2%	1.3%

**Questions 8-15 were only answered by overnight guests.**

Question 8: How many days do you plan to be away from home on your current trip?

Number of Days	Frequency
2 days (overnight)	16.0%
3-4 days	26.1%
5-7 days	36.1%
8-10 days	9.2%
11-14 days	5.9%
14-21 days	1.7%
More than 21 days	4.2%
Non response	0.8%

Question 9: How many days will you spend at the beach on your current trip?

Number of Days	Frequency
One day or less	6.7%
2 days (overnight)	16.8%
3-4 days	30.3%
5-7 days	30.3%
8-10 days	7.6%
11-14 days	3.4%
14-21 days	2.5%
More than 21 days	1.7%
Non response	0.8%

Question 10: How did you get to this area?

	<b>Drove</b>	<b>Took Plane</b>	<b>Walked</b>	<b>Camping Here</b>	<b>RV</b>
Frequency	94.1%	3.4%	0.8%	0.8%	0.8%

Question 11: Consider how you arrived on this trip (drove, flew, etc.). What best describes your attitude toward the process of traveling?

	<b>I hate traveling</b>	<b>I don't mind traveling, but my time is valuable</b>	<b>I like traveling</b>
Frequency	2.5%	31.9%	65.5%

Question 12: We'd like to know how important visiting the beach is for your trip/vacation.

	Frequency
The beach is important to me--No beach, no trip	61.2%
If there were no beach I might not come or would stay less often	19.2%
I would still come but I like the fact that I can go to the beach	17.1%
I can take the beach or leave it; it would not affect my decision	2.5%

Question 13: Where are you staying?

	<b>Camping</b>	<b>Hotel</b>	<b>House or Condo Rental</b>	<b>With Friends/Family</b>
Frequency	26.9%	25.2%	35.3%	12.6%

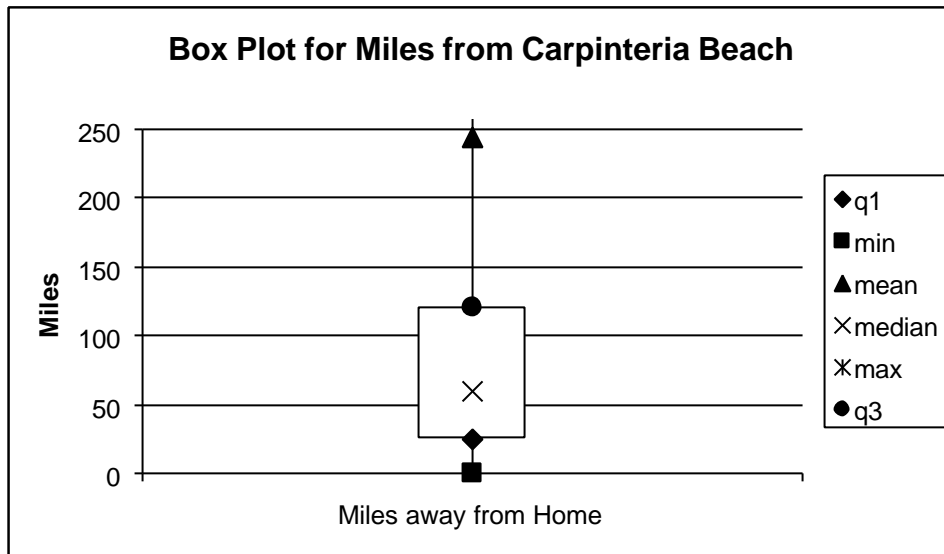
Question 14: If California's beaches disappeared, would you go to beaches in another state/country?

	<b>Yes</b>	<b>Maybe</b>	<b>No</b>	<b>Non response</b>
Frequency	50.4%	31.9%	16.8%	0.8%

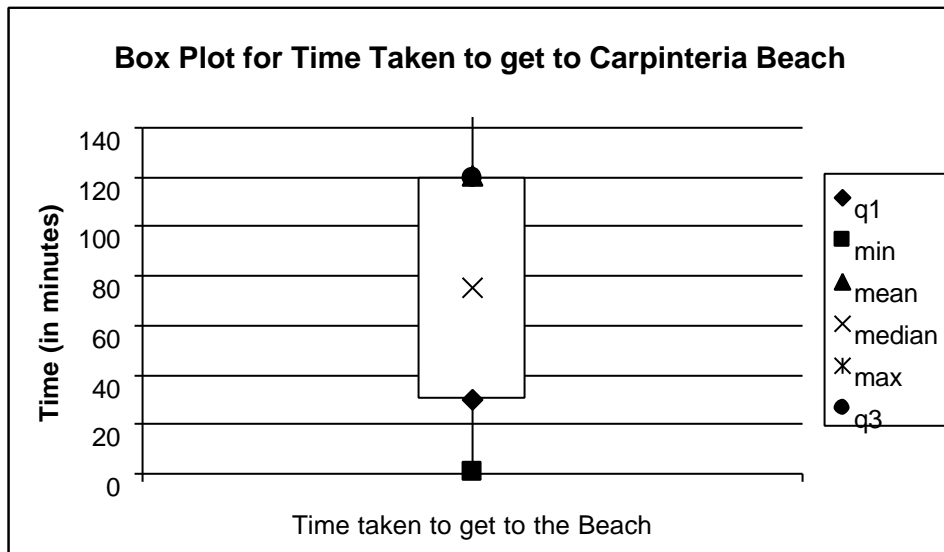
Question 15: On a typical day, how many hours do you spend at the beach?

Length of Time	<b>Less than 1 hour</b>	<b>2-3 hours</b>	<b>3-5 hours</b>	<b>5-8 hours</b>	<b>More than 8 hours</b>
Frequency	5.9%	21.0%	42.0%	26.9%	4.2%

Question 16: How many miles away is your home (permanent residence)?



Question 17: How long does it take to get from your (permanent) home to here?



Question 18: What was your reason for coming to this beach?

	Frequency
So I could swim	9.1%
So my children could play/swim	34.9%
To surf	2.5%
To hike	1.1%
To play on the beach	8.5%
To hang-out on the beach	40.0%
To walk my dog	0.5%
I like the beach	0.4%
Relaxation	1.8%
Non response	1.3%

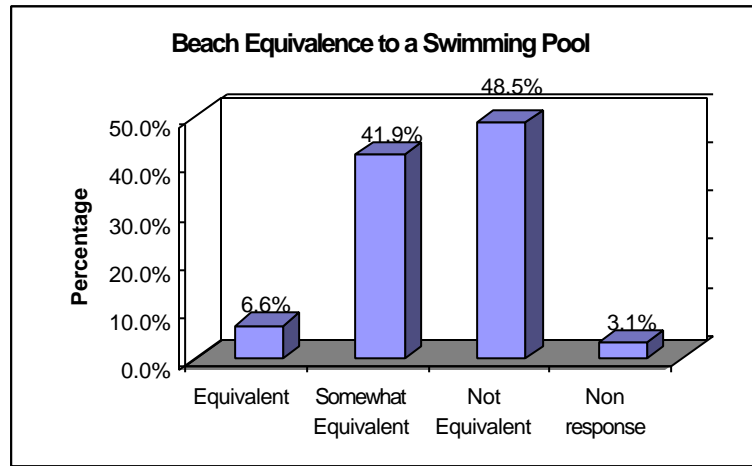
Question 19: What is the minimum width a beach needs to be before you would stop going?

Width	Frequency
5 ft	3.1%
10 ft	7.9%
20 ft	15.2%
40 ft	0.4%
50 ft	26.7%
100 ft	19.4%
200 ft	13.7%
Doesn't Matter	1.8%
Write in*	1.3%
Non response	10.6%

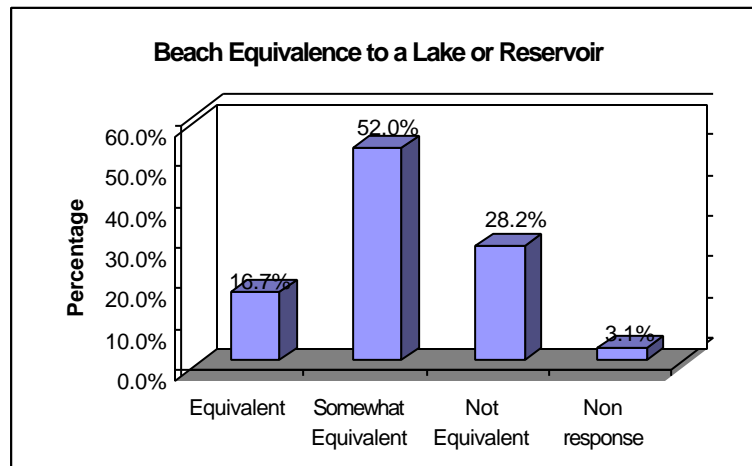
\* If only cliffs and no sand.  
Wider is better.  
As long as there is sand.

Question 20: consider alternate forms of recreation to the beach. How would you rate the following as alternatives to the beach?

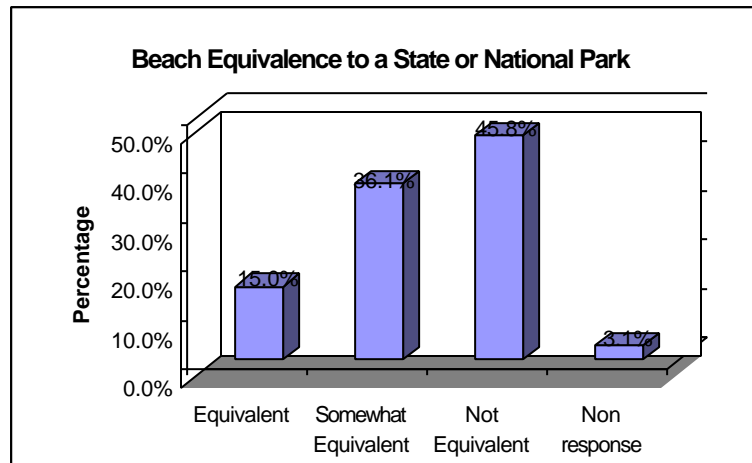
Item 1: Swimming Pool



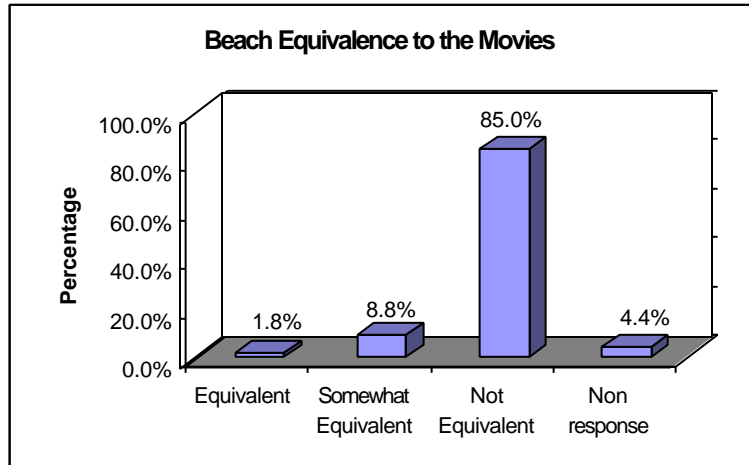
Item 2: Lake or Reservoir



Item 3: State or National Park

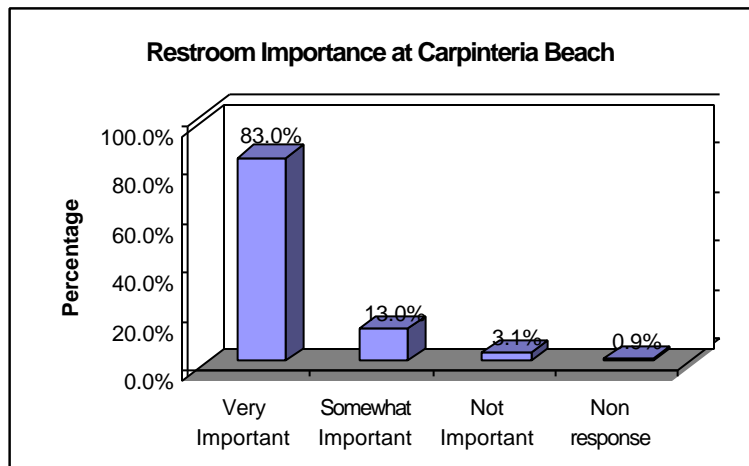


Item 4: Movies

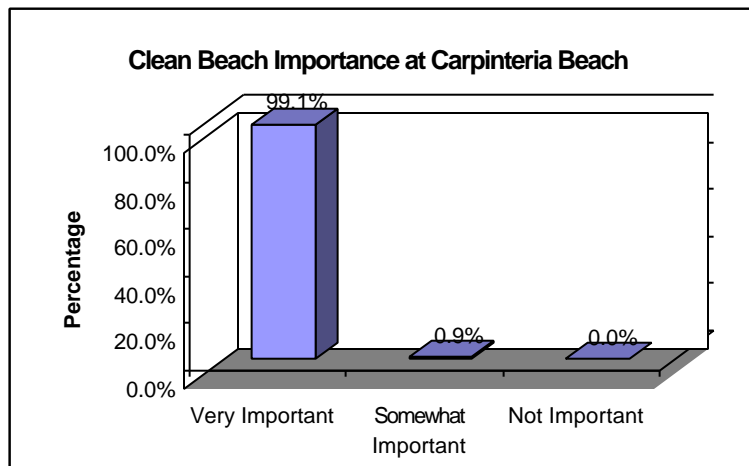


Question 21: How important are the following amenities/services to you?

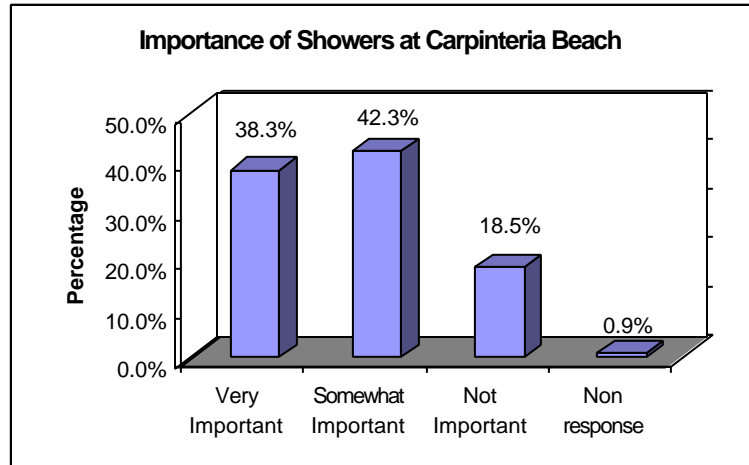
Amenity 1: Restrooms



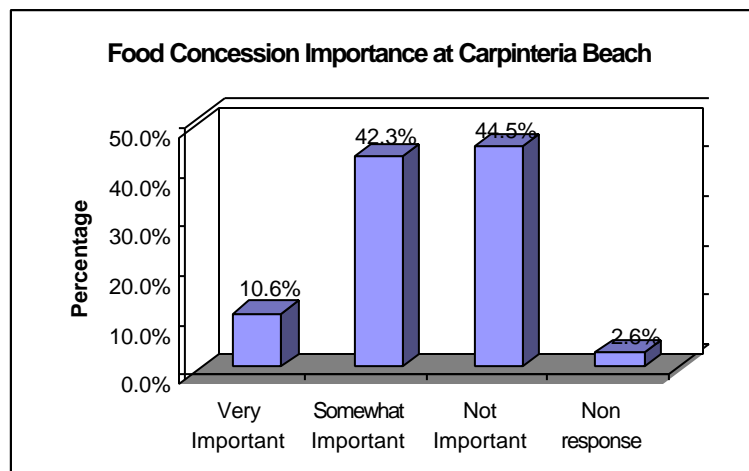
Amenity 2: Clean beaches



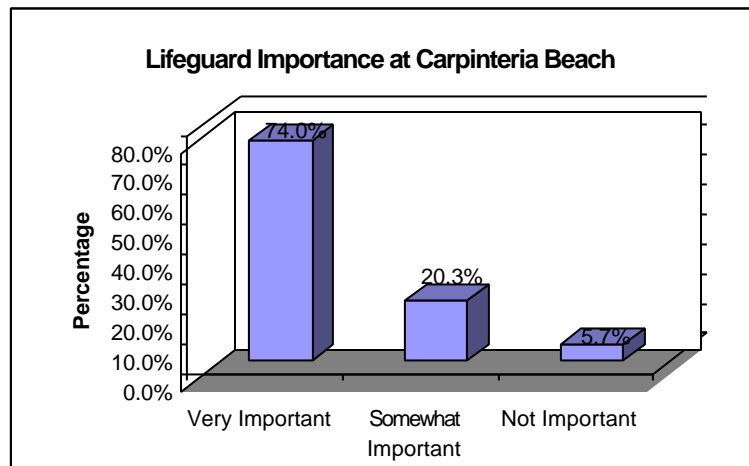
### Amenity 3: Showers



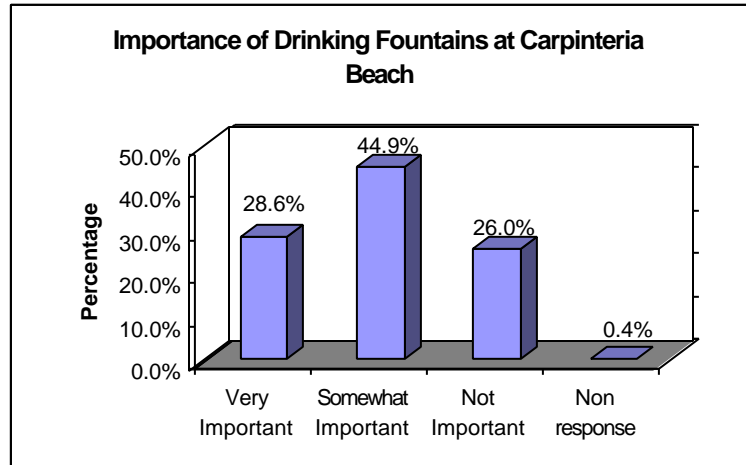
### Amenity 4: Food Concession



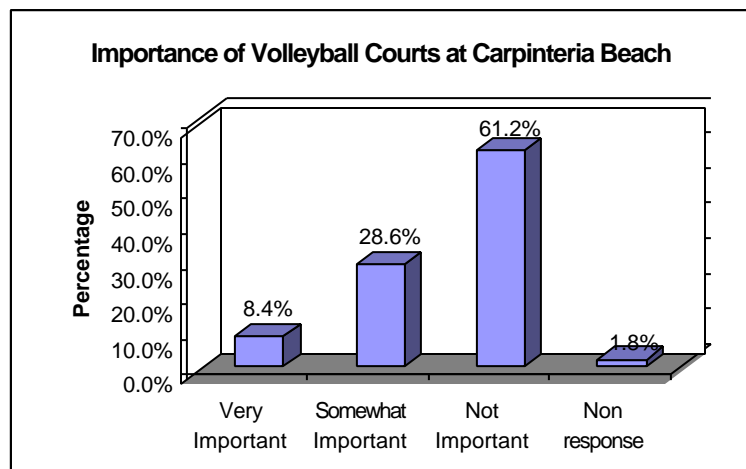
### Amenity 5: Lifeguards



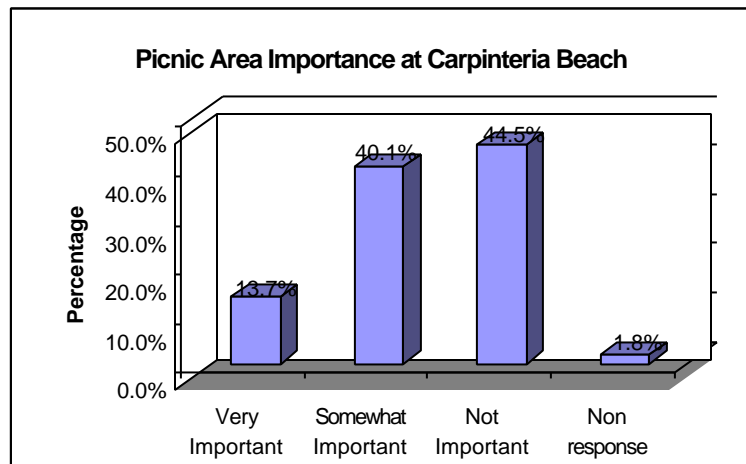
### Amenity 6: Drinking Fountains



### Amenity 7: Volleyball Courts



### Amenity 8: Picnic area

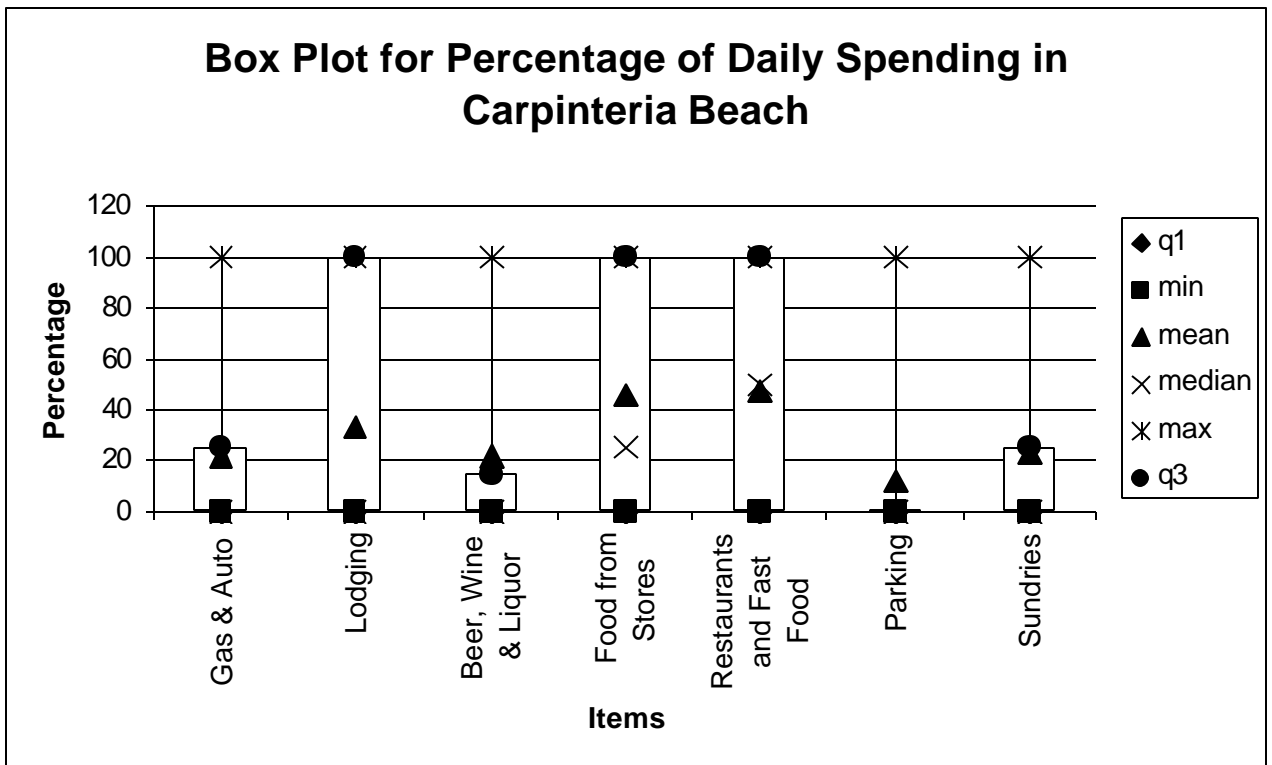
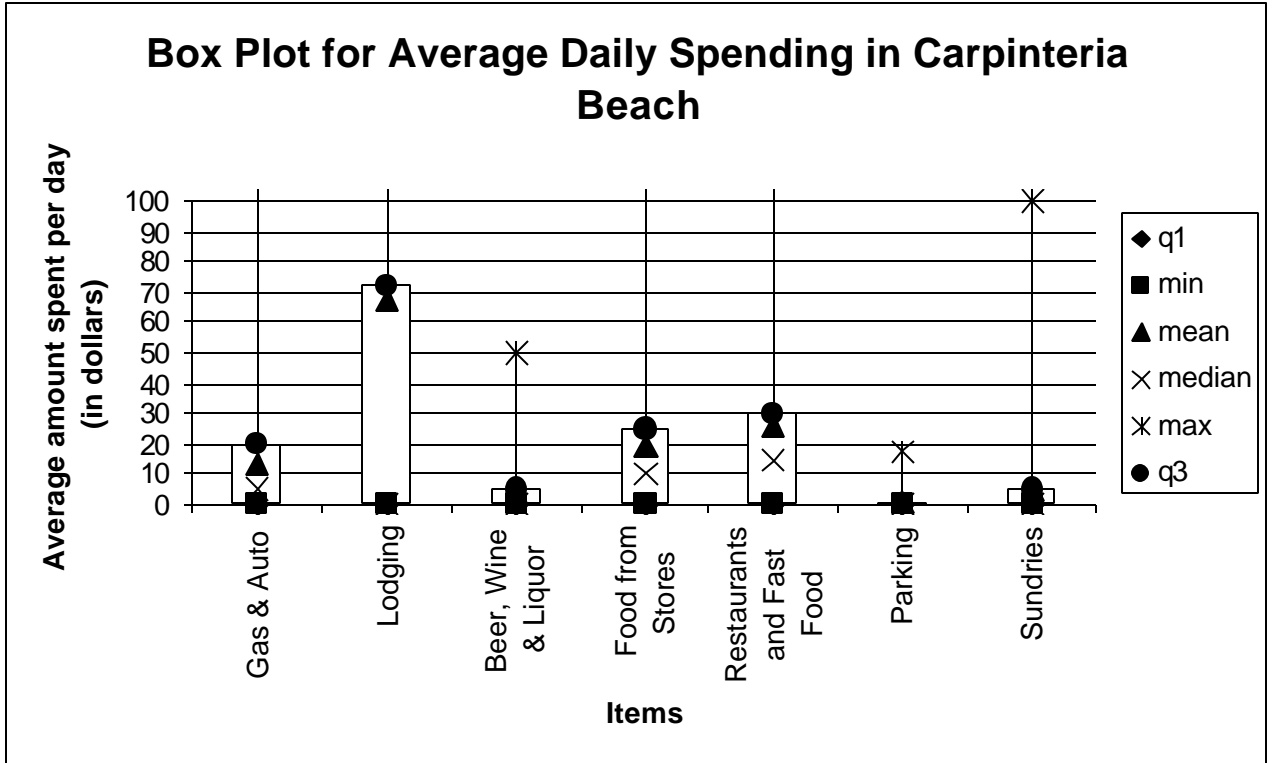




Question 22: Daily Spending.

	Dollar Amount	Percentage of Total Spent
Average daily spending in Carpinteria Beach	\$101.38	79.5%
Average daily spending outside Carpinteria Beach	\$26.20	20.5%

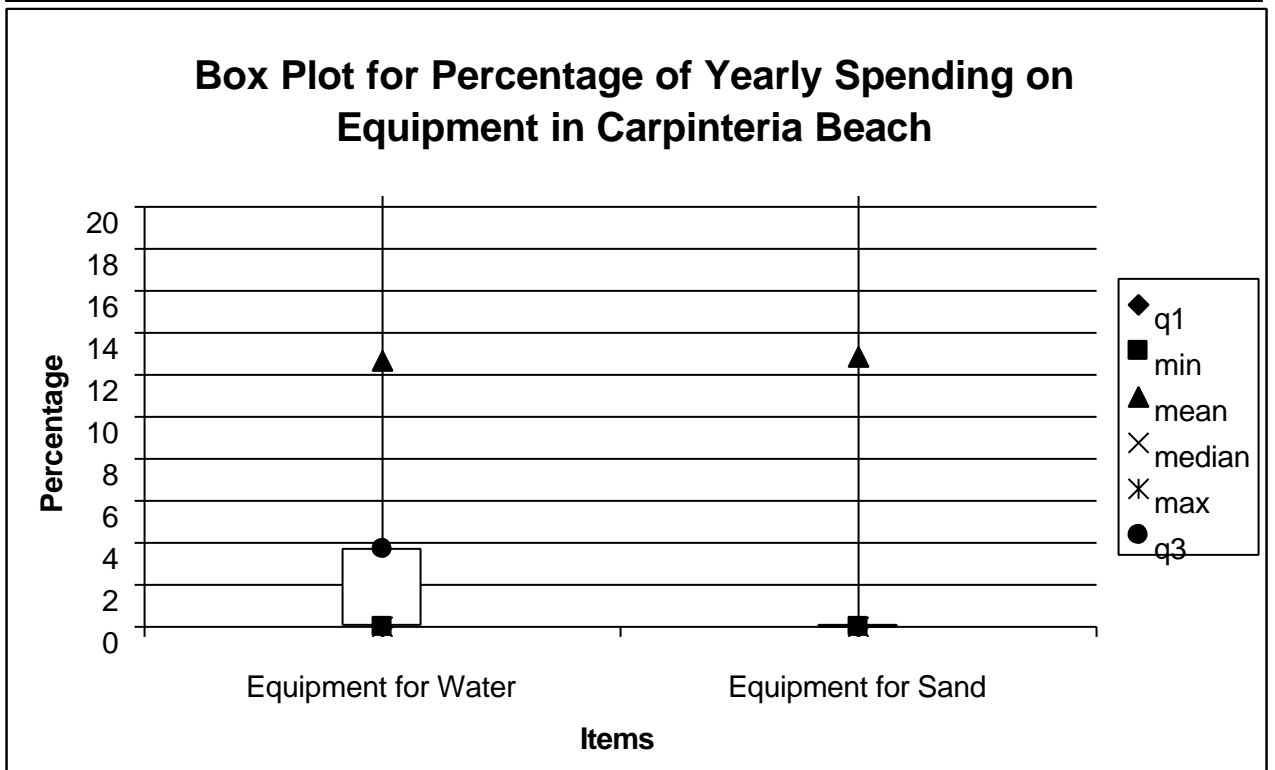
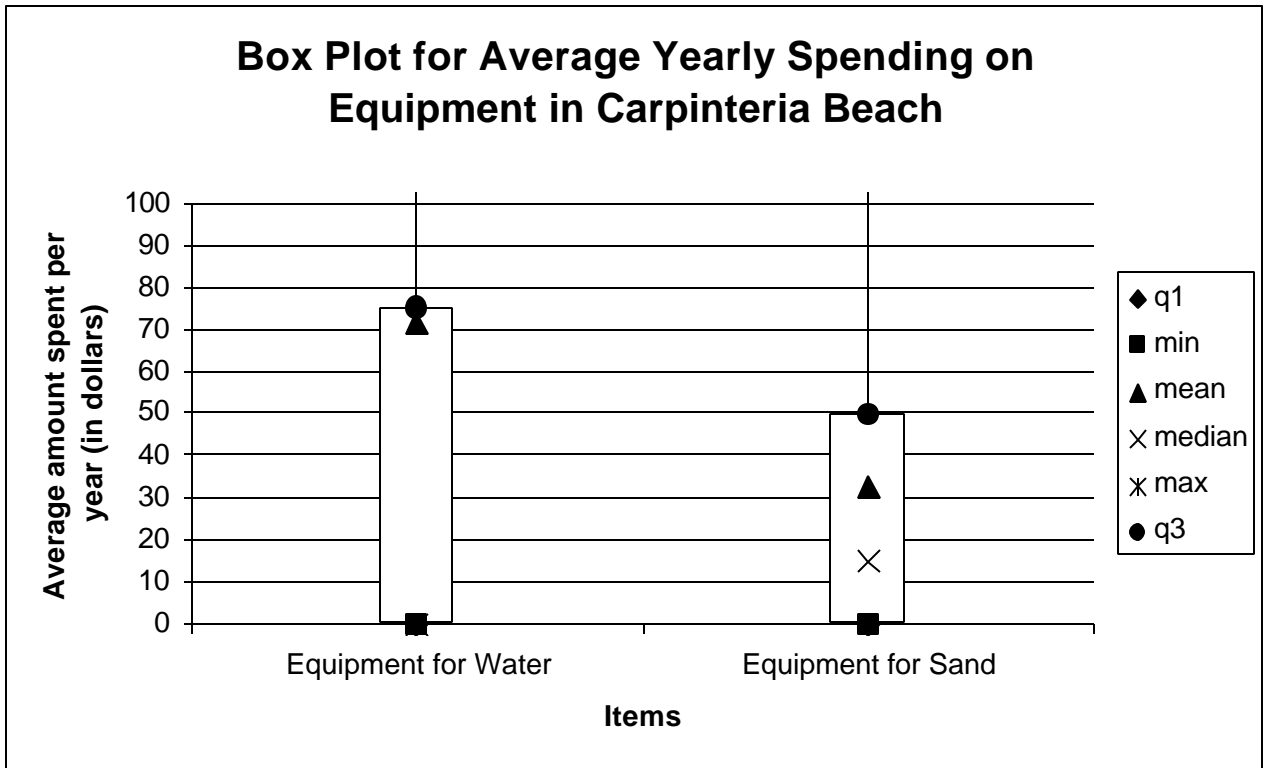
Please refer to the following box plots.



Question 23: Spending on Equipment.

	Dollar Amount	Percentage of Total Spent
Average yearly spending in Carpinteria Beach	\$32.63	32.3%
Average yearly spending outside Carpinteria Beach	\$68.53	67.7%

Please refer to the following box plots



Question 24: When you go to this beach, how often do you visit downtown Carpinteria?

	<b>Never</b>	<b>Every day</b>	<b>Every other day</b>	<b>Twice a week</b>	<b>Once a week</b>	<b>Non response</b>
Frequency	19.6%	46.7%	16.3%	4.9%	5.4%	7.1%

Question 25: Would you be more likely to go to downtown Carpinteria if a free shuttle were available?

	<b>Yes</b>	<b>Maybe</b>	<b>No</b>	<b>Non response</b>
Frequency	22.8%	26.6%	44.6%	6.0%

Question 26: Are you aware of community activities and shopping in the City?

	Frequency
I know nothing about Carpinteria other than the beach	19.6%
I have a vague idea of what is available	36.4%
I believe I know what is available	38.6%
Non response	5.4%

Question 27: Have you received any information regarding events or activities in the City?

	<b>Yes</b>	<b>No</b>	<b>I'm not sure</b>	<b>Non response</b>
Frequency	25.5%	65.2%	3.8%	5.4%

Question 28: Which would you find helpful (check as many as appropriate):

	Frequency*
A map with local activities, restaurants and stores made available to visitors	70.1%
A kiosk with information for visitors	41.8%
Other**	5.4%
I'm not interested in knowing more	9.2%
Non response	7.1%

\* Frequency totals more than 100% because of multiple responses.

\*\* Other

? We enjoy the local magazine and Coastal News

? Mailing List

? Free web site

- ? List of local activities
- ? Info at camping area when you come in
- ? Camp ground to let us know flyer or something.
- ? Mailing list
- ? Local newspaper
- ? Info, as above, provided at motel
- ? No! Will be too crowded!

Question 29: Have you been to the Carpinteria Salt Marsh Nature Park?

	Yes	No	I'm not sure	Non response
Frequency	25.5%	67.4%	1.6%	5.4%

Question 30: The City is considering placing a food concession just off the beach. Profits would go to the beach upkeep and lifeguard services. What best describes your reaction? (Check as many as appropriate).

	Frequency*
I like the idea but would probably not use it	12.8%
I would buy small snacks or beverages occasionally	53.7%
I would buy meals to take out occasionally	26.9%
I would buy meals and sit down if seats and tables were available	26.9%
I would go there all the time	7.0%
I don't like the idea	9.7%
Comments**	20.3%
Non response	5.3%

\* Frequency totals more than 100% because of multiple responses.

\*\* Comments

- ? We try to keep our expenses down, so if it was very reasonably priced we might use it.
- ? Good idea as long as trash didn't become an issue.
- ? We have it in Hunt Beach – watch out for trash
- ? If it's good and prices are reasonable, I'll use it. Don't like being gouged. Need beach vendors like Cabo San Lucas.
- ? It's a fine idea as long as the concession stand is low key and not commercial. Carpinteria already has enough fast food places and I wouldn't want to take business away from them.
- ? Would compete with the spot- unfair. Too much litter.
- ? Please do not clutter the beach with food concessions- more garbage. We can bring our own. Locals benefit from visitor shopping uptown.
- ? Sounds great.

- ? We go to Santa Claus Lane beach sometimes because of Padaro Beach Grill. We would come to Carpinteria for beach and food too.
- ? Use especially if the money goes back to the city.
- ? Like idea.
- ? Excellent idea if it was noticeable that profits went to beach.
- ? Keep this concession at Linden Beach. Most people would appreciate- small concession- ice cream, drinks, burgers- But keep it small and off the beach.
- ? I don't like the idea if it increases the crowds. I do not like it.
- ? If beach is kept clean.
- ? Keep it natural!
- ? Very good idea.
- ? Kiss keep it simple stupid- Owner of a food chane (chain).
- ? Depends on the day.
- ? I would use it all the time, especially if it helps keeping beaches clean and safe.
- ? Great.
- ? Depends if already use the money allotted for here on the concession stand. No more taxes!
- ? It takes away from the beauty of the beach.
- ? Worry about trash.
- ? But is not gonna affect the area or make it dirty.
- ? If is not so (much) money and it does go to lifeguard.
- ? Supply garbage cans and encourage use.
- ? The Spot and other fast restaurants are plenty close to the beach.
- ? Could be good for campers or day visitors.
- ? Love the idea!
- ? It would bring too much traffic. Carpinteria is a secluded beach lets keep it that way!
- ? Seems good.
- ? I think there are enough places to buy food within walking distance to the beach. I would not want to see the city in competition with private business.
- ? We love this beach because it's free of commercial facilities, unlike most beaches. In addition, food is available close by in town.
- ? As long as it didn't further create parking problems.
- ? Think this is a very good idea.
- ? Teen crowds would start hanging out. I think it is a bad idea. This is a family style area.
- ? Go for it!
- ? Depends on type of food.
- ? Not necessary for us.
- ? Good idea.
- ? We like the new bathroom that was put in at the north end of the beach.
- ? Like the idea of lifeguard spending, but don't know if will use it.
- ? Too much trash and people. Don't want any more developments!
- ? A huge sign saying "Profits would go to the beach upkeep and lifeguard services" would attract business.
- ? But trash cans would be nice ✍

Question 31: How old are you?

Age	16-19	20-24	25-34	35-44	45-54	55-64	65 or older	Non response
Frequency	2.2%	2.9%	13.4%	36.3%	29.3%	9.7%	2.6%	3.5%

Question 32: What is your ethnicity?

Ethnicity	White (Caucasian)	Hispanic	Asian	Black (African American)	Other	Non response
Frequency	78.6%	13.8%	2.0%	0.8%	0.9%	4.0%

Question 33: What is your highest level of Education?

Level of Education	did not finish high school	high school	some college	college degree	post graduate degree	Non response
Frequency	0.1%	9.4%	29.7%	37.2%	19.6%	4.0%

Question 34: How many people are in your current household (people you live with and share financial resources)?

Number of People	Frequency
1	9.7%
2	17.2%
3	18.9%
4	27.8%
5 to 6	20.3%
7 to 9	1.8%
10 or more	0.4%
Non response	4.0%

Question 35: What would you estimate is the current yearly income of your entire household (before taxes)?

Income (in dollars)	Frequency
Less than 9,999	1.3%
10,000-14,999	0.0%
15,000-24,999	0.9%
25,000-34,999	4.8%
35,000-49,999	15.0%
50,000-74,999	16.3%
75,000-99,999	17.6%
100,000-149,999	18.9%
150,000 or more	11.0%
Non response	14.1%