THE USE OF MODELS IN DECISION-MAKING:
A CASE STUDY OF TOURISM IN SAN DIEGO

by

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The Use of Models in Decision Making:
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The frequency of application of quantitative forms of analysis by planners has been increasing significantly during the recent past. A quick review of several modeling efforts would show some to have been successful while others were failures. This thesis reviews one application of modeling techniques to determine if there are specific occurrences during the modeling process which bear heavily upon a model's reliability, its usefulness to decision makers in the context for which it was designed, and its ability to help planners learn more about the urban environment.

The case reviewed is an analysis of the tourism industry in the City of San Diego. The City Council requested an analysis which could provide the answers to two questions: what are the economic, fiscal, and environmental impacts of tourism on the city, and what role should the city play in promoting tourism? The Council selected Arthur D. Little, Inc., a consulting firm, to provide answers to these questions. The consultants assessed the impact of tourism through the use of several analytical models.

Several phases of the study are shown to have the capacity to affect either the conceptualization of the desired results or the actual results: (1) the conceptualization of the issues by the city and the transformation of these issues into a Request for Proposal; (2) the response of the consultants to the Request for Proposal, resulting in a proposed work program; (3) the selection by the city of a consultant to conduct the study; (4) the formulation of an actual work program by the consultant, including a review of what factors influenced the contents of the work program and the types of analyses conducted; (5) the actual form of the analysis, including the assumptions made to complete the work and the basis for these assumptions; and (6) the process of transforming the results into recommendations.

The various forms of analysis used by the consultant are analyzed to determine how sensitive the results and recommendations they produce are to small changes in the values of particular input variables. The analysis shows the reliability of the models to be highly dependent on procuring input information in which there can be high confidence.

The review of this application of models shows that there is a gap between desired and actual performance of analytical techniques. Several causes of this difference are reviewed. First, all parties seem to be guilty of over-expectation -- that is, they do not carefully consider before the study is conducted the actual likelihood of generating the desired quality of output. The proposal process, as it currently exists for most studies, is not designed to allow the consultant to think through a study thoroughly before preparing a work program. There is insufficient distribution of analytical techniques among potential users. Finally, many municipalities cannot affort the development of highly sophisticated models.

Several suggestions are made as to how the gap between desired and actual performance can be reduced and how analytical techniques can be made more effective. These include better preliminary review of the capabilities of available techniques before preparation of a work program, a reasonable estimate of the amount of money which must be committed by the client to achieve the desired results, and an increased ability of clients to make use of the analytical techniques prepared for them.

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FOREWORD

While I was a consultant to Arthur D. Little, Inc., (ADL) during the course of the analysis of tourism in San Diego and was responsible for much of the work conducted as part of that anlaysis, the statements of this thesis reflect my own evaluation of the events surrounding the study. Much of this evaluation benefits from the improved vision of hindsight. The statements, observations, and opinions made in this thesis, unless specifically cited, do not necessarily represent the position of ADL or the City of San Diego.

I. INTRODUCTION

We are currently in the midst of a quiet revolution. During the past twenty years dramatic changes have been made in the methods of analysis used to study urban problems. Historically, most studies of urban issues have been of a descriptive and non-mathematical nature. Often a city would request an "expert" in the problem area to conduct an investigation of the issue. His research would include gathering the significant facts and figures available and outlining what type of relationships exist among various actors. However, the relationships were discussed in qualitative rather than quantitative terms. The "expert" could not definitely determine the exact effect changes in one variable would have on others. The recommendations developed from this form of study were often based upon the experience and background of the research staff and were designed to influence the relationships among actors. However, because it had been impossible to determine the current strength of the relationship, the study could not predict the magnitude of the recommendations' effects.

Significant work has recently been done in the construction of more rigorous types of analysis including simulation, optimization, input-output, and computer mapping. However, implementation of many of these forms of analysis is hindered by the lack of required data inputs and computation facilities. Therefore, their theoretic development is more advanced than their utilization.

With the development of more extensive computer facilities, there is increased usage of these techniques. In addition, data collection capabilities are also increasing, thereby allowing for testing the hypotheses of theoretical models against actual information. As a result, it has become far more commonplace for mathematical models to play a vital role in the analysis of many types of urban issues. Governments at all levels are coming to make greater usage of these tools in their decision making process.

An example of model usage has recently been provided by the City of San Diego. During recent years, there has been increasing concern in the City about the role the tourism industry should play in the City's development. Unfortunately, no one side possessed data generally acceptable to all those people interested in the issue. Therefore, the City Council requested a study which would provide the basic data needed to continue the discussion and recommend whether San Diego should continue to develop tourism and which particular tourist types were best.

The City's request for proposal suggested the consultants employ several analytical techniques representative of the types of quantitative approaches often used to deal with similar issues. Largely because it expressed a capability to constructe these models, the firm of Arthur D. Little, Inc., (ADL) was chosen to conduct the analysis. I was involved on the case team and therefore helped to design and conduct the study. This thesis is based upon my experience and research.

While some of the work conducted by ADL was of a qualitative nature, most of the effort was concentrated on three impact models which measured the impact of tourism on the City's economy, the expenditures made by the City to provide services to tourists, and the amount of commercial acreage supported by the purchases of tourists. A fourth technique was used to combine the results of the three models into one evaluative measure.

This thesis concentrates on the role these models played in the development of recommendations to the City. Conclusions are made about the impact certain aspects of the modeling process had on the final result and suggestions are made to both the client and the consultant about actions they can take during the modeling process which will maximize its benefits. Other suggestions are made to persons involved in developing and adapting these models as part of planning work.

Chapter II provides an introduction to both San Diego and the tourism industry. It discusses the background of San Diego and contains statistics regarding population, income levels, and the City's major industries. The Chapter also outlines the structure of the tourism industry and reflects upon the difficulties the lack of both adequate definitions and techniques will cause for a study attempting to utilize precise estimation tools.

Chapter III addresses the question of how techniques of analysis and their outputs are affected by the characteristics of the formulation of the City's request for proposal and the design and selection of the proposals received. Several prominent characteristics of the process are uncovered. Those persons in the City who were in close contact with making the request for proposal have the most influence over it. Some of these people are led by preconceived notions of the impact and designability of tourism while others worked under the weight of misinformation and preconceived ideas about how to best address the question. The consultant labors under need to construct a proposal responsive to the request for proposal and reasonable in light of the many constraints. The City's guidelines for selecting a consultant predict a certain type of result.

Once the consultant has been chosen and begins to design the study, much of the City's former influence is lost and given to him. While the consultant wishes to provide as much information as possible, a series of time and budget constraints are shown to slowly dwindle at the study's hoped for comprehensive scope. Chapter IV reviews the alternative techniques available to the consultant. These range from adapting previously developed models to San Diego to formulating entirely new approaches for research. The Chapter draws some conclusions about the forces which influence the selection of specific techniques of analysis and the implications the techniques chosen by ADL had for the recommendations the report would eventually provide.

Four of the models used by ADL are reviewed and critiqued in Chapter V. Problems of data availability and a lack of time are seen to force the consultants to accept questionable assumptions or use inadequate data. The most important of the models' assumptions and inputs are reviewed and their affect upon the outputs discussed. The Chapter provides a good look at the type of analytical models currently being used to study urban issues. A more detailed description of the models and the sources of their inputs are found in Appendix II.

The outputs and recommendations of the models indicate tourism is a beneficial industry for San Diego. In addition, those tourists who stay in a commercial attraction are seen to have the most positive overall impacts upon the City. Chapter VI provides a brief look at the outputs generated by the models and traces the method used by the consultants to use the outputs to draw findings and make recommendations.

Chapter VII goes back to the models to discover if their structure or the nature of the inputs clearly predict the types of results and recommendations found in Chapter VI. The most important set of inputs are the expenditure patterns of different tourist types, the assumptions concerning leakage at the indirect and induced level of economic production and the estimates of the amount of public services consumed by different tourist types.

The Chapter uses sensitivity analysis as a tool in assessing the validity and usefulness of the models' outputs. Sensitivity analysis is shown to have potentially educative benefits for both client and consultant. Changes are made in the most important inputs to determine the range within which the outputs and policy recommendations of the model are valid. While policies based upon inter-tourist type comparisons are not seriously affected by this process, those which rely on the absolute impact of tourism are shown to rely on model outputs in which there is insufficient confidence.

Chapter VIII synthesizes the entire modeling process and develops some general conclusions and guidelines for those interested in using models. The important influences on model conceptualization, development and reliability uncovered from a review of the process in previous Chapters are reviewed. Based upon these influences, a series of recommendations designed to improve the use of models are made for clients, consultants and planners in general. Additional suggestions are made about how the entire modeling process can become a more educational experience for both client and consultant and how the spinoff benefits of model development can be maximized. Finally, the Chapter describes the affect inherent characteristics of the modeling process have upon the planner's ability to use them to help improve the urban environment.

II. AN INTRODUCTION TO SAN DIEGO AND THE TOURISM INDUSTRY

Decisions concerning the desirability and form of the tourism study were influenced by the existing knowledge of the industry, the attitudes of residents towards tourism and the physical, social, economic and political makeup of the San Diego community. A growing concern about population growth prompted inclusion of an analysis of tourism's growth-inducing congestion impacts. In addition, since tourism is such a diffuse entity, significant proportions of the total study effort must be used simply to clarify what is and what is not being analyzed and the type of analysis that can be conducted. The background of each of these issues is reviewed in this Chapter.

The San Diego Fact Sheets on the following pages provide a brief introduction to the City and County. Most unexpected is the city's large population -- 696,000 in 1970 and an estimated 763,000 in 1973. It may now be the eighth largest city in the country. Much of San Diego's growth, however, is not caused by in-migration or natural population increases but is the result of annexation of surrounding unincorporated communities. Approximately fifty percent of the population of the SMSA lives in the city. The San Diego SMSA was the 23rd largest SMSA in 1970.

San Diego's geographic location is an obstacle inhibiting the development of tourism and many other industries. While the City is less than 130 miles from Los Angeles and 500 miles from San Francisco, distances to major population centers in the Midwest and the East are much greater. Therefore, it is less accessible to these markets than cities in Florida.

San Diego's climate, with an average annual temperature of 63 degrees and over 250 days of sunny or partly sunny weather each year, ranks among the best in the nation. The prevailing winds and the shape of the San Diego Air Basin create a potential for a serious air pollution problem. At the present time, however, air quality standards are only occasionally exceeded.

<u>SAN DIEGO FACT SHEETS</u>

- San Diego is located in the southwestern corner of California approximately 130 miles south of Los Angeles. Air distances to other major U.S. cities are: San Francisco -- 530 miles; Houston -- 1,370 miles; Chicago -- 1,860 miles; Atlanta -- 2,050 miles; Honolulu -- 2,450 miles; Phoenix -- 600 miles; New York -- 2,570 miles.

- San Diego's climate is considered one of the country's best. The average yearly temperature is 63 degrees. Average annual rainfall is 11.5 inches. Approximately 150 days of every year are sunny, and an additional 106 are partly sunny. Air pollution, potentially a very severe problem in the San Diego Air Basin, only occasionally exceeds Federal standards. During 1972, oxident measured at the Downtown San Diego monitoring station exceeded Federal standards during forty days and carbon monoxide levels exceeded standards on thirty days.

- San Diego was settled by the Spanish in the 1700s. Its growth has occurred since 1900. Its 1900 population was 17,700; 74,361 in 1920; 203,341 in 1940; by 1950 it had obtained a level of 334,387. The 1960 population was 573,224, and by 1970 San Diego had grown to 696,769. The estimated population of San Diego in 1973 was 763,300. In 1970 it was the 14th largest city in the country, and assuming that the larger cities have not increased their population, is currently the eighth largest city. The population of the SMSA, which comprises the 4,000 square miles of San Diego County, was approximately one million in 1960 and had increased to 1,357,387 by 1970, making it the 23rd largest SMSA in the country.

- Of the City's 1970 population, approximately 620,000 persons were white, 53,000 were black, and 24,000 were of other races. 174,000 residents of the SMSA are of Spanish heritage. An additional 9,000 blacks live in the SMSA but not in San Diego.

- The 1970 median family income was $10,165 in the City and $10,133 in the SMSA. Per capita income was $3,441 in the City and $3,330 in the County. The SMSA median family income was $10,133. The median family income for persons with Spanish surnames was $8,723 and for blacks the median family income was $7,366.

- The median age of the SMSA population is 25.5; for males the median age is 23.9 and for females it is 28.5. In the City the median age for all persons is 27.7; 24.0 for males and 28.6 for females.

- Only fifteen percent of all current residents over 35 were born in San Diego County. Of the population with Spanish surnames, approximately 23% were born in San Diego County.

- The median number of years of school attended in 1970 by the entire population was 12.5. For the Spanish surname population, the figure was 12.2.

- In 1970 the average family size in the City of San Diego was 3.0.

- In 1970 695,910 persons in the San Diego SMSA were employed. During that year, the unemployment rates among males in the SMSA were 5.8 percent and for females 7.2 percent. These compare with State unemployment rates of 6.0 percent for males and 7.0 percent for females.

- The number of persons in the SMSA working in each of several professions during 1969 and the median salary for males is shown below.

Occupation	Number Employed in 1969	Median Salary: Male Employees
Prof., Tech. and Kindred	80,375	$11,588
Managerial and Administrative	39,801	11,494
Clerical and Kindred	82,058	7,491
Sales	37,950	7,845
Crafts and Kindred	58,375	8,968
Operatives	35,265	7,361
Laborers, ex. farm	17,992	5,160

Occupation	Number Employed in 1969	Median Salary: Male Employees
Farm Workers	5,569	$ 4,900
Service Workers	55,359	4,866
Pri. Household Workers	5,292	1,847

- The number of persons employed in the San Diego SMSA in each of several major industry categories during 1969 is shown below.

Industry	Number Employed in 1969
TOTAL	695,910
Agriculture, Forestry and Fisheries	18,630
Mining	1,021
Construction	54,697
Manufacturing	132,882
Fabricated Metals	23,206
Electrical Equip., Mach. and Supplies	16,105
Motor Vehicles and Other Trans. Equip.	44,109
Printing, Publishing and Allied Inds.	8,998
Transportation, Utilities and Communications	40,745
Wholesale Trade	25,105
Retail Trade	125,270
Eating and Drinking Places	26,320
Finance, Insurance and Real Estate	36,859
Business and Repair Services	27,408
Personal Services	42,817

Industry	Number Employed in 1969
Hotel and Motel	11,510
Entertainment and Recreation	10,074
Medical and Educational Services	96,539
Welfare and Religious Organizations	11,519
Legal, Engineer and Prof. Services	22,030
Public Administration	65,560

The three sectors which are often thought of as part of the tourist industry -- Eating and Drinking Places, Hotels and Motels, and Entertainment and Recreation Services -- comprise only a small portion of total employment. Their total employment during 1969 was 47,904 or less than seven percent of all employment in the SMSA. Since these sectors also supply services to the resident non-tourist population, the employment which is supported by tourism is even less than this figure.

- Retail sales in San Diego during 1972 were $237 million. Total payroll for all sectors, except military, in San Diego County during 1972 was $3,409 million. The military payroll for 1972 was estimated at $694 million.

- Taxable retail sales in San Diego County during 1972 were $1,237 million. During the same year, manufacturing sales were $1,822 million with aerospace accounting for almost forty percent of all sales. Agricultural production was $167.7 million, while production in fishing and mining was $117.3 million.

The U.S. military, particularly the Navy and the Marines, have the greatest economic impact on the City. San Diego was recently selected as the major Naval base on the West Coast, succeeding San Francisco. Uniformed and civilian employees in 1972 were paid $694 million, a fifteen percent increase over the 1971 level. Many retired military personnel relocate in San Diego. A 1972 survey found five percent of the people who had moved to San Diego during the previous ten years returned because of the favorable implression they had gained while they had formerly been stationed there. Another twenty-three percent indicated they moved because of military transfer. As a result, the military has a major influence on the City.

The second largest industry is aerospace. However, recent layoffs have made many San Diegans weary of future expansions in this area. Tourism is thought to be the City's third largest industry. A 1973 survey showed many residents feel tourism causes a disproportionately large amount of growth of the permanent population. Because the City is questioning the desirability of future growth, concern exists about future expansions of the tourism industry.

The issue of optimal City size has been one of increasing importance during the past few years. A 1972 referendum asked voters if they would like to see the population of San Diego, then about 730,000, double by 1990. Opponents of such growth outnumbered proponents by a three to one margin. The Sierra Club in San Diego has taken a position against future growth in the City through a recently released analysis of growth's implications. They recommended the City restrict the number of permits for new housing units in an effort to discourage in-migration. The number to be allowed would be decided by multiplying the current housing stock by the rate of population growth of the entire United States. It was assumed this procedure would yield a rate of growth equal to the rate of growth in the United States.[1]

The City's reaction to the Sierra Club's recommendation indicates the seriousness given the issue of future growth. In October, 1973, shortly after release of the Sierra Club report, the Council and the Mayor directed the City Manager to designate a Task Force to study the proposed Slow Growth Ordinance. Representatives of the County, the Comprehensive Planning Organization, the City Attorney, and the Departments of Environmental Quality, Planning, and Community Development were asked to participate. The Task Force prepared a response to the Sierra Club's recommendations and the supporting information. The City Attorney's office also prepared a brief dealing with the legality of the proposed ordinance. Inputs were sought from various community figures and from the City's Quality of Life Board and Science Resource Panel. In general, these groups felt the idea of slow growth had merit, but thought both the techniques of analysis and the specific recommendations of the Sierra Club left much to be desired. Although the Task Force did not favor the Sierra Club ordinance, it concluded additional research was needed on the projected impact of population growth.[2] The Task Force agreed to submit a proposal to the City Council within six months which would outline the tasks, resources, agencies and time schedules involved in analyzing the physical, economic, and social constraints of projected population growth.

A survey of residents conducted by the Comprehensive Planning Organization showed many people are concerned about the problems the Sierra Club contends are only aggrevated by increased population.[3] The survey of over 4,000 resident households revealed the major public issues the residents thought the County was facing and measured their willingness to bear increased costs as part of an effort to deal with these problems. Respondents listed the following issues as most important:

1. Air pollution;
2. Water pollution;
3. Open space;
4. Transportation systems;
5. Visual pollution;
6. Noise pollution; and
7. Tourism/Industry

When asked if they would be willing to spend an additional $5.00 annually to combat these problems, a majority indicated in the affirmative only to the question of air pollution. Only six percent expressed willingness to spend $5.00 to encourage further expansion of tourism and industry. A recent open-space bond issue reinforces the results of the survey. Seventy-five percent of those questioned said they would not be willing to spend an additional five dollars to help preserve open space. A recent $7 million bond issue put before County voters in 1971 received an affirmative vote from only 43% of the electorate. A similar bond issue put before voters in the City has been defeated twice. Hence, while San Diegans are concerned about various environmental problems, they do not consider them to be serious enough at the present time to warrant costly action.

The environmental concerns of residents interrelate with the prevailing attitudes towards tourism. A study conducted by the San Diego Convention and Visitors Bureau revealed a majority of residents think tourism is good for San Diego, but feel tourists are large contributors to the City's several environmental and congestion problems. Those who felt tourism did the most environmental damage were most likely to feel additional development would be bad for the City.[4]

Politics in San Diego have been historically conservative, partially because of the influence of the large proportion of residents who are or were connected with the military. The past several mayors of the City have considered themselves to be conservative to moderate Republicans. County government shows the conservative outlook. In promoting the quality of County government, the annual budget does not discuss the level of services provided by the County but, instead, concentrates on the fact that the County has one of the lowest per capita expenditures for public assistance of all California counties. Both newspapers, which are owned by the same company, have usually taken moderate to conservative stands. The City government has been free of major corruption.

The Tourism Industry

Tourism is a very difficult industry to study. There are no universally accepted definitions of who is and is not a tourist and what is and is not the tourism industry. Nevada, for instance, considers all out-of-state visitors to be tourists including people on business trips or attending college.[5] Florida explicitly excludes people who come to the State strictly on business or shopping trips, educational purposes, or military service. Florida also does not consider in-transit visitors as tourists.[6] While that may be reasonable, the in-transit visitor is economically the most important traveler for some states between Florida and the populous northern states. New Hampshire includes those trips made by out-of-state persons which "contain an element of recreation"[7] whereas Vermont includes only those trips made "for pleasure purposes."[8] The differences are significant. Conventions which occur in Vermont partially because of its location but also because of the recreational opportunities available to the participants are not classified as tourist activities, whereas the same conventions occurring in New Hampshire are. The definitional problem is portrayed most vividly in a 1965 study of tourism in Massachusetts. Defining tourists as "persons, not on business, who stay away from home overnight," the study estimated the revenue derived by the State from such people was $932.4 million in 1963. Substituting a definition which labels tourists as those persons "staying in commercial lodging" and"other pleasure travelers," the study measured the revenue at $451.3 million in 1963.[9]

A recent study by Arthur D. Little, Inc., suggests tourists should be defined in relation to a particular purpose. Tourists who are promotable are generally the most important because any assessment of the impact of tourism would concentrate on the sector of the market that was policy sensitive. Several groups are "promotable;" people visiting friends and relatives, conventioneers, vacationers, business trips with time for recreation. The selection process of tourist types used in the San Diego study drew from this discussion. An account of the definitions of tourists used by the study and the technique used to develop the characteristics appears in Appendix I.

Just as no universal agreement exists about the definition of a tourist, the components of the tourism industry are equally disputable. Whereas the automobile industry can provide reasonable estimates of total car sales, no standard reporting format exists for businesses in the tourism industry. In addition, many establishments which only serve tourists occasionally do not even know they might be considered part of the tourism industry. Unlike most other industries which are classified rather specifically by the Standard Industrial Classification code, no general code applies to the tourism industry. Instead, it is spread across several sectors: hotels, restaurants, bowling alleys, golf courses, museums, and transportation services. Even within these categories, few establishments serve only tourists. A restaurant, for example, may serve tourists but will also cater to residents of a local community. Thus, it is difficult to obtain sales information regarding the economic impact of tourism as it is mixed with sales to non-tourists.

The indirect and induced effects of tourism are especially hard to measure. While growth in sectors of the economy can be pinpointed using tools such as input-output analysis, tourism is spread over several sectors and is usually lumped together with businesses, such as personal services, having little in common with tourism.

One of the things those who study the tourism industry do agree upon is the importance of what might be called attractors. Obviously, people will not go somewhere unless they are somehow attracted by something special. There are three types of attractors--natural, man-made/non-tourist oriented, and man-made/tourist oriented. Natural attractors are such things as beaches, lakes, or ski slopes. Climate, itself, can be a key attractor--witness the success of both ski resorts and beaches. Many natural attractors are contained in national or state parks, some are under the control of private operators, and many are not really under anyone's control, although they are usually within the jurisdiction of a local government. Most natural attractors require little development: lifeguards on the beach, lifts at the ski slopes. Development is limited to the addition of certain conveniences--parking areas and walkways. Finally, natural attractors are tied to the land and are immobile. In addition, they are the hardest to create if they do not already exist.

San Diego is blessed with a number of natural attractors. Foremost among these are the City's extensive beaches which have the capacity to serve twelve million users per year and a peak daily capacity of almost 75,000. Another is Cabrillio National Monument which offers a spectacular view of San Diego Bay and Downtown San Diego. During 1973, almost 1.4 million people visited the monument. San Diego Bay is the focus of most boating and fishing activities in the City. However, the economic contribution of the Bay is measured in terms of military-related enterprise, as well as tourist-related activity.

The second type of attractor is man-made but not developed originally for the use of tourists. These attractors are historical--Civil War battlefields, New England fishing towns--or of relatively recent vintage--the United Nations, Washington, D. C., the tours at the Kennedy Space Center. They have a smaller impact than most natural attractors, although they are very much alike in several ways. First, modifications made to these attractors are most often slight, involving little more than the construction of information booths or a small room set aside for displays. Also their location is fixed. Examples of this type of attractor in San Diego include the Scripps Oceanographic Institute and Old Town.

The third type of attractor, also man-made, is one developed largely for recreational and tourist usage. There are several examples of this type of attractor in San Diego. Foremost among these is the San Diego Zoo. Reported to be one of the finest in the world, the Zoo recorded a 1973 attendance of 3.0 million persons. A newly-opened offshoot of the Zoo is the Wild Animal Park located approximately thirty miles north of San Diego. While it has only been in operation since May, 1972, its 1973 attendance was a respectable 960,000. Both the Zoo and the Wild Animal Park are owned and operated by the Zoological Society of San Diego. This is a non-profit corporation which receives most of its financial support through admissions and memberships. The Society has also been empowered by the City to levy a tax upon the City's property, sufficient to cover the Zoo's water costs. The major privately-operated tourist attraction in the City is Seaworld, which is essentially an aquatic zoo. In addition, several performances are given daily featuring dolphins, seals, and whales. Attendance at Seaworld in 1973 was 1.8 million.

The City operates several museums located in mile square Balboa Park. Among these are the Museum of Man, the San Diego Art Gallery, the Hall of Champions, a planetarium, and one of the largest outdoor organs in the country. These exhibits are financed through admission fees and City funds collected via a transient occupancy tax.

The two City parks directed largely toward tourists -- Balboa and Mission Bay Parks -- deserve special notice. Balboa Park is located close to Downtown San Diego and is the site of the Zoo, the Museum of Man, and some of the other attractions mentioned previously. In addition, the Park is used for picnicking and other forms of outdoor recreation. Mission Bay Park was a swampy area on the coast that was developed into a recreational bay. It houses Seaworld and several of the City's largest hotels. The City has ruled no more than twenty-five percent of the bay may be developed for commercial use.[11] Some residents feel the limit has already been exceeded and the Park is now oriented more toward tourists than residents.

A second major component of the tourism industry are those businesses that supply goods and services to tourists and serve those businesses which, in turn, serve tourists. There are several major types of these businesses: accommodations; eating and drinking establishments, including food stores; transportation-related businesses, including airlines and service stations; entertainment, including certain attractors and movie theaters, bowling alleys, etc.; retail stores, including curio shops, apparel stores, etc.

Accommodations serve a perplexing role in the tourism industry. While often one of the most important components of the tourism industry in terms of total sales, they penetrate only about fifty percent of the market (dependent, of course, on the definition of a tourist). In many areas, tourists are only day-trippers and do not require overnight accommodations.

Another large group of tourists visits friends and relatives, thereby requiring no commercial overnight accommodations.

The accommodation industry has become more centralized. Holiday Inn, Sheraton, Hilton, and a few other corporations dominate this sector. It is becoming more common for managers of hotels to become professionals and to transfer frequently to different locations. The result is that many managers are more concerned about being loyal to the company than to the specific inn and its surrounding community.

Increasing activity of large chains has caused many local operations to be replaced by chain motels. In part, this is due to the heavy capital investment required to build hotels or motels. In some locations, the cost of a new hotel room is more than $15,000. The creation of commercial chains is not limited to hotels. Campgrounds, which have become increasingly important to the tourism industry, may also involve a local franchise granted by national organizations.

While accommodations may not garner the greatest amount of total tourist dollars (more is spent on food and beverages), it is a component of the industry heavily dependent upon tourism for its survival. Whereas local residents visit natural and man-made attractors as well as restaurants, few local residents choose to live in commercial accommodations in their own community. As a result, total accommodation receipts related to tourists approximate 80% of more of total annual proceeds. This dependency on tourism often causes those involved in the accommodation industry to play an active role in community efforts to promote tourism.

The third component of the industry is the food and beverage sector. Included in this category are restaurants, bars and grocery stores. Traditionally, tourists have made more food purchases in restaurants than in grocery stores. However, with the increases in food prices in both grocery stores and restaurants and the increasing popularity of camping, the gap may be narrowing. A recently-completed analysis of tourism in the State of Maine estimated tourists spent $67,892,000 in restaurants and $21,806,000 in campgrounds, during the period from September, 1972, through September, 1973.

In most studies of tourist spending, expenditures for transportation have represented between fifteen and twenty percent of total expenditure. Transportation expenditures represent a considerably greater percentage of total trip expenditure when overnight commercial accommodations are not utilized. With the continued rise in fuel costs, the percentage of total purchases made for transportation will increase. Because those businesses which provide transportation services directly to the tourist probably buy a greater percentage of their inputs from outside the local community, a larger portion of the transportation dollar is likely to leak from the community than would leak from a dollar spent in a restaurant. If the tourist does not increase his total expenditure but shifts more of his expenditure to the transportation sector, the local community will receive less economic benefit from the same number of tourists.

While any attractor is often the most important part of the local tourist industry, not even the private profit-oriented attractors are the beneficiaries of a large percentage of the total tourist expenditure. For instance, admission to Seaworld is $4.50 per adult. Assuming a tourist is in San Diego for two days and stays in a hotel, his lodging expenditure can be expected to be over $30.00 and his food bill approximately the same. Even if he spent no money for either transportation or other retail goods, a trip to Seaworld would represent less than seven percent of his total expenditure.

The final commercial component of the tourism industry is retail stores. These include gift shops and other stores catering to the tourist. In some communities, such as Rockport, Massachusetts, and Old Orchard Beach, Maine, many stores are open only during the tourist season; they sell goods expected to be particularly attractive to tourists. Most retail stores, though, do only a small portion of their total business with tourists.

In addition to those industries interacting directly with the tourists, other businesses serve the tourist indirectly. Among these are wholesale firms, manufacturing firms, construction companies, and farmers. In fact, almost every sector of the economy provides some services either directly or indirectly to the tourist.

Government plays an important role in the tourism industry. Historically, the federal government has not been seriously interested in domestic tourism except as a means of aiding lagging regions. A recent book by a developing economist looking at six of the country's lagging regions concluded, in some cases, tourism was the only hope.[12] What interest has been displayed by the federal government has been directed at increasing the number of foreigners traveling to the United States. Much of this promotion is not aimed at providing additional business for the tourism industry as it is at helping to ease the country's balance-of-payments deficit. Travel promotion at the domestic level has been left to the travel industry and to state and local governments. Almost every state government has a tourism office. In some states, such as Hawaii and Florida, these offices are quite large and actively promote tourist-related activities. In other states, such as Nebraska, these offices are small and operate on a very limited budget. Many cities have publically-financed promotion agencies and San Diego is no exception. During the fiscal year 1974 the San Diego Convention and Visitors Bureau (CONVIS) received $80,000 (out of a total budget of $1.2 million) from the city.

State and local governments can also shape the tourist industry in other ways. In many cases, governments work in tandem with the private tourism industry. The city receives revenue in the form of taxes in return for which it supplies important public services. Because local governments promulgate building codes and zoning ordinances, they can influence both the location and type of structures used by the tourism industry. San Diego, for instance, can control tourist development along the City's coastline. It has already moved to impose height restrictions on the areas of the City with the greatest number of hotels. The City also maintains and helps operate some of the largest tourist attractions, thereby aiding related tourist-oriented businesses.

Federal, state, and local governments all reap large amounts of revenue from the tourist trade. The Federal Government receives income in the form of taxes upon corporations and individuals. The Federal gasoline tax is another important source of revenue. State government collects tourism-related income taxes and also collects large amounts from sales and gasoline taxes. Local governments receive funds via the property tax, business licenses and subventions on various state revenues. San Diego also receives money from the transient occupancy tax which is a sales tax on the sale of commercial accommodations. Every dollar of tourist spending in San Diego generates $.37 in State and $.10 in City revenues. In return for these tax revenues, the City provides services of various types. Tourists put an additional strain on the City's service systems and may necessitate the expansion of certain delivery systems such as highways, hospitals and water systems. Along the southern coast of Maine, additional police officers must be hired during the summer months to handle the influx of tourists. San Diego transfers more police to beach patrol during the summer months to deal with especially crowded conditions. Tourists also tax the community's service infrastructure, thereby requiring major expansions. This may take the form of improving highways in those areas frequented by tourists or may require the development of new water sources in order to meet the tourists' demands. Daytona Beach, Florida, has been forced to construct several additional causeways to the beach in order to handle the number of tourists.

San Diego's recognizance that it is a partner in the tourism industry led to a decision to request and fund an analysis of the industry. The City desired the study to indicate the type of partner it ought to be in the future. The next Chapter indicates those areas in which the City thought it was interacting with the tourism industry and were, therefore, those areas requiring further study.

Summary

Most San Diegans see several problems with their City but feel few of them are severe enough to warrant expenditure of public funds. Rather, a portion of the population feels control of the City's size is an effective way to prevent increases in these problems. Therefore, many citizens view continued development with a skeptical eye and only heartily approve development which neither harms the environment nor increases the City's population. Development of industries felt to have either of the above mentioned detrimental effects will be shunned by many residents.

Tourism is one of San Diego's major industries, but little information about it is available. Many residents believe tourism causes greater growth in the resident population than other industries. Because of the previously mentioned unwillingness to encourage industries which increase the population, some groups feel further expansion of tourism would be detrimental to permanent residents. On the other hand, industry proponents say tourism does not cause growth and feel its many benefits should encourage the City to expand public support of the industry. Chapter III will show this situation left decision-makers in the middle. The suggestion for a tourism study was approved to help decision-makers get out of a tight situation.

Tourism has been shown to be a very amorphous industry about which little information is available. It would, therefore, prove difficult to model. Mathematical models require the use of both specific data inputs and cause and effect relationships among the aspects of the industry. Unless these inputs are accurate, the use of the model developed from them will be severely limited and recommendations derived from the model may possibly be detrimental. The information in this Chapter suggests several serious problems any modeling effort of tourism will face. First, is the definition of the industry. Any models of tourism will have to assume a certain definition of what it is and what is not tourism. As a cited Massachusetts study has shown, the impact of the tourism industry depends greatly upon what is classified as tourism. For economic purposes the tourism industry can be described as the group of establishments which provides the goods and services tourists consume. But to find those businesses it is necessary to determine who are the tourists. Even once the proper establishments have been identified, the foregoing discussion has indicated few of them rely solely upon tourist trade. Hence, any modeling effort will be faced with the task of determining which part of any particular business falling within the tourism category actually sells goods and services to tourists.

The necessary components of a successful tourism area have been defined. However, explicit relationships among these entities are not readily available. The lack of these relationships will severely hurt any model which attempts to predict the future impact of tourism. Fortunately, the use of developed economic tools would allow a model to determine the relationships among the economic sectors of the tourism industry. Hence, it is theoretically possible to determine tourism's economic impact on San Diego.

Both the data and the relationships concerning tourism's fiscal and environmental impacts are less refined -- thereby forecasting a pessimistic probability for a successful modeling of these impacts.

However, the third requirement of models -- data -- may be of such poor quality as to prohibit even a valid economic assessment of tourism. Most of the data inputs required by any models would come from developed information and limited primary data collection. It is unlikely developed information would prove useful for estimating the impact of the economic sectors which comprise tourism, since the information available regarding these businesses deals with their total sales and not just their sales to tourists. Hence, it cannot be used to determine tourism's economic impact. Therefore, primary data must be collected. This would be an expensive task and budget constraints may hurt the quality of the collection effort and subsequently the quality of the study. Similar problems are even more likely to arise concerning fiscal and environmental impacts.

The combination of the lack of knowledge about tourism and the specific requirements of analytical models implies any effort to model any aspect of the tourism industry is likely to confront serious and possibly debilitating problems. This is not to say modeling tourism is a useless or impossible exercise. With the development of proper knowledge of the interrelationships among sectors of the tourism industry and of the data necessary to test these relationships, useful models of tourism's impact could be constructed. Modeling efforts at this time could serve to determine which relationships are most crucial to assessing tourism's impact, the specific requirements needed to measure those relationships and the variables that can most affect the industry's impact upon an area. In addition, today's models could reach useful and valid policy conclusions on a number of issues. It is not clear, however, whether these conclusions would be ones unobtainable with current methods of research. Hence, models developed to assess tourism at this time can best be viewed as part of a learning effort for both the modeler and the users of the outputs.

The models developed to study tourism in San Diego served such a purpose. Chapters IV and V show many of the problems discussed above caused severe difficulties for the modeling effort and forced the modelers to use questionable assumptions in order to obtain any results. The models, however, did serve to indicate which relationships among sectors of the industry need to be researched and which data inputs seem to be most important in determining the industry's impact. Hence, while the models were unable to fulfill all of the study's goals, they were able to increase the knowledge concerning tourism and serve as a base for future and more sophisticated research efforts.

NOTES

[1]Sierra Club, San Diego Chapter, "Economy, Ecology and Rapid Population Growth," San Diego, 1973, p. 5

[2]City of San Diego, "City Task Force Report on Proposed Slow Growth Ordinance," San Diego, 1973, p. 1

[3]Comprehensive Planning Organization, "Attitude Survey: Summary Report," San Diego, January, 1973, p. 13

[4]San Diego Convention and Visitors Bureau, "Resident Opinion on Tourism and the Tourist Industry in San Diego," San Diego, March, 1973, pp. 11-15

[5]State Highway Department Staff, "Nevada Out-of-State Visitor Survey, 1963," Nevada State Highway Department, Carson City, Nevada, 1964, p. VI., as cited in Arthur D. Little, Inc., "Tourism and Recreation," Cambridge, Massachusetts, 1966, p. 3

[6]Florida Development Commission Staff,"1965 Tourist Study," Tallahassee, Florida, 1966, p. 2, as cited in Arthur D. Little, Inc., op. cit., p. 2

[7]P. Hendrick, R.L. Pfister, and M. Segal,"Vacation Travel Business in New Hampshire - A Survey and Analysis," New Hampshire Department of Resources and Economic Development, Concord, New Hampshire, 1962, p. 4, as cited in Arthur D. Little, Inc., op. cit., p. 3

[8]Thompson, John, M., "The Tourist and Recreation Industry in Vermont," Vermont Development Department, Montpelier, Vermont, p. 2, as cited in Arthur D. Little, Inc., loc. cit.

[9]Urban Survey Corporation, "Measurement of Tourism in Massachusetts," The Bresnick Company, Boston, December 1965, as cited in Arthur D. Little, Inc., op. cit., p. 7

[10]Files of the Economic Research Bureau, City of San Diego

[11]Interview with Raymond Blair, February, 1974

III. EXAMINATION OF THE CLIMATE WHICH INFLUENCED SAN DIEGO'S REQUEST FOR A STUDY OF TOURISM

For most research efforts the initial planning period is one of the most important. The decision of what issues to research and the framework in which the results will be presented has a great impact upon the eventual recommendations of the study and their usefulness to decision makers. This initial process had such effects upon the type of study conducted for San Diego.

Several issues appear frequently in the preliminary stages of the design process. Perhaps most important is the changing nature of the goals people had for the study and techniques they thought should be employed to achieve these goals. An issue closely related to the goals of the study is the question of who had the power to influence its initial concept and how this power was used. In some instances, people believed certain forms of analysis could be used to achieve goals beyond their capability. In another case, the method one person thought would achieve a goal was thought by another to have made attainment of the same goal impossible. Also important were the issues of who should conduct the research and how it should be funded.

Once the City had decided upon the items it felt should be included in a study, it was then necessary for the consulting firms interested in the effort to indicate how they might provide the required information. The major issue facing each firm is how to write a proposal that stands a good chance of being accepted but also does not promise the City outputs that will be impossible to produce.

After the City had received all the proposals, it was necessary to select a firm to conduct the study. The analysis shows the selection committee used guidelines that assured the firm chosen was capable of providing the outputs desired by the City within the given amount of time and would conduct the study with an objective outlook.

This Chapter follows the emergence of these issues at different times throughout the initial life of the study. It offers some conclusions about the characteristics of the process and the effect they can have on the results of any models developed.

Before the events which led to the study are explained in detail, the characters who play a part in the drama should be mentioned, along with some brief background information: the Mayor, Pete Wilson; the City Manager, Kimball Moore; Deputy City Manager, Ray Blair; the President of the Convention and Visitors Bureau, Robert Gadbois; the City's Budget Director, Larry Haden; the Mayor's Assistant, Mike Babunakis.

Pete Wilson, Mayor of San Diego: Mayor Wilson was elected in 1970 after serving two terms in the California Senate. While in the Senate, he became interested in the issue of growth and made the question of San Diego's future growth a major part of his campaign. In the Mayor's 1974 State of the City Address, he spoke at length about future growth and seriously questioned its benefit in San Diego.[1] He stated the City should only encourage new industries that do not degrade the environment and that do provide jobs for unemployed San Diegans. The Mayor also said the most important question facing the City in 1974 was "How much growth is a good thing?" He called for a study which would help to determine the optimal level of population for the City.[2]

The Mayor has close ties with the San Diego tourism industry. A number of people indicated the Mayor hopes the current analysis will show tourism is a good industry for the City. The Mayor is most interested in one type of tourism--conventions. He has suggested San Diego construct a new convention center which would be larger than the existing 6,000 seat center. He supports a new center for several reasons:[3]

- Conventions can be a cure to the seasonality inherent in the vacation tourism industry;
- A new, larger convention hall would allow the City to become a viable contender in the big convention market; and
- The center could spur other growth in the downtown area and lead to a revitalization of San Diego's core.

The Mayor, however, has stated that no action should be taken until the results of the Arthur D. Little study are available. He has further stated the recommendations of the study should be followed and if these recommendations do not warrant an increase in the number of conventions, he will drop the proposal for a new convention center.

Kimball Moore, City Manager: To an extent the City Manager in San Diego has more power than the Mayor. The governmental structure of San Diego calls for a weak-Mayor/strong-Manager combination, but the Mayor has made several attempts to alter this situation. Kimball Moore's background is in public housing and administration. Many people who were interviewed view the City Manager as a person with relatively liberal ideas who has submerged these ideas somewhat and has replaced them with practicality. Many of the City's tourism proponents are wary of the Manager's attitudes towards tourism. They feel he has little interest in spending the revenues of the transient occupancy tax for the continued development of tourism. They also feel he does not think the industry is good for the City and would not like to see continued development. Mr. Gadbois, President of the Convention and Visitors Bureau, has stated in a manner of obvious disgust that he felt Kimball Moore would "take all of the T. O. tax and spend it on poor people."[4]

The Manager has expressed serious interest in the ability of the tourism study to answer some of the City's other questions concerning future growth and its ability to develop the best possible economic opportunity. Apparently, he was responsible for much of the design of the Request for Proposal of the tourism study.

Ray Blair, Deputy City Manager: Mr. Blair has acted as the client monitor and liaison with the consulting firm. He was also instrumental in the selection of the consulting firm for the study. Among other things, he is responsible for the annual preparation of the Transient Occupancy tax budget and any other issues relating to special promotion efforts. It was this last role which caused him to become involved in the current analysis. Mr. Blair is considered to be largely impartial on the issue of tourism and is said to be willing to let the study say what it will.

Robert Gadbois, President of the Convention and Visitors Bureau (CONVIS): Mr. Gadbois is concerned with the continuing development and enlargement of the tourism industry in San Diego. Because he feels tourism is beneficial, he thinks its expansion could only aid both the industry and the City. Recent community concern about growth and congestion induced by tourism has caused Mr. Gadbois to become somewhat defensive. This defensiveness can be seen in several recent Bureau-sponsored studies. In 1972 the Bureau sponsored a study of resident households in San Diego to determine the percentage of all migrants who moved to San Diego as a direct result of a visit to the City as a tourist.[5] The Bureau also conducted a survey of resident attitudes towards tourism and considered programs that would increase the value of tourism in the residents' eyes.[6]

Finally, the Bureau has sponsored television and slide shows in the City geared to explaining to residents exactly how valuable tourists are.

The Convention and Visitors Bureau is a group of business persons in the County who have an interest in the tourism industry. The Bureau divides its efforts about equally between conventions and vacation advertising but the amount spent on each conventioner is much greater than the amount spent on the vacationer. The Bureau is funded by both the contributions of individual members and the contributions made by the City from monies received from the transient occupancy tax. Table III-1, which shows income for the Bureau for fiscal years 1967-1968 through 1973-1974, indicates during the past few years the percentage of total funding which has been supplied by the City has been increasing. The Table indicates that while membership contributions are lower than they were in the 1968-1969 fiscal year, contributions to the Bureau by the City have increased. Mr. Jensen of Arthur D. Little has said some City officials told him this represented a feeling among the industry that the Bureau does not use its income efficiently and that they can do better by using the money for their own advertising campaigns. These City officials are beginning to wonder why they should support a Bureau not supported by the industry. The City's initial agreement with CONVIS, which is outlined in a February, 1968 City Council resolution, was that it would match the contributions made by the members and the County and would also occasionally provide other monies for special promotion. Currently, the City provides more monies for these special promotion and advertising expenses than it does for the matching contribution as over half of the City's contribution is unmatched by other CONVIS revenue. The City has not been increasing its contribution to the Bureau during the past few years. This reflects a growing feeling within the Council

TABLE III-1

SAN DIEGO CONVENTION AND VISITORS BUREAU
ACTUAL INCOME--FY 1967-1968 THROUGH 1973-1974

	FY 1967-68	FY 1968-69	FY 1969-70	FY 1970-71	FY 1971-72	FY 1972-73	FY 1973-74
Membership Dues	$229,418	$251,580	$269,838	$289,367	$237,491	$260,268	$297,450
City of San Diego	486,000	557,772	596,700	682,000	750,000	800,000	800,000
County of San Diego	110,000	110,000	110,000	110,000	125,500	25,000	75,000
Other Income	789	2,948	2,791	48,569	24,266	22,507	26,350
TOTAL Income	$826,207	$922,300	$979,329	$1,129,936	$1,137,257	$1,107,775	$1,198,800

Source: San Diego Convention and Visitors Bureau.

that (1) the monies are not being effectively used, and (2) the City does not really need large amounts of additional tourism.[7] The Bureau feels it should receive all, or at least more, of the receipts of the T. O. tax. The Bureau argues that because the tax is raised by the tourism industry, the Bureau, as a representative of the industry, should have the major responsibility for its allocation. Mr. Gadbois wants the funds to be used solely for the promotion and development of the tourism industry and feels the current allocation does not pursue these goals.[8]

The Bureau hopes the current study can do several things. First, it assumes the study will demonstrate tourism is indeed a valuable industry to San Diego and is one which should be expanded. Given this conclusion, the Bureau hopes the study will provide the information it needs to make claim to a larger percentage of T. O. receipts. Finally, the Bureau will be pleased if the study would assist it in determining how to allocate its funding to the programs it operates.

Robert Gadbois left the Bureau during the latter part of 1973 to accept a position with a major hotel chain. He was replaced by Dal Watkins. The opinions of the two men are similar.

Larry Haden, San Diego Budget Officer: Because one of Council's major interests in this study is the use of the transient occupancy tax, the Budget officer has become involved. Mr. Haden's department is responsible for the form of much of the initial request for proposal. He is a member of the committee which selected a consulting firm and sits on the monitoring committee for the study. Also on the committee are Mr. Moore and Mr. Blair. Larry has also been a major supplier of information to the consulting team.

Mike Babunakis, Mayor's Assistant: Because of the Mayor's interest in this study, his assistant participated in the formulation of the initial RFP. Since that time, however, he has ceased to work directly for the Mayor and is now connected with the City Council. As a result, his interest in the study appears to have dropped considerably and he no longer plays an important role.

The transient occupancy tax plays a major role in the study. The tax is levied on the sale of hotel and motel rooms. The tax, at a rate of 4% of sales, was first adopted by the City Council in June, 1964. The rate was increased to 5% in April, 1968, and was raised again to 6% in June, 1973. The first 5% is allocated to the two special promotion budgets while the last one percent goes to the general fund.

Significant resistence to the tax was created by members of the lodging industry before its initial adoption. They agreed to accept the tax only with a provision that it be used primarily to promote the City as a tourist attraction. The February, 1968 City Council resolution governing the allocation of funds received from the tax states that eighty percent of the receipts shall be used to promote the City.

Actual use of the tax has been widespread. Many people in the City, including Mr. Blair, feel uncomfortable because there is no unified program through which the money is spent. They comment that any community group that can convince the Council its activities might promote the community can probably receive some tax funding. As a result, such diverse activities as the City-County Band and Orchestra Program and Radio Broadcasts of City Council meetings are being financed with the tax. Table III-2 shows the diversity of the types of projects which have been financed with the tax during the past several years.

TABLE III-2

ALLOCATION OF TRANSIENT OCCUPANCY TAX RECEIPTS
(FY 1971-1972 through FY 1973-1974)

	Allocation FY 1971-72	Allocation FY 1972-73	Allocation FY 1973-74
Convention and Visitors Bureau	$750,000	$800,000	$800,000
Junior Chamber of Commerce	12,000	12,000	12,000
Mission Bay Promotion	24,000	22,000	22,000
Cabrillo Festival	4,500	4,500	4,500
Economic Development Corporation	64,726	98,000	98,000
San Diego Junior World Golf Championship	8,445	8,445	8,445
The Andy Williams San Diego Open	50,000	40,000	40,000
Travel to Promote the City	25,582	34,569	34,358
International Affairs Board	993	2,000	2,000
City-County Band/Orchestra Program	8,000	8,000	8,000
Municipal Promotional Activities	20,638	30,000	34,000
San Diego Stadium Sports Promotion	-0-	-0-	200,000
Horton Plaza	8,334	9,638	10,473
COMBO	150,000	165,000	165,000
Community Concourse Sudsidy	330,700	396,570	472,634
Interfund Transfers	191,413	-0-	-0-
Toltecas En Aztlan	-0-	20,000	20,000
Inter-Museum Council	-0-	-0-	15,000

TABLE III-2
(Continued)

	Allocation Fy 1971-72	Allocation FY 1972-73	Allocation FY 1973-74
Republican National Convention	$ -0-	$ 82,635	$ -0-
America's Finest City Week	-0-	-0-	5,500
Contingency Reserve	9,500	51,114	106,096
Institute on World Affairs	-0-	5,000	5,000
San Diego 200th Anniversary	223,575	-0-	-0-
San Diego Stadium Sports Promotion	284,616	284,616	84,616
U. S. Conference of Mayors	-0-	-0-	60,000
Radio Broadcast of Mayors	-0-	-0-	7,350
San Diego Planetarium Operations	-0-	103,000	204,510
TOTAL	$2,197,022	$2,213,203	$2,612,654

Source: City of San Diego, San Diego Annual Budget: A Program of Municipal Services, Fiscal 1974, September 1973.

Mr. Blair recounts that since 1966 the annual debate concerning the allocation of the T. O. tax monies has been hot and heavy. The Council finds itself in the unenviable position of not having adopted any strong guidelines concerning the manner in which the funds are to be spent. As a result, the size of the requests are always greater than the size of the pot and someone invariably leaves unhappy. Historically, the debate centered around the following issues:

1. What things can be classified as promotion;
2. Are the dollars being spent in the best manner, i.e., are we getting the highest possible number of tourists for the dollar; and
3. Should the Convention and Visitors Bureau receive a larger slice of the pie.

Beginning in 1972, however, the nature of the questions asked concerning tourism changed. Council members and the Mayor began to question the very nature of the tourism industry. Mr. Blair reports there was increasing discussion both in Budget and general Council meetings concerning the growth of San Diego and the desirability of growth. The importance of environmental concerns achieved a higher level of importance in the decision-making process. People both in and outside of City Hall began to wonder aloud about how much tourism San Diego should have. A survey showed many residents thought the industry induced permanent population growth. People also wondered whether tourism created the proper type of employment opportunities.[9] Mr. Blair indicates opinion was being expressed that the dollars spent by CONVIS to enlarge the industry might be enlarging a sector of the economy not in San Diego's best interest. A great deal of discussion concerning growth did not deal with tourism directly, but since many people felt tourism was a cause of growth, the discussion was at least implicitly linked to the industry.

These questions, however, did not enter the discussion of how the T. O. monies should be allocated.

The tourism industry, and the Convention and Visitors Bureau in particular, took steps during this period to promote tourism, not only to the potential tourists, but to residents of San Diego. The Bureau also became involved in research aimed at determining whether some of the charges leveled at tourism were true. In April, 1972, the Bureau conducted a telephone survey of 500 resident households in an attempt to measure the number of households who had moved to the City as a result of a previous vacation in San Diego. The study showed that less than ten percent of the population moved to San Diego as a result of having vacationed in the City. The study was used by the Bureau to show tourism was not a major contributor to the increasing resident population.[10] The fact that the Bureau felt the study needed to be conducted indicates they were concerned about the effect adverse resident opinion could have upon their industry and the amount of funding the Bureau received from the City.

The Bureau sponsored another study of residents in early 1973. While the results became available after the Council had resolved to proceed with an analysis of tourism, they are useful as they indicate residents' opinions towards the tourism industry. We can expect residents had roughly these same opinions during the previous year when the Mayor, the Council and the Manager outlined the scope of the proposed study. Mr. Blair said the scope of the study was constructed to address many of what were thought to be residents' concerns about the industry. The survey, which consisted of a telephone survey of approximately 500 resident households, came to the following major conclusions concerning resident opinions of tourism.[11]

- Slightly over half of all respondents felt tourism had a beneficial effect upon their lifestyle. Almost one fifth felt it detracted from their lifestyle. The percentage of respondents from the poorest section of San Diego who felt tourism added to their lifestyle was the lowest of any section of the City--28%--while the percentage of respondents from one of the most exclusive parts who felt tourism detracted from their lifestyle was the highest of any neighborhood--44%.
- Almost seventy percent of the respondents felt tourism had no impact upon their family income, while almost one quarter felt tourism added to their family income.
- Approximately one third felt tourism increased City taxes while one quarter felt it reduced taxes.
- Over ninty percent felt tourism increased the growth rate of San Diego; tourism was cited as the second largest factor in the growth of San Diego, behind the military and ahead of industry and higher education. Sixty percent felt population growth was bad while one one third though it was good.
- Nine of every ten respondents felt tourists contributed more than residents to the crowding of airport facilities, fifty percent felt tourists contributed more than residents to the crowded conditions of the City's beaches and parts and 36 percent cited tourists as contributing more to traffic congestion than residents. Thirty-one percent felt tourists contributed more to air pollution and one of every four respondents felt tourists contributed more to water pollution.

That CONVIS commissioned the study indicates their concern about residents' opinion of tourism. The recommendations which flow from the survey discuss the steps that must be taken to improve the residents' opinion of the tourism industry. The study does not try to determine what the actual effects are, but is only concerned with what residents think they are. The strategy that promoted the Bureau to conduct the survey says "If they think tourism is good for them, great, let them go ahead and think that; if they think it isn't, what can we do to change their minds?" The recommendations of the study clearly indicate it was part of an effort by the Bureau to win support it could later use in requests for additional funding from the Council.

The survey clearly indicates City officials and residents shared the same concerns about tourism. Since the eventual study was designed to answer the questions of the Council, it would also address the issues residents thought important.

<u>The Initial Planning</u>

It was during a Council budget session in May, 1972, that the idea for a comprehensive analysis of tourism was first proposed. The session appropriately was considering the use of the T. O. tax. The idea was suggested by the Mayor who said a good study would provide information the Council could use to make better informed decisions concerning the allocation of T. O. monies. While the idea was not discussed at great length during the session, the Council asked Larry Haden and Mike Babunakis to consider the type of study which would be most useful to the City. Council thought an analysis should look at the economic impact of the industry on San Diego in terms of sales and employment. It also felt the impact of tourism on City government should be studied in terms of the monies expended by the City to provide services to tourists. The thought of looking at the congestion and induced population growth related to tourism was not considered. Representatives of CONVIS were in attendance and indicated their support. The Council did not request assistance from the Bureau in outlining the type of study that should be conducted.

The Bureau, however, responded to the idea by giving Mr. Haden a short list of recommendations concerning those items they felt worthy of research, the procedure the City should follow to select a consultant and the things that should be done with the study once it was completed. The Bureau called for a study that would "factually identify the positive and negative effects of tourism in San Diego, thereby providing a guideline with which tourism's continuing promotion may be channeled to avoid the negative and capitalize on the positives. Also the study would provide guidelines for proper land use for recreational facilities and private sector development." The Bureau suggested five consulting firms be requested to submit the methodology they would use to conduct a cost-benefit analysis. They emphasized the City should invest as little of its own staff time in the problem as possible but rather should look at the various proposals and "select on the basis of the most comprehensive method of establishing the economic and environmental positives and negatives on the community." They suggested a comprehensive study would cost approximately $100,000.[12]

They further suggested that once the study was completed, a public hearing be called to disseminate the results, to indicate proposed actions resulting from the findings and to seek community input. They also felt the study could be utilized as a "benchmark by which tourism will be promoted to channel growth of the tourist industry to meet overall community plans." Finally, and probably the most important to the Bureau, they saw the study as a means to "clarify the disbursement of the transient occupancy funds."[13]

The statement of the Bureau did not deal at any length with those items which should be researched. Conversations with Mr. Blair, however, indicate the Bureau wished to keep the study closely confined to an assessment of the economic impacts of tourism with some concessions in the direction of determinating the level of municipal expenditures required to support the industry. While the Bureau had indicated it thought the study should address environmental issues, it knew such an evaluation could only prove to be detrimental. Since quantification of environmental effects was such an abstract process, Mr. Gadbois felt the study could conceivably be rigged against the industry. The Bureau presented its recommendations during another budget meeting on June 7, 1972. During that meeting, the Council requested Larry Haden and Mike Babunakis to continue to consider the usefulness of an analysis.

Since many members of the Council felt they could not benefit in such an atmosphere no matter what they did, many people in City government hoped the study would provide some concrete information over which the debate could be centered. As a result of this information being available, Mr. Blair indicated there was some optimism that the level of emotion connected with the annual allocation would simmer. The new procedure would be to (1) look at the numbers provided in the report, (2) decide, based upon these results, whether the City should attempt to attract additional tourists, and (3) allocate the T. O. monies accordingly. The result would be that the Council and the Mayor would have an "objective" study upon which they could base what had heretofore been a risky political decision.[14]

The Council implicitly assumed that if tourism was good, more money should be spent for promotion, whereas if it was bad, less should be spent. There was no discussion of whether the manner in which the dollars were spent should affect the Bureau's funding. Even if tourism were found to be good, the Council should not necessarily allocate more money to promotion unless it could be assured the money would be spent wisely and would actually increase the part of tourism that was best for the City. Similarly, a decrease in the amount spent for promotion might mean that only those tourists who were most beneficial to San Diego would stop coming and all those who were detrimental would continue to visit. In order to know whether the Bureau deserves more or less money, the Council should have requested a study that evaluated not only tourism but also the effectiveness of the promotion campaigns. However, the Council did not realize the complexity of the problem and assumed they could determine the proper level of promotion by knowing whether tourism was good or bad. This assumption would later result in the City's request for a type of analysis that could not provide accurate answers to its real questions.

Haden and Babunakis did not respond to the Manager or the Mayor until October 31 of that year when they submitted a memo concerning the study. There were three major points:[15]

- They suggested several firms be included in the study so the results could not be unduly biased by any one firm. (After being interviewed in 1974, Mr. Haden could not support the idea of having several firms work on the same component of the study except to say the possibility was considered of one firm possibly not having the necessary qualifications in all areas.)
- A time period of six months was suggested for the study. This would have meant the results of the study could have been completed before the final budget decisions were made for the 1973-1974 fiscal year.
- The memo suggested two studies be conducted. One would assess the benefits the City was currently receiving from its expenditure of T. O. tax monies, particularly those used by the Convention and Visitors Bureau. The second would look at the question of the advantages and disadvantages tourism had for San Diego. Included in this analysis would be an assessment of the economic impact, congestion caused by tourists, and the fiscal impact of tourism on the City.

The Mayor and the Manager agreed with the recommendations outlined in the memo and sent the proposal to the Council. The Council after minor deliberation agreed to have an RFP drafted and sent to those firms thought qualified. The Council resolution was passed on January 23, 1973.

It is interesting to consider whether any person or groups that had a strong interest in the outcome attempted to influence the course of events which preceded the Council resolution. The Convention and Visitors Bureau certainly was concerned, as the results might determine the amount of funds they received in the future and, therefore, might try to use all of its influence to guide the proposal in the direction CONVIS thought would show tourism in the most beneficial light. However, with the exception of the initial memo, the Bureau put very little pressure on anyone in the City. Mr. Haden reported that from time to time Mr. Gadbois would ask about the progress being made in designing the RFP but made few efforts to influence Mr. Haden's actions. There is also no indication that he sought to influence the Mayor, with whom he felt he had good rapport. The Bureau would have liked to have been given control of the study so it could act as a monitor. However, it was unwilling to use its monies to fund the study and the Manager was unwilling to give it control of City monies. Also, people in the Manager's office were concerned about whether a study monitored by the Bureau, regardless of its actual level of objectivity, would be viewed as being objective by the public.[16] Surprisingly, perhaps, the Bureau did not press the issue.

Some of the no-growth groups in the community would also be interested in the study as they would see it as a means of indicating tourism did have a detrimental effect and that further efforts at expansion should not be funded by the City. However, no one in the City remembers ever being approached by representatives of such groups who were trying to influence the study. This was, in part, related to the amount of press coverage which was being given to the idea. Although some information about the proposal was given to the press, there was very little coverage. Therefore, it is possible for many people to have never heard about the study. The lack of interest by almost every group indicated the study proceeded along in very routine fashion and got no one upset or vitally interested.

The City chose to finance both studies with the receipts of the transient occupancy tax. Interviews with both Mr. Haden and Mr. Blair indicated the initial funding source considered was the T. O. tax and that no other source was seriously discussed. When asked whether anyone had thought of seeking federal funds, Mr. Haden said the idea had been briefly considered but was discarded because of the length of time required to obtain federal funding. He thought the City probably could have gotten outside money and would have done so if it had not had sufficient in-house funds.[17] The availability of funds and the time required to obtain federal funds influenced the City to fund the study from the T. O. tax.

The City approached the County and several of the other communities in the metropolitan area about the possibility of a jointly supported study. However, none of the other communities were willing to monetarily support the effort, although they expressed interest in seeing the results.

Another issue was the City's decision to utilize a consulting firm rather than constructing an inter-disciplinary team from the City's own staff. Several reasons backed the decision. First, Mr. Moore felt that while City staff could probably develop the necessary expertise to conduct a sectoral analysis of tourism, these skills were not currently available and would take time to develop. Since the results were needed for the next year's budget deliberations, time was a critical factor arguing against using the City's staff.[18] The Mayor was concerned that a study performed by City staff would be attacked as biased by those people who disliked it. Wilson thought people would state that because the City staff had an interest in the outcome, they would attempt to alter the results so their opinions would be proven. It was felt an outside consulting firm could afford to be more objective as its position and viability would not be affected by the results.[19]

We have stated the initial usefulness seen for the study by most decision makers was that of an "objective" assessment which could be utilized to reduce the emotionalism historically accompanying distribution of T. O. tax receipts. However, as time passed, various persons began to see additional issues addressable by the study outside of the simple yes or no question concerning additional funding for CONVIS. First, the Council realized there was not necessarily a direct link between the level of tourism desired and the size of the promotional campaign. A major factor was the effectiveness of the monies being spent for promotion. Therefore, the Council accepted the proposal of Babunakis and Haden for two studies.

The Council also hoped the study would comment on the type of advertising campaign CONVIS should develop. Many people argued that too much of the Bureau's advertising was being directed at the Los Angeles metropolitan market and that additional efforts should be instituted to "attract the Chicago and Minneapolis executive." Other people, however, felt that "because all the studies show the most significant origin of our tourists is Southern California, we should concentrate our efforts there since we still have not reached many people.[20] Mr. Blair said that once Council decided to make an allocation of funds to the Bureau, it had very little influence over how those funds were spent. Members of the City administration wished they could have more of an influence over the type of promotion and convention attraction programs. Mr. Blair thought that if he knew the different impacts of different types of tourists, he could influence CONVIS to gear its program to the best tourist types. This desire resulted in the decision that the study should be designed to compare the benefits of different tourist types. This influence on study design was made by Mr. Blair and Mr. Moore.[21]

After the study was begun, various members of the City, particularly the City Manager, began to question whether the study would also answer other questions concerning the extent to which the industry should be expanded, given it should be expanded at all. In addition, he was concerned whether the study would indicate if tourism was the best opportunity facing San Diego or whether it would be better off developing a different sector. While these questions were not formally included in the scope of the study, Mr. Moore's influence caused them to be considered by ADL.

Once the Council accepted the idea for the study, Mr. Haden wasted very little time sending out the RFP. The Manager retained final approval over the contents of the RFP and had an important impact on its contents. Mr. Haden indicated the RFP was written by himself and his staff with very little input from anyone outside the Manager's office.[22]

The RFP includes a substantial increase in the scope of the study compared to the ideas discussed at the Budget session during the previous year. The additions include more detailed evaluations of the impact of tourism upon public facilities including the effect tourism has on exceeding the capacity of various public facilities, an evaluation of the growth-inducing effects of tourism, an analysis of the effect of tourism's seasonality upon employment, and considerations of the impact of tourism upon various aspects of San Diego's environment.

It appears most of these additional items were included at the direction of the City Manager, who hoped they would answer broader questions than had been originally proposed and who also felt more information than had initiallly requested would be required to answer the initial questions. Apparently, the Mayor paid little attention to what was being proposed in the RFP unless he made his wishes known through the City Manager. However, there is no reason to believe he did act through the Manager and the level of his participation since his initial proposal has been minimal. However, his interest in the topic remains high.

Some of these items were included because Mr. Haden and Mr. Moore wanted what they felt would be an objective study of the industry. In order for the study to be objective, they felt it had to address not only the positive impacts of tourism, but also had to consider the negative. Mr. Haden admits that what he thought would make an objective study was related to the major issues of the day.[23] Certainly, one of the major issues was the growth of San Diego; this led to a section that would deal with the growth-inducing impacts of tourism. It also was partially responsible for the section of the study concerned with the use and possible congestion of public facilities.

The RFP proposes three types of assessment of the tourism industry be performed. The first is an analysis of the economic contribution tourism makes to the San Diego economy, measured in terms of both sales and employment. The second part includes an investigation of the impact of tourism upon City government. Specifically, the RFP requests the consultant determine both the level of City taxes and expenditures related to tourism, including an analysis of the City's service infrastructure and the determination of whether the capacity of the infrastructure is being taxed by the additional tourist demand to an extent that major increases in the size of the infrastructure will be required in the near future. The third section calls for an assessment of the impact of tourism upon the environment of San Diego, where environment is a term with a very broad definition. To be included is an evaluation of the growth-inducing effect of tourism, an analysis of the unemployment market related to tourism, and assessment of any other issues concerning tourism which should be studied in order to make a comprehensive evaluation.

While the RFP indicates the City is interested in some of the non-market impact of tourism, it also shows the City is not clearly aware of what these impacts might be and seems willing to leave the decision to the consultant. Mr. Haden decided he could develop an impression of what the important issues were through a review of the proposals.[24] Since most proposals to public sector clients often require a "chest-pounding" effort on the part of the consultants in an effort to indicate their qualifications, Mr. Haden felt assured a review would indicate all the environmental issues which could be considered even remotely important and influenced by tourism.

While not mandating the use of a specific form of methodology, the RFP encouraged the use of particular forms of analysis. Specifically, the RFP read:[25]

> Methodology used in the study should include, but not be limited to, the following:
>
> a. Cost effectiveness analysis.
>
> b. Computerized impact analysis. (Subject to discussion with consultant. Any computer programs must be in COBOL, and programmed for the IBM 360/40).
>
> c. Opinion and marketing surveys.

The inclusion of computerized impact analysis indicated the City was interested in models dealing with specific relationships among variables. Mr. Haden was interested in quantitative analysis but did not necessarily expect a computerized model. (One of the consulting firms to which the RFP was sent, Stanford Research Institute, estimated that approximately $180,000 would be required to construct a computerized model of tourism impact.)[26] Mr. Haden stated he had included the suggestion of providing a program for the model because he hoped that if the City had the model, it could provide periodic updates.

Reaction to the final RFP was not completely flattering. Robert Gadbois felt its tone indicated the City was looking for a negative result, particularly since it stressed the environmental issues. He told Ken Jensen, of Arthur D. Little, "You can rig these environmental assessments any way you want to."[27] Mr. Gadbois saw the inclusion as another act of the City Manager designed to run the tourism industry out of town. He did, however, cooperate fully with all firms presenting proposals and gave them the information the Bureau had available.

When questioned as to the possible bias in the RFP, Larry Haden stated the RFP was written in the prescribed manner in an effort to encourage objectivity. He felt most tourist studies are conducted to "prove" tourism is a good industry and that if the RFP did not clearly indicate this was not what San Diego wanted, it would be the product the City would receive.[28] Mr Haden indicated the final form of the RFP was accepted by Mr. Moore, Mr. Blair, and himself.

Mr. Haden made a conscious effort to ensure the RFP was received by what were considered to be some of the most reputable firms in the area. The initial mailing was to several firms including Economic Research Associates of Los Angeles, Stanford Research Institute, The Rand Corporation, Arthur D. Little, Harris, Kerr, Forster, Horwath and Horwath, Data Research Associates and Data Resource Incorporated. Two of the firms, Stanford Research Institute and The Rand Corporation declined to submit a proposal to the City on the basis that none of their staff members who could conduct the required study were available at that time. Stanford Research did send a team of investigators to the City to briefly look at the situation and later sent a letter to the City indicating the type of effort they felt the study would require and indicating the probable cost of such an effort. After the RFP was sent out to the selected firms, several other firms and associations requested copies of the RFP.

When the RFP was received at ADL, it was routinely sent to one of the senior staff for a response. In this case, the RFP was sent to two persons in ADL's San Francisco office--David Hurley and Kenneth Jensen. Both individuals had previously conducted studies of the tourism industry, including work in both Asia and Africa. Shortly after receipt of the RFP, both Hurley and Jensen took a one-day trip to San Diego for the purpose of collecting information necessary in writing the proposal. The type of information they collected during this time dealt with what was known about the volume of tourism in San Diego, the nature of the issues the City wanted studied and the type of data sources available to study these issues. In addition, they were interested in obtaining some idea of the amount of money the City was willing to spend on the study.

Jensen and Hurley decided it would be worthwhile to submit a proposal to the City, but Mr. Hurley became less involved with the case due to other commitments and the leadership role fell solely upon Mr. Jensen. With only a week left before the proposal was due, Ken called John Sanger, an ADL consultant, with background in both City Planning and Law to assist in the preparation of the proposal. They assumed in the proposal the City had four particular problems of interest:[29]

- The significance of tourism as a generator of employment and income to local residents and businesses;
- The impact of visitors on the use of public recreations and other facilities;
- The long-term impact of tourism on population and economic growth and resulting land use changes; and
- The revenues and costs to the City caused by tourists and their resulting impact on local taxpayers.

The proposed study outline included three options involving various levels of effort, cost and duration. The approach to the study was based on three interrelated analyses: (1) economic impact analysis, (2) environmental impact analysis, and (3) fiscal impact analysis. Eight major study elements were suggested with varying degrees of scope according to the option selected by the City.[30]

- Construction of visitor profiles: determine the characteristics of visitors to San Diego in terms of trip purpose, length of stay, party size, type of accommodation, means of transportation to San Diego, total expenditures, and patterns of spending among goods and services. Three options were suggested which ranged from using information currently available through sources such as CONVIS and the Southern California Visitors Council to conducting extended primary interviews of tourists to obtain the desired information.
- Estimate total Visitors and Visitor Days by type: estimated with the use of existing information and the data collected through primary survey work. Visitor days are computed by multiplying the number of visitors by type by the length of stay of each visitor type.
- Derivation of economic impact of visitor expenditures: this included estimation of direct and indirect impacts of visitor spending on payroll and employment in the SMSA and, if possible, in the City. The study would also identify the general occupational skills required in the affected industries and the likely effect on unemployment. If the most detailed option were chosen, further investigation would be made concerning the secondary effects of tourist spending and more information would be obtained about sources of income received from tourism other than wage and salary

income. Consideration would also be given to the seasonal characteristics of tourist spending and the impact of seasonality on overall economic performances of the economy and on unemployment.

- Survey of major visitor-attracting facilities and their users: included surveys of the major attractions, both public and private to determine the proportion of total usage attributable to tourists and to investigate the capacity of the facility, the level of use and the frequency of overcrowding. The amount of survey work to be conducted would depend upon the option chosen by the city. The data obtained from these surveys would act as inputs for both the environmental and fiscal analyses.
- Estimate traffic generated by visitors for different seasons and days: on the basis on the primary survey work and information generated in the construction of the visitor profiles, estimates would be made of the volume of tourist traffic during different parts of the week for both the peak and non-peak season.
- Analyze land use and population impact of visitors to the City: using the information from the visitor profiles and the facility surveys, estimates would be made of the amount of land used by tourist serving businesses.
- Estimate the costs and revenues to the City of San Diego directly attributable to visitors: This task included estimating the costs incurred by the City in providing services directly to tourists and the costs of promotion and providing funds to various attractions. City revenues which could be estimated by tourists would also be estimated.

Based upon this information, the final report would offer major conclusions concerning the impact of tourism and make recommendations to the City. Specifically, the proposal suggested five outputs:[31]

- The market profile of tourist/visitor categories to San Diego:
- The measurement of the direct and indirect impact of tourism in terms of employment, income and seasonality;
- The fiscal impact of tourism on city government;
- The environmental impact of tourism, focusing on facility capacity, transportation, land use and growth-inducing factors;
- The detailing of a technique to be used by the City to periodically update the estimate of tourism's impact.

The proposal offered three options to the City which varied in terms of their scope, duration and cost. The costs ranged from $75,000 and six months duration to $100,000 and twelve months.

Both Jensen and Sanger were intrigued by the scope of what the City desired. While each had done a great deal of work in the public sector, including work in the field of tourism, neither Jensen nor Sanger had seen a proposal which addressed what they thought were the major issues concerning tourism. Jensen stated the normal RFP in the tourism field is only interested in determining the economic benefits of the industry and was often not even concerned with the implications of the seasonal distribution of these benefits. No RFP they had seen addressed the issue of the environmental impact of tourism. Nor was there often such an expressed concern about the fiscal impacts on local government. Hence, they were very interested in the RFP because they felt it would allow them to conduct the type of analysis they thought proper.

Regardless of their interpretation of the problem and of the discussion in the beginning sections of the proposal, the eight tasks proposed for the study were designed to explicitly meet the demands of the RFP. While there was a possibility the scope of the study could be altered after a contract was signed, it was very important to provide in the proposal those things for which the client states a desire in the RFP. Therefore, a comparison reveals many of the eight tasks suggested in the proposal are included in the RFP. The proposal was less enthusiastic than the RFP concerning the idea of providing a computerized model for use by the City. The proposal took the following stand when talking about the basic outputs of the study.

> The detailing of model specifications for determination of economic impact on an ongoing basis by the City of San Diego. The programming of this "model" is not considered under any of the options identified in this proposal; rather it is felt that with the uncertainty of data availability and the data requirements it is better to wait until the end of the study to conclude whether or not a model is desirable from the user standpoint, and in fact, whether the userwould have some personnel assigned to keep it updated.[32]

Mr. Jensen stated this statement tried to indicate several things. First, when writing the proposal he was not sure exactly what type of procedure would be used to estimate economic impact and was, therefore, not sure it would be a technique the City could use. For instance, if the eventual "model" required information that had to be updated on a frequent basis, it was possible that the data requirements would be so great the City would decide it did not want to allocate the personnel required to operate the model. He also felt that if he promised the City a computerized model, he might be forced to use a sub-optimal methodology. He was not unwilling to use a computer model but did not want to be forced to.

Selection of a Consultant

The contact between the City and the consulting firms between the time the RFP was completed and the time Arthur D. Little was selected was very limited. All the firms submitting a proposal to the City sent staff members to San Diego to develop information which would be later used in their proposals. Most met with Mr. Haden, Mr. Gadbois, and other people involved with tourism in San Diego. All of these contacts were conducted between the date the City mailed the RFP, February 2, and the date the proposals were due. After the proposals were sent to the City, very little communication existed between the consultants and the City. Ken Jensen indicated the amount of communication from the City was so little he decided they had either dropped the idea for the study or had decided to select someone else. Mr. Haden indicated the level of communication between ADL and the City was about the same as that between the City and any of the other firms. He felt the lack of communication was consistent with the City's policies in such circumstances. Both Mr. Haden and Mr. Blair said no pressure was ever put on them by any of the consulting firms, anyone in City government or in any pressure group.[33] The entire procedure was regarded as quite routine. All the firms that received an RFP, with the exception of RAND and SRI, submitted a proposal. In addition to those firms who were initially mailed an RFP, several other firms which had requested a copy of the RFP submitted a proposal.

Once the City had sent out the RFP, much of the control over the project was given to Mr. Blair. This was a routine transfer of authority for such contracts. Because Larry Haden had a large staff at his disposal, he was frequently called upon by the Manager to design proposals and write studies. After the initial work had been finished, supervision was given to someone in the Manager's office.

Mr. Blair and Mr. Haden formed a committee to choose the consulting firm that would conduct the study. The members of the committee, selected with the approval of Mr. Moore, were: (1) Larry Haden, (2) Ray Blair, (3) Mike Babunakis, (4) Robert Gadbois, (5) Robert Gleason, Director of the Department of Environmental Protection, and (6) Lucille Mortimer of the Economic Research Bureau. Once the proposals had been received, they were sent to the members of the committee with the request they review the proposals and select the one which they felt was the best on the basis of ability to meet the requests of the RFP. The entire process was informal and the committee held only one meeting. Both Blair and Haden felt several members of the committee did not even closely study all the proposals. The committee met to choose one proposal for submission to the Manager. All the participants in the commitee, except Mr. Gadbois, felt the proposal submitted by ADL best met the City's expectations. Mr. Gadbois was somewhat critical of the emphasis of ADL on the environmental and fiscal aspects of tourism and preferred the proposal submitted by Economic Research Associates in conjunction with an individual San Diego consultant. Their proposal concentrated on measuring the economic impacts and paid relatively little attention to the fiscal and environmental analysis. However, because all of the other members of the committee preferred the ADL proposal, both Haden and Blair reported there was little discussion concerning the firm that should be chosen. Once the committee had chosen ADL, Mr. Blair met with Moore to obtain his approval of the selection. Approval of the Mayor was also obtained. The Council approved the selection a few weeks later.

The committee preferred the ADL proposal for several reasons. First, many of the members of the committee felt the discussion and understanding of the problem was good. They also felt ADL would try to conduct the study in an objective manner. ADL was one of the few firms which indicated it could conduct all of the required work by itself. Several of the other firms had stated that if they were chosen, they would have to subcontract either the environmental or the economic part of the case.[34] Most members of the committee felt it would be preferable to contract one firm which would be able to do all the work involved. Contrary to the desires of Mr. Gadbois, other members of the committee liked the ADL proposal because it did give more emphasis to the environmental aspects of the problem.[35]

The committee opted for the longest and most costly option in the ADL proposal. Since even the least costly option of the ADL proposal was more expensive than many of the other proposals, this selection was somewhat surprising. Blair reports the choice was made because that option would produce more information than the other two and the city felt the additional information would merit the increased costs.[36] In terms of time, the city did want the study to be completed in time for use in the fiscal 1975 budget deliberations but felt that even though the chosen option called for the longest study duration, there would be sufficient time to complete it.

Summary

The importance of the initial stages of the project lie in how the characteristics of these initial actions influenced the topics researched by the study, the techniques used to conduct the analysis and the usefulness the results would have for decision makers. Several important themes have arisen from the process in San Diego. The first is the issue of who had the power to set the objectives of the RFP, how they were set, and why they took that form. The events show the mayor first suggested the idea as part of a desire to learn more about the impact of tourism and to provide some information which could be used to make budget decisions.

After the mayor first suggested the idea, he had very little input to what happened. Rather the suggestion and many of the decisions concerning it became the property of the city bureaucracy, particularly the city manager.

Most of the items included in the RFP were done so at the request of someone in the city staff. While several pressure groups in the city were interested in the outcomes of the study and would be vitally affected by these outcomes, they appeared to have little influence over the study design and, for the most part, did not try to wield any influence. Similarly, the council and the mayor did not take an active interest in the study except to occasionally approve the recommendations of the city manager and his staff.

The manager and his staff pushed the study towards the direction of tackling a broader range of issues than the mayor had originally proposed. The mayor was mostly interested in determining the economic benefits of tourism and the costs it imposed on city government. The manager expanded this concern to include the impacts tourism had on congestion and other environmental considerations. Both the manager and his staff argued for inclusion of these issues on two grounds. First, these were issues which were becoming more important to citizens and exclusion of them would draw fire from several citizen groups. Secondly, they felt exclusion of these issues would significantly bias the study in terms of its overall assessment of the impact of tourism.

Both the manager and the mayor were concerned that a study conducted by city staff might be viewed as being biased by those in the community who disagreed with its findings. Therefore, the decision was made to seek an outside firm to conduct the work. However, since the manager and his staff virtually outlined the type of study the consultant would conduct, they were able to wield significant influence over its outcomes, since it was likely that some of the aspects of the study would probably show tourism was detrimental. Therefore, the manager was able to influence the results of the study but still be able to maintain it was conducted by an objective outside firm with no interests to protect.

A second theme of the process was the translation of the goals particular individuals had for the study into analysis techniques these persons thought would provide answers to the city's questions. Mr. Haden felt if the consultant used quantitative rather than qualitative forms of analysis, the benefit the city would receive from the study would be greater. However, neither Mr. Haden nor anyone else in the city was familiar with the types of techniques currently in use nor with their accuracy. They merely hoped the consultant selected would be able to use precise tools while conducting the analysis.

Whether the tools used in a given analysis are precise or blunt depends largely upon whether precise tools exist. If techniques which provide the desired level of specificity have not been developed, there is nothing a client can do to invent these tools unless he is willing to fund the costs of research. Most municipal governments do not have the type of funds required to conduct such research and this option, therefore, is not open to them. Therefore, the only way in which precise tools may be used to analyze their problems is if such tools already exist. If they do exist, the client can take several steps to see that they are implemented on his behalf. First, the client should become familiar with the types of tools available before he asks consultants for proposals. If the client becomes familiar with the types of tools available, he can recommend the use of the tool which is most applicable to his situation. He may further indicate the specific actions required of the consultant, such as the type of data to be collected and the verification of this information. With a prior knowledge of the type of tool to be used and an estimate of the quality of the available inputs, the client would be able to make conclusions about the preciseness of the results even before the study was underway. Obviously, this process requires more effort on the part of the client but the benefits received from the effort will be evident.

If the client does not make a preliminary review of the types of tools available before the study, he runs the risk of employing a consultant who will not use these tools even if they do exist. Mr. Haden's approach of developing a list of the techniques available from the proposals submitted may not always work since none of the submittors may suggest utilization of the best available techniques. For instance, neither the Rand Corporation nor the Stanford Research Institute submitted proposals. Proposals from these two institutions might have contained approaches different from and better to those suggested by the other firms. However, because the city did not know what types of techniques were available, there was no way to determine if the best techniques had not been included in any of the proposals.

In conclusion, if precise tools do not exist, there is little most clients can do as they are not equipped to fund the type of research necessary to develop techniques. However, if such techniques have been previously developed, the client can cause them to be used by becoming familiar with their existence and specifying the use. Assuming the client's staff has sole competence in the field under study, the more conceptualization of the study done in-house, the better the client will be able to anticipate the potential quality of the results and influence the consultant to produce results of this quality.

The client's actions during the preparation of the RFP and review of the proposals significantly affects the relationship which developes between the client and the consultant. A good client-consultant relationship is of particular importance to the client as it will significantly improve the consultant's awareness of his needs which should result in a more useful effort. In addition, a close relationship will probably generate an increased transfer of knowledge between the two parties which should be of benefit to both.

San Diego requested periodic interim reports from the consultant but did not specify any other working relationship. While the city did express an interest in obtaining the techniques used, it did not want to participate in the development of these models during the study. The city viewed the consultant as an outside advisor rather than as a short-term addition to the city's own staff. Hence, there was less contact between the staff of the consultant and the staff of the city than there might have been and consequently less shared knowledge. As a result, the amount the city's staff could have learned from the project was reduced.

The RFP was also directed towards an assessment by the consultant of the current impact of tourism rather than towards providing the city with a technique for monitoring tourism in the future. This emphasis served to highlight the approach the city took towards the effort -- i.e., that of a one-time assessment of the industry rather than an ongoing evaluation which might lead to more information and better techniques of analysis. This emphasis towards the one-time assessment came from the desire to use the study as an aid in a budget allocation decision. After the decision was made,the city did not see any further use for the study as the allocation could not be changed. The city neglected to realize that the allocation of T.O. monies was an annual event and that continuation of the research might lead to more detailed conclusions which might yield better allocations of the fund in the future.

The major issue facing the consulting firms submitting the proposal was how to write a proposal that would convince the city that the particular firm could provide all the information the city wanted without promising results that the firm would be unable to deliver. At this point, the consulting firm can influence the type of study by proposing certain types of efforts in its proposal. Because it is trying to meet the city's demands, however, it must basically be responsive to the RFP. This means only minor alterations to the tasks outlined in the RFP can be made. Thus, while Jensen and Sanger were interested in several aspects of the issues in the RFP that did not receive direct attention by Mr. Haden, the tasks they proposed were ones that corresponded directly to the requests in the RFP. Hence, the city does retain significant control over the results of the final study through the proposal phase. Chapter IV will show that once the consulting firms begin to conduct the analysis, it assumes a large influence over the form of the analysis.

The technique used by the city to select a consulting firm will also affect the study's outcome. The manager chose to form a committee that would review the proposals and submit a candidate for his approval. In an effort to obtain community input and to ensure those vitally concerned were aware of current events, Mr. Gadbois was included in the committee. However, he was not seen to have any special impact upon the committee's decision as to chose the ADL proposal over his objectives. The prime consideration used by members of the committee was the ability of each firm to indicate it could provide the information the city desired, a demonstration that it possessed a solid understanding of the issues, and an indication it could carry out an objective analysis of the issue.

While the criteria used by the committee were good, few members had the type of background required to choose among technical proposals. They could not evaluate different models which might have been presented to them. It was not possible for this committee to select one proposal as providing a better technical approach than another.

Since the city had requested quantitative analysis, it should have been able to evaluate the proposals properly. By not having anyone with a significant amount of technical skill review the proposals, the committee could not select the best alternative. Given its location, the city could have asked faculty members from one or more the several local universities to evaluate each proposal from a technical point of view. Once it received an impartial evaluation of the technical quality of each proposal, the committee could then weigh this against other factors which would enter into the choice of a firm, such as cost, reputation of the firm, reputation of those persons who would be involved in the study. San Diego's failure to do this meant they might not have selected the firm best equipped to conduct the analysis.

NOTES

[1]Wilson, Peter, Mayor of San Diego, "Eleventh Annual State of the City Address," January, 1974, p. 15

[2]Ibid., p. 20

[3]Ibid., p. 9

[4]Interview between Kenneth Jensen and Robert Gadbois, as recalled by Kenneth Jensen, March, 1973

[5]San Diego Convention and Visitors Bureau, "Why People Move to San Diego," April, 1972, p. 2

[6]San Diego Convention and Visitors Bureau, "Resident Opinion on Tourism and the Tourist Industry in San Diego," March, 1973

[7]Interview with Raymond Blair, February, 1974

[8]Ibid.

[9]Ibid.

[10]San Diego Convention and Visitors Bureau, "Why People Move to San Diego," loc. cit.

[11]San Diego Convention and Visitors Bureau, "Resident Opinion on Tourism and the Tourist Industry in San Diego, " op., cit., p. i

[12]Memorandum from CONVIS to Lawrence Haden, Budget Director, City of San Diego July, 1972

[13]Ibid.

[14]Interview with Raymond Blair, op. cit.

[15]Memorandum from Lawrence Haden to the Mayor and City Council of San Diego, October, 1972

[16]Interview with Raymond Blair, op. cit.

[17]Interview with Lawrence Haden, op. cit.

[18] Interview with Raymond Blair, op. cit.

[19] *Ibid*.

[20] *Ibid*.

[21] *Ibid*.

[22] Interview with Lawrence Haden, *op*. *cit*.

[23] *Ibid*.

[24] *Ibid*.

[25] Request for proposal submitted by the City of San Diego, February, 1973

[26] Letter from the Standord Research Institute to Lawrence Haden, February, 1973

[27] Interview between Robert Gadbois and Kenneth Jensen, *op*. *cit*.

[28] Interview with Lawrence Haden, *op*. *cit*.

[29] Interview with Kenneth Jensen, February, 1974

[30] Arthur D. Little, Inc., Proposal to the City of San Diego, March, 1973, pp. 18-21

[31] *Ibid*., p. 23

[32] *Ibid*.,

[33] Interviews with Raymond Blair and Lawrence Haden, *op*. *cit*.

[34] Interview with Raymond Blair, *op*. *cit*.

[35] *Ibid*.

[36] *Ibid*.

IV. DESIGN OF THE STUDY

The previous Chapter showed the people who had the greatest influence on the original concept of the study to be those most directly concerned with it. The City Manager was able to direct the design of the entire effort because it was being carried out by his subordinates. This Chapter looks at how the study design is altered by the consultant in search of techniques for analysis and discusses those factors which most influence the selection of specific techniques. Just as the Manager had the most influence over the outcome of the study while it was under his control, so does the consultant have considerable influence once he has been chosen to conduct the analysis. Since conclusions reached during the design phase had important implications for the type of models later developed, the type of information they could provide and ultimately the recommendations the study would be able to make, the process itself will also be discussed in some detail. Since the author was involved in the effort, the Chapter is written from the point of view of a participant observer.

Ken Jensen admits that at the time ADL was chosen, he had not decided on the exact approach he would use. While he had been involved in studies of tourism and public sector issues, he had never faced a task that combined the two. His grasp of the tourism industry and its problems was evident in the treatment of these issues in the proposal, but he knew the translation of this knowledge into research procedures would prove a difficult task.

Jensen's situation was not atypical. Proposals are often submitted by firms with no experience in the exact area outlined by the Request for Proposal. What a firm tries to do during the course of writing a proposal is to develop a good idea of the problem and the techniques available. In instances where new techniques will be required, much of the overall study effort is devoted to their development. A firm will rarely go to the effort of developing new methodologies unless it had already been selected to carry out the study.

A basic choice of methodology was available. Jensen could call for the development of relatively sophisticated models, which would spell out a wide range of impacts but would require large amounts of time and money to implement or he could settle for recommendations based upon the data and modelling capability currently available to the City. While both the RFP and the proposal had implied some form of mathematical model would need to be used to complete the analysis, he was not bound to choose this approach. Similarly, while the City wanted most of the information requested in the RFP, it understood the consultant might not be able to answer all the questions.

The data requirements of different types of analytical models pose serious constraints. While some information might be available about current impacts of tourism, there is no way in which much historical data could now be developed. Those analytical models which require historical data would most likely be unusable. The first action taken after receipt of the contract was to determine the amount and quality of currently available information and to determine the type of information obtainable through survey research.

In 1966 the Economic Research Bureau commissioned an input-output study of the industries in San Diego. One of the fourteen sectors studied was the tourist industry which was assumed to include accommodations, restaurants, and attractors.[1] The input-output table was used to estimate the total level of economic activity generated by tourism and was updated in 1970. The ERB study provided some useful estimates of inter-industry linkages and offered an approximation of the total volume of tourism activity. Critics of the study felt an inadequate number of businesses had been interviewed and that the estimation of demand was questionable.

The Convention and Visitors Bureau conducted several studies of the impact of tourism and was involved in an ongoing data collection effort. They had tried to determine the number of people who moved to San Diego as a result of a previous visit to the City and to document the feelings of residents toward tourism. The Bureau's ongoing effort consisted of quarterly surveys of people staying in first-class accommodations throughout the City. They recorded length of stay, spending habits, time spent in each of several activities as well as reasons for coming to San Diego. The surveys did not make any attempt to question travelers who did not stay in first-class hotels. Representatives of the Zoo, Seaworld, the Planetarium, Pacific Southwest Airlines, and the City Department of Parks and Recreation indicated that most of the facilities in San Diego were not overtaxed and that substantial increases in the level of utilization were possible. ADL concluded records kept by the various attractors would allow them to determine the impact of visitors on public recreational and other facilities by using common and relatively non-complex techniques.

Selection of Techniques for the Economic and Fiscal Analyses

While the data mentioned above would prove to be useful throughout the study, they did not provide the information needed to compute either the economic impact of tourism or the impact of tourism on local government revenues and expenditures. Mr. Jensen knew ADL's Cambridge office had worked on tourism studies of similar scope and, therefore, requested information about the techniques they used.

One of the tourism studies then underway was being conducted for the State of Maine.[2] Two interrelated models were being used in the study. The first, the tourism impact model, estimated the total impact of tourism on the economy of the State. In addition to estimating total sales, the model also computed wage and salary income and tax revenues generated by different governments as a result of these sales. The model was based upon input-output economics. The public expenditure model allocated the expenditures of governmental functions to tourists and non-tourist groups based upon the user fees attributable to the average daily amounts of service they consumed. Between them, they provided much of the information Mr. Jensen had not decided how to calculate.

Jensen concluded the models could probably be useful in San Diego and requested the three persons in the Cambridge office who were using them, Dr. William Reinfeld, Mr. Ray Hartman, and myself, to study his proposal and determine which of the outputs could be provided by the models, the modifications to their structure that would be required, and the data that would be necessary.

We developed an outline of the work to be done that was based not around the three areas of analysis but on the chronological order in which the study would be conducted. The outline concentrated on those aspects of the study which could be addressed by either the tourism impact or public expenditure model. It discussed the modifications necessary to provide the information required by San Diego. Most were minor and almost all would have been required to adapt the model to any other location. Because we were concerned about the applicability of the two developed models, little attention was paid to the environmental portion of the study.

Based upon the conclusions of the outline, we felt our greatest contribution to the case could be in the form of transferring our previous experience. Because of the data requirements of the tourism impact model, we estimated that most of the work would involve that section of the research. We proposed to work closely with Mr. Jensen throughout the following design and initial implementation tasks:[3]

- Define a tourist, design a system of accounts and help supervise the data collection efforts of a market research firm to be hired as a subcontractor;
- Adapt the tourism impact model to San Diego to determine a method by which capital investment can be incorporated;
- Adapt the public expenditure model and design the necessary data collection program;
- Assist in outlining an environmental impact model;
- Test the revised tourism impact model;
- Collect the public expenditure data for the revised public expenditure model;
- Review preliminary results of market data collection;
- Describe all tasks performed in sufficient detail so that the San Francisco staff can assume total responsibility for the analysis from that point.

Mr. Jensen accepted the proposal and agreed that it would provide much of the information he required. He felt some of the tasks we had outlined, such as the incorporation of capital investment into the impact model, were not of crucial importance to the City and should, therefore, be postponed until the most important items were completed. He also indicated some outputs desired by the City would not be available from either of the two models. An example of this is the effect of seasonality upon employment levels. The impact model would only indicate the amount of wages generated by a certain level of economic activity and the number of man-months of employment supported by that activity. Because the model did not incorporate time into its calculations, it was impossible to determine exactly when the employment took place. Therefore, it was necessary to develop additional techniques to measure the occurrence and magnitude of seasonal employment and unemployment.

The adaptation of the tourism impact model to San Diego was simply explained although the ease of adaptation depended on the quantity and quality of available information. A study of the proposal revealed few significant changes in the model would be required. The number of tourist types would change and the number of regions would be increased to three: the County of San Diego, the Rest of California, and the Rest of the World. The State was listed as a separate region because if there were large leakages from San Diego to other areas in the State, the local economic development agency could use the information provided by the model to demonstrate to prospective businesses the size of the sales potential in San Diego. The State was also listed so State taxes could be estimated. The County of San Diego was used as opposed to the City because most of the economic data required by the model existed for the County but not for the City. City taxes were estimated separately, however. The Rest of the World indicated all of the leakages that occurred outside of California. In cases where the leakage occurs in an industrial sector that could locate in San Diego, the results of the model can be utilized to show the size of the market to new industries.

In addition to changing the number of regions, almost all of the coefficients of the model needed to be altered. However, these alterations are required in each new application of the model. The only other change contemplated was the inclusion of a technique to estimate capital formation, but as explained previously, this was initially postponed. A lack of both the required time and information led to its later elimination from the study. It was argued the results would be of secondary importance and the inclusion of the impact would require inordinate amounts of time.

Minor changes were required to adapt the public expenditure model to San Diego. The model had been applied to local government activities in Maine and the same structure was used to provide results in San Diego. The required work involved selecting those departments of City government that provided services consumed by tourists and conducting the interviews necessary to estimate the coefficients of the model. Chapter V discusses the agencies selected and the meaning of the coefficients.

A major addition was the development of a technique to estimate the cost of capital expenditure related to tourism. Because of the complexity of the task, these costs had not been estimated previously. However, elimination of such costs from this application would have meant the requirements of the RFP would not have been met. Hence, it was decided to include these costs. The lack of knowledge about the level of tourism's impact in previous years made estimation of capital costs very difficult. A methodology was developed that considered only those payments made for capital improvements during the current year. The technique included payments made for bond issues used to construct facilities used by tourists. A complete outline of the model is provided in Chapter V.

We felt the City could profit more from the public expenditure model if it could be constructed to estimate marginal as opposed to average costs. However, because of the nature of the City's budget document and the type of knowledge available to people in various City departments, we expected this to be a very difficult task. An attempt was made to construct a marginal cost model in Maine but failed due to both a lack of adequate information and a technique with the required level of sophistication. We hoped we would be able to construct the model in San Diego, but to ensure we could provide useful information, we made the decision to initially implement the existing public expenditure model and to develop a marginal cost model as time allowed. Some attempts were made later to develop such a model and the approach was discussed with the City. They were interested and offered whatever assistance they could. However, from our experiences in implementing the public expenditure model, we found no department that had the type of information we needed. In addition, by the time the model had been developed, time constraints were becoming important. Therefore, the model was not implemented.

When asked several months later why he decided to employ the specific models described to him, Mr. Jensen stated that until then he had not found any useful alternatives to our approach and, because of the limited amount of time available for the study, concluded that since the models appeared to be reasonable, they should be chosen in order to prevent further delay. At this point, time was becoming a critical factor. July, the middle of the peak tourist season, had to be the start of collection of the information required by the research techniques. Since it would be unwise to begin a data collection effort without having determined exactly what type of data would be required, it was necessary to select a research approach. In addition, Mr. Jensen was looking for other people to work on the study, and since we were interested and had specific ideas about how he might proceed, we and our approach were selected. As a result, the selection of a specific model for the analysis was not based upon a careful evaluation of the alternatives and a selection of the optimal approach but rather on a search for an approach which seemed reasonable and then adoption of that approach in order to save the time required for future search. The advantage is that the research is assured of both a useful technique and the time required to successfully implement it. The alternative may be to continually look for techniques until there is so little time left in the project that none of the good ones can be applied.

Selection of the Techniques for the Environmental Analysis

The variables that played important roles in the design of the economic and fiscal analysis were also evident in the design of the environmental sector. Both the lack of techniques and the small amount of time available to develop new methodologies limited the environmental section of the report. As was the case in the economic and fiscal areas, the few methodologies proposed were quickly accepted.

Initially, the flurry of activity on the economic and fiscal aspects precluded similar study of the environmental elements. Mr. Jensen contacted an ADL staffer who had worked on environmental issues in San Diego and asked him to look at the issues in the RFP and the proposal and begin to develop study techniques. However, his other study commitments made it impossible for him to devote much effort to the task.

In late September, I sent Mr. Jensen a memorandum which listed eleven areas which we might study and provided a brief description of a possible technique that could be used to study the problem, possible sources of information, and the probable pitfalls any research in that area would encounter. The topics were: (1) air pollution, (2) water pollution, (3) land use, (4) ground transportation, (5) air transportation, (6) population increases caused by tourist activity, (7) the effect of tourism on the need for increases in the City's infrastructure, (8) the impact of tourism on land values, (9) the psychological effects of tourism on permanent residents, (10) compilation of areas that were reserved for the exclusive use of tourists, and (11) noise pollution. The memo was sent because I hoped to be involved in the environmental aspects of the study.

The environmental approach was finally designed in October. Mr. Jensen was busy with other commitments and had not found the time to deal with the environmental issues. He was, therefore, pleased to receive my suggestions because they meant (1) someone other than himself was interested in the problem, and (2) some effort had been made in determining how the issue should be approached. Due to a combination of the lack of alternatives and his knowledge that there was little time still available, Mr. Jensen took the suggestions seriously.

In our discussions during October, several of the impacts which had been discussed in the memo were dropped from consideration. These included (1) the impact of tourism on land values, (2) the psychological effects of tourism on permanent residents, and (3) a listing of the areas reserved for tourists. The first was dropped because we felt it would be extremely time consuming to obtain sufficient information about changing land values and because even once such information was compiled, we were not sure we could tie the changes to the influence of tourism. While it would only be difficult to obtain information about changing land values, we concluded it would be almost impossible to obtain specific information about the psychological effects of tourism on residents. We did think the topic had importance and decided to consider including a non-technical discussion in the final report.

A driving tour of the City showed very few locations were restricted for the sole use of tourists. The beaches are publicly owned and in those areas where hotels and motels lie along the beach, the City has maintained street rights-of-way which are used to provide public access to the beaches. Therefore, we concluded the amount of exclusion was negligible.

Our interest was greatest in the areas of land use, population increases related to tourism and air pollution. Retrospectively, this interest was generated because these were questions that the City had specifically asked in the RFP and because there appeared to be a greater probability of finding the information needed to make quantitative models. In general, the areas that received the most consideration were those that were specifically mentioned by the City and where specific quantitative relationships could be developed. Eventually, most of those areas for which we could not obtain both quantitative information and explicit mathematical relationships among variables were dropped from serious study.

After outlining the types of impact tourism could have, we conducted cursory investigations aimed at determining whether the impact of tourism might be so large as to merit actual study. Contacts with local agencies involved with water pollution, air pollution, the City's service infrastructure, and traffic congestion found that they felt tourism was having only a small impact. Therefore, these topics were dropped from further study.

The topics of population growth related to the in-migration of people seeking to join the tourism labor force, air transportation, and noise pollution were not studied because of a lack of both adequate information and the explicit cause and effect relationships necessary for any analysis. Hence, it was only possible to qualitatively discuss these issues in rather abstract terms.

It was possible to conduct quantitative research only in the areas of population increases related to the in-migration of former visitors and land use. Because the study conducted by CONVIS that measured the population increases related to tourism had been conducted in 1972, we decided it should be updated and conducted the same study again with only small changes in the questions. The major problem facing the methodology was the lack of information relating to the number of tourists who had visited San Diego in previous years. We were forced to use those estimates that were available and extrapolations of our own information.

In the area of land use, the City was interested in receiving information about the amount of commercial acreage in the City being used for tourism purposes. Since few businesses cater expressly to tourists, it became necessary to allocate part of a business to tourism and the rest to other users. Fortunately, the City had compiled a complete computerized land use file; this tool eased the difficulty of the computation significantly.

Ideally, one wants to determine the marginal increase in commercial acreage related to the presence of tourism in the community. However, we estimated in the case of many types of businesses this would prove to be an almost impossible task. We, therefore, investigated the possibility of allocating land area to tourism based on the percentage tourist-related sales were of total sales. A discussion of the technique is presented in Chapter V.

Selection of a Technique for Combining the Analyses

Some of the impacts of tourism are good while others are not. If the City was to decide whether to continue to promote tourism, it would have to be willing to make tradeoffs among the positive and negative aspects of the industry. The previous techniques calculated the size of these impacts but did not make the tradeoffs and, therefore, were unable to determine whether tourism was good or bad for San Diego. Since our recommendations to the City would be affected by the tradeoffs it was willing to make, it was necessary to develop a grasp of the nature of these tradeoffs. Therefore, we proposed implementing a decision analysis game with various civic leaders. We hoped the exercise would indicate the nature of the City's tradeoffs and would, therefore, allow us to suggest policies consistent with these tradeoffs.

Another hope was that the decision analysis process would make the participants aware of the information provided in the report and would allow them to make greater use of it. We were concerned that unless we worked with the City and explained to them how the information could be incorporated into the City's decision-making process, the study would spend the rest of its life on a shelf. By involving people in the City who were at the decision-making level, we could ensure the nature of the information we provided would be understood, even if the specific recommendations of our report were not followed. The City agreed with our opinions and cooperated in the process. The work of the committee is discussed in Chapter V.

Summary

The prime issue concerning the selection process is the type of product it creates. Several influences have been shown to affect the selection process. Why should they be part of the selection process? What sacrifices do each cause in the final product. Are the types of techniques used unduly influenced by these issues? What potential for education do they create and what potential do they detract? Should other factors play a part in the selection process and if so, what are they? Finally, we shall use all of this information to conclude whether the process is capable of selecting approaches which are both feasible and desirable.

In reviewing the study's design process, three effects are shown to have the greatest impact on the type of study produced: the desired result the City outlined in the RFP; the backgrounds of the consultants; and several practical considerations including the availability of research techniques and information, the total amount of time available for the project and the amount of time team members could devote to it, and the initial suggested approaches. The first of these outlines the broadest scope of topics that might be covered, while the last two serve to whittle down the selection of items actually researched.

Obviously, the RFP outlines the types of research and results the City desires and hence, expresses what the City hopes to learn. Its role in the selection process is to pinpoint the topics the research will address and as such it is indespensible. It can, however, be a limiting factor in some cases when it does not properly address the actual areas of concern. This may be caused by the client's failure to recognize the true nature of the problem. In such cases it may be necessary to expand upon the research techniques called for in the RFP in order to provide the information actually desired. The decision analysis process is an example of such a situation. However, because of practical limitations, these additions are often too rare.

Since the scope of the study is often limited to the scope of the RFP, an unnecessary reduction in the RFP's scope may result in a reduced scope for the study, possibly making it less useful. On the other hand, an insufficient amount of clarity and detail in the RFP can also result in a study which fails to tackle the important issues. Therefore, the RFP must walk a fine line to avoid the sacrifices in study content it can create by being either too specific or too vague. This potential can be seen in the discussion of environmental impacts by the RFP. If the RFP had been more specific in outlining the type of environmental impacts to be studied, consideration would probably not have been given some of the areas which were reviewed. Even though work was not conducted on many of these topics, it is important to make the initial investigation to determine if they are important and if they can be studied. As a reflection of the RFP's influence, the only areas of the environmental sector where significant effort was expended were the two mentioned specifically by the RFP -- land use and population growth.

The picture painted by the RFP was that of a broad research effort which would address many of tourism's impacts. However, once the study went from the initial proposal phase to actual implementation, the scope was reduced in response to various types of pressures.

The background of the consulting team affected the amount of energy given to each area. Mr. Jensen had a background in operations research, both Dr. Reinfeld and Mr. Hartman had backgrounds in economics and my background was in urban planning with a specialization in urban economics. Predictably, the areas in which we felt most comfortable were those we could model in some mathematical fashion. If all of the interesting aspects of the study could have been modeled within the constraints placed upon us, it appears all of them would have been modeled. However, those areas which did not lead to quantification were generally dismissed from the forefront of the research.

Hence, the consultants' backgrounds tended to prohibit them from conducting a truly comprehensive analysis of the entire impact of tourism, but rather led to a concentration on a few areas in which serious research could be produced. As such, the City was left unable to use only the results of the analysis to decide tourism's fate. Rather, decision-makers had to include the comparatively unstudied non-quantifiable impacts themselves before making a decision. Therefore, this influence on study design caused significant sacrifices in terms of study output. While an undesirable influence on study design, it is also unavoidable. Obviously, the extent to which it causes sacrifices in study output is directly correlated with the backgrounds of the consultants. The broader their backgrounds, the fewer limitations placed on the study. It is to the client's advantage to select the consultant who can pursue the inquiry with the maximum number of different approaches.

The background of the consultant will predict final outputs that correspond with these backgrounds. People trained in quanitative techniques will produce information created by those approaches while those who use other approaches will produce different types of outputs. Different approaches can produce the same policy recommendations.

The consultant's attitude towards making his study an educational experience for the client and himself will affect the study's results. The fact the selection process is influenced by the consultant's background does not in itself determine whether the techniques chosen will support an educational environment. That depends on the backgrounds of the chosen consultants. Since the client does have an option in choosing consultants, it is to his advantage to choose the one who will be most likely to be deeply concerned about the benefits the client receives. The consultant would do well to think seriously about whether there is a different value to the client that might come about from the adoption of different techniques, even if the outputs of the techniques are the same.

An aspect of the background not yet mentioned deals with the biases of the consultant. If a consultant is opionated about the problem under investigation these feelings will often influence the form of the final product and its value to the client. If these feelings are strong, a consultant who has an excellent background, may not produce an educational product.

In this study the issue of objectivity influenced ADL's decision to spend less time on the qualitative issues. Research of these issues would almost certainly involve more value judgments on the part of the consultant than would the implementation of the models. In case of such an event, forces opposing the outcomes could base their opposition on the failure of the consultant team to make proper assumptions. Hence, we decided it would be better to offer the City a limited report but one that would probably have good credibility than to provide one which covered a broader range of topics but suffered in the credibility area. However, it is foolish to believe our biases about the desirability of tourism did not affect some of our actions.

The practical limitations had an important influence on the report. Unlike the consultants' bias, which could sometimes increase the number of tasks to be completed, the practical limitations served only to reduce the scope of analysis. Like the issue of the consultant's background, practical limitations are undesirable but also unavoidable. One of the most important of these limitations was the pressure and the lack of time available to the consultants to complete the study. Mr. Jensen stated he accepted both the tourism impact and the public expenditure models because they seemed to be reasonalbe approaches, had been used before and should, therefore, have fewer development problems than other techniques and would save the time required to develop an alternative approach. Similarly, the initial suggestions for the environmental analysis were eventually used in their initial form simply because none of the case team members had the time to develop a range of alternative approaches.

The problem of time is continuous in the consulting firm. On the one hand it is caused by the consultant's desire to finish the work quickly and within the defined budget. On the other hand it can be caused by the client, who is often unwilling to spend the amounts of money needed to thoroughly research the problem and is, instead, interested in receiving advice quickly and cheaply. Hence, if a city requests information about a topic or a technique which is currently under-researched, it is unlikely that the type of research it is willing to fund can reach definitive answers.

Because there are limits on the amount of effort allotted to a specific project, little time is available to pursue each of several alternative research schemes in an effort to choose the optimal. Rather, the choice of which procedure will be used must be made earlier in the process. It is not necessarily clear this procedure leads to results different from a search process which has more time. If both procedures eventually select the same technique and if the techniques are applied equally well by both groups, there should be no difference in the eventual outcome. However, we cannot be assured the same technique would be selected under different search procedures. It should be recognizable that the limited search procedure will be more prone to make errors.

Based on this, the number of poor modeling efforts might be reduced if more resources could be brought to bear on the issue under study. In such an event, the consultant would have more time to try out alternative forms of analysis and could also prepare inputs of high quality. The problem comes in that the additional effort would have to be funded. This means the client would have to commit additional resources to the study. Most cities do not see themselves in a financial position that allows them to fund such research and are, therefore, reluctant to do so. Consultants similarly are usually not in a position where they can affort to commit their own resources to such a project unless they can foresee additional future applications of the product. Hence, the city-consultant relationship is one that under most conditions cannot support major research efforts.

In relation to the study, another question is whether the form of the models was influenced by the requirements of the study or whether the requirements of the study were altered to fit the abilities of existing models. As discussed previously, both parties often realize that what the RFP requests and what the proposal indicates will be provided is not always the results actually provided. In areas where there is little knowledge of the availability of the information required or of cause and effect relationships, the constraints on research discussed above often block some avenues of analysis. In this instance, Mr. Jensen indicated and Mr. Blair understood that while ADL would attempt to provide all of the information it could, there could be areas of analysis where it would be impossible to collect the desired data.

It appears the models were designed to meet the requirements of the proposal but, in more than one instance, it proved to be impossible to generate the requested information and, therefore, the models were changed to provide as much useful information as possible. These changes were generally caused by the lack of both time and resources. Hence, when it became impossible to develop a successful marginal cost model, the average cost model was used, and a discussion was provided concerning the differences that could be expected between marginal and average costs. The marginal cost model suffered basically from a lack of the required information. In comparison, the air pollution efforts were hindered by the lack of sufficiently sophisticated techniques. Initially, it hoped to determine the marginal impact of pollution caused by tourists on the overall air quality in the San Diego area. We could generate reasonable estimates of the actual volume of pollutants generated by tourists per day but our ability to allocate the generation of these pollutants across the several hours of the day was more limited and would have to rely upon our own judgment and interviews with people in San Diego. In addition, we found just knowing the amount of pollutants generated by tourists would not allow us to determine the marginal impact their pollutants had on air quality. This last limitation was caused by the inability of present day air pollution models to provide that type of information. As a result, the best information we could provide was the amount of pollutants generated by tourists. However, without knowledge of how this later affected the region's air quality, it was somewhat useless.

These examples lend themselves to a discussion of what the impact of considering existing models during the selection process means in terms of the value of the final product. The consideration of existing models does not in itself cause any sacrifices in the study or affect the final products. Sacrifices arise when the decision to accept an existing rather than a potentially better new technique is made. If the consultant is unwilling to accept anything but the best possible study, consideration of developed techniques does not hurt the selection process. However, if he is willing to accept old techniques in order to save the development effort required for new ones, consideration of these old techniques can have costly consequences.

The use of previously developed models can provide as much education for the client as the new model, if the two models fulfill the same objectives. There is a possibility that using an existing model can prove to be more of an educational experience for the client as the consultant will have more time to explain the model than he might have if substantial portions of his time were spent constructing a new approach.

All the limitations cut at the comprehensiveness of the study, making it once again necessary for decision makers to rely upon their own value judgments for the topics that could not be researched. As a result, the study is no longer a comprehensive analysis of tourism that can provide all the information the city needs to chart its future course, but rather becomes a serious study of some, and hopefully the most important of tourism's many impacts.

While the specific recommendations that would be based upon the information provided by the models were not available, it was possible to see several influences the decision to concentrate the study on the application of formal models would have upon the type of recommendations the study would be able to provide and on the ability of these recommendations to influence city policy. First, and most important, the decision to limit the bulk of the work to the issues the models could discuss limited the range of topics the recommendations would cover. Hence, the report would not provide the city with any recommendations as to how it could most effectively reduce the level of air pollution related to tourism while at the same time maximizing the economic benefits to the greatest extent possible. Secondly, models, because of their demanding nature, can be expected to pinpoint those areas for which insufficient information is available and which should therefore be the focus of future research. While this may not have a direct impact immediately, it can improve long-term city policies. Finally, the desire by the city for formal models implies an opinion that the results of a formal modeling process will necessarily be better than those of a qualitative analysis. Several city officials indicated they would be more willing to incorporate the recommendations of a formal model into their decision process than those of a qualitative analysis. Hence, even while the scope of the recommendations the models can give is limited, there were indications that the recommendations of the models would be given serious consideration.

The assumptions made by the model, which are explored in Chapter V, will be seen to have several additional influences upon their ability to affect the decision-making process. Because of the construction of the models, many are limited only to being able to provide information about particular issues.

The final issue which now surfaces is how to determine the value of the selection process just described. We have seen each of the three major influences create certain sacrifices in terms of the final product and have also seen in them inherent characteristics which influence the final product even before work begins. However, one of these influences -- the RFP -- has been described as indispensible while the other two are unavoidable. Hence, these same influences will appear in every project. The detrimental impacts associated with them could be lessened by following the suggestions outlined above.

The other option available for improving the selection process is to introduce additional influences designed to improve the quality of the study. One such influence would be to give preference to those approaches which would maximize the educational experience for both the client and the consultant in both the area of study and in related areas where possible. This influence might lead to the selection of techniques which called for close cooperation with city staff so they might better understand the process of designing and implementing the chosen techniques. It could also help them understand the type of base they must construct to have the information required to develop a modeling approach. The consultant should tell the client whether further research will be required after the consultant's report is completed. If it is, the entire process should ensure that sufficient knowledge be given to the consultant so he might be able to continue the research. In addition to showing the client how to further current lines of research, the consultant should also show how to conduct the research so new findings and issues can redirect its approach.

While planning a project with the idea of allowing the client to continue the research independently is generally useful, there are circumstances in which it would be of little use to the client. Consultants are sometimes brought in to aid decision makers in deciding how to allocate irretrievable resources. These decisions are often made shortly after the study is concluded. The client would have no time to conduct further research even if he were told what should be done.

Some clients may not have the in-house resources to continue the research on their own even if they were told how to do so. In such instances, there is little immediate value the client can obtain from the learning process although it might influence him to develop an in-house research capability.

NOTES

[1] Economic Research Bureau of San Diego, San Diego Economic Development Research Program, San Diego, 1966, Part I - p. 10

[2] Arthur D. Little, Inc., Tourism in Maine: Analysis and Recommendations, Cambridge, Spring, 1974

[3] Memorandum from William Reinfeld to Kenneth Jensen, May, 1973

V. REVIEW OF THE MODELS

This Chapter studies several of the models used by Arthur D. Little, to assess tourism's impacts on San Diego and to devise policies that could better its impact from the City's point of view. The previous two Chapters have reviewed the reasons behind the City's request for an analysis of the tourism industry and the types of information they hoped to receive. While the City did not require a specific type of analysis, they preferred one that would utilize explicit relationships among the inter-active variables. The results they were interested in are quantitative and not qualitative. In the proposal to the City, ADL indicated quantitative mathematical models would be useful tools with which to conduct the proposed analysis. However, the consultant indicated that until the quantity and quality of input information could be ascertained, it would not be possible to promise the use of a certain modeling technique.

After ADL was selected, a number of different mathematical models were either adapted or developed for the analysis. Those areas for which explicit models could not be constructed were often discarded as a major area of concern. This was due to several things. First, it was possible to conclude that many of the areas were not important since the impact of tourism upon them would be small. Second, the consultants felt their time could best be spent on those areas where it would be possible to produce specific results and that they should only try to argue in qualitative terms about the type of impact they would expect tourism to have on those non-quantifiable impacts. Finally, the background of the people engaged in the study was such that they felt more comfortable with mathematically oriented forms of analysis.

The previous Chapter indicates the selection of specific models was often based upon the fact that they were the first reasonable option offered to the case leader. They were not necessarily chosen because they were the best possible models available for the analysis, but because they were suggested early in the selection process and the time available to choose a technique was limited. Another reason for choosing the models was that they were already structured to provide most of the information desired by San Diego.

This Chapter will critically analyze four models used in San Diego.[1] Two models, the tourism impact model and the public expenditure model, were initially devised for application in other regions and were adapted to San Diego with the only changes in their structure being those necessary to provide the information requested by the City. The other two, the land use model and the decision analysis model, were constructed specifically for use in San Diego.

Each model will be addressed from several angles. The outputs provided by the model will be described and the policies the model can affect will be reviewed. Particular concern will be given to the effect structural assumptions and coefficient values have on a particular recommendation and effects alterations in these inputs could have on policy recommendations. Appendix II contains an in-depth description of the models including a review of all major assumptions and a discussion of their reasonableness. A description of the models' input requirements and a list of the various sources used to obtain the information is also included.

The Tourism Impact Model

The tourism impact model measures the economic impact of traveler spending on the San Diego economy in terms of sales, wage and salary income, employment, proprietary income, and tax revenues. It calculates each of these impacts at the direct, indirect, and induced levels of activity. The calculations are made for many different sectors of the economy -- 25 Tourism Impact Analysis Categories (TIACs) at the direct level and 15 San Diego Input-Output Categories (SIOCs) at the indirect level.

The model is capable of providing innumerable specific outputs including the amount of proprietary income generated in SIOC 10, Business and Consumer Services, as a result of an expenditure of $4.00 in TIAC 6, Gas Stations, by a Salt-Water Bather/Rental Cottage/Summer/Southern California visitor. However, for simplification, the outputs of the model can be grouped into the following categories:

- Total production in each region caused by a particular tourist purchase;
- Total wage and salary income accruing to each region as a result of production in all regions;
- Total proprietary income accruing to each region as a result of production in all regions;
- Total employment accruing to each region as a result of production and wage and salary income in all regions;
- Total tax revenues collected by the State of California as a result of the production and income generated in the state;
- Total property tax revenues collected by the county as a result of production and income occurring in the county; and
- Total tax revenues collected by the city as a result of production and income occurring in the city.

Each of these outputs is expressed both in terms of the total impact made by each tourist type, i.e., the impact of all tourist days, and the impact per 1,000 tourist days. The second approach allows for easy comparisons of the per tourist impact.

In summary, the formulation of the model, which is based on input-output economics, relies on several key assumptions:

- A linear production function for both sales and income at the indirect and induced levels;

- Constant wage rates in all three regions for the employment created indirectly in each SIOC category;
- Unchanging proportional disbursement of economic activity across the three regions; and
- An ability to estimate all tax revenues collected as a result of tourism-generated production and income during a particular time period in the form of sales taxes.

The structure of the models and a further discussion of these assumptions are included in Appendix II. This Chapter now focuses on the policy applications of the model and how its usefulness is affected by these assumptions.

The City can use the model in several ways. First, it can serve as an expository device that delineates the structure of tourism in San Diego and its relationships with the rest of the State and nation. The model shows expenditures made by tourists in San Diego have indirect benefits for other portions of the country and demonstrates how economic activity in San Diego generates revenues for the State government. While outlining these relationships, the model measures the total size of the economic activity generated by the initial tourist expenditure.

All of the assumptions of the model could have an important impact upon its ability to serve this purpose, since they concern the structure of the tourism industry. In terms of affecting the model's ability to estimate the total impact of tourism on San Diego, the most important assumptions are those dealing with the leakage of production and income from the San Diego region. Alterations of these estimates can have dramatic effects upon the size of tourism's impact since they control the size of the multiplier. The most important input in the determination of tourism's impact is the final demand, which is the amount tourists spend. Changes in these figures affect not only indirect and induced production but direct sales as well. The sensitivity of the results to changes in the values of these coefficients will be shown in Chapter VII.

The outputs of the model can be used as a tool for planning industrial diversification. One of the major reasons for including the two regions outside of San Diego was that it would be possible to see to which area the leakages accrued. If there is a large leakage to a local region, it might be possible to use the results of the model to entice a firm to move to San Diego in order to improve the multiplier. This use of the model is most dependent upon two of the inputs: the estimates of the leakage to the other regions and the total amount of tourist spending. The estimates of the size of the leakages affect both the proportion of total production leaking out of San Diego and thereby the size of the leakage. Tourist sales affect the size of the leakage given a fixed rate of leak. Since any attempt to entice a new firm will be largely based upon the size of the potential market, both coefficients can have a great effect upon the model's usefulness.

The model shows State government is dependent upon local economic activity for its revenues and indicates the amount of State revenues that are in turn shared with the local government. The model also provides the City with estimates of the amount of City revenues created by tourism. For the percentage of total production that becomes tax revenue, the estimate is based upon the tax rates used by the model, whereas for the total amount of taxes collected, both the tax rates and the total amount of production are important. While tax collections in a given year do represent a set proportion of total economic activity during the same year, the use of historical information to estimate that proportion may lead to unreliable estimates. The City can use the estimates of State tax revenue collected to determine if it receives a fair return for the amount of money it generates for the State. The City can compare the amount of revenues it receives from tourism from the costs associated with the industry, to determine whether tourism has a beneficial fiscal impact upon the City. The structural relationships outlined in the model also provide the City with some information that can be used to determine how the fiscal impacts of the industry can be improved. The model is a major part of the fiscal model used in the study.

Finally, the model can be used to compare the impacts of several tourist types. Each different tourist type spends a different amount and spends it in different sectors. Each sector has its own impact on each of the three regions and in each of the four areas of impact measured by the model. The results of the model demonstrate these differences. Because the impacts generated by equal expenditures in each TIAC are not that different and because there are not widely fluctuating differences in the distribution of tourist spending among TIACs -- with the exception of the lodging TIACs -- the tourist's per diem expenditure level is the prime determinant of how his economic impact will compare with that of other tourist types. The four major assumptions of the model do become important when the tourist's overall impact is measured to be either beneficial or detrimental. If the coefficients are structured to indicate very little multiplier impact, the value of the tourist dollar to the City will diminish along with the value of the tourist. The importance of these coefficients will be seen in the application of the decision analysis model.

Knowledge of the comparative impacts of different tourist types can be useful in designing a marketing program. Certainly the City can use the model to determine which tourists have the best economic impact and then construct a promotional campaign designed to attract these tourist types.

If similar analyses could be completed of other industries in the City, it would be possible to compare the benefits the City receives from its various businesses. Such information could be useful in an effort to determine the area in which the City should concentrate future development. As will be shown later, however, the outputs of the model may not be reliable enough to use in this context.

Public Expenditure Model

The public expenditure model measures the costs to City government of providing services to tourists using the idea of the user fee associated with the average daily amount of services tourists consume.* No attempt is made to measure the marginal costs incurred in the provision of additional services to an increase in the number of tourists. Therefore, the model is useful for forecasting marginal costs only to the extent user fees equal marginal costs.

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*The model used in the ADL report estimates induced level expenditures made to provide services to the tourism industry in addition to expenditures made at the direct level. Because of the length that would be required for a full discussion, the induced portion of the public expenditure model will not be discussed in detail in this text. Simply stated, the induced model estimates the costs of the services consumed by those persons employed by the tourism industry and their dependents. Costs associated with a particular employee day are determined by dividing the total number of person days into the total City budget less those revenue sources not considered in the tourism impact model.

The induced cost related to a particular tourist type is directly linked to the amount of employment he creates and, therefore, to his expenditure level. Hence, those tourists with the largest expenditure patterns will be associated with the largest induced costs. In the same sense that the estimation of property taxes paid at the induced level do not represent a marginal contribution of tourism, so the services consumed by these employees do not represent a marginal burden upon the City since many of them would live in San Diego and thereby consume services regardless of whether or not they had a job in the tourism industry. However, inclusion of the costs does provide an estimate of the overall fiscal impact of the tourism sector.

The model is forced to estimate user fees because supply equations for public services in San Diego, which would be necessary to measure either average or marginal costs, are not available. The model estimates the demand for urban services and allocates the total cost of all services over the demand. If the amount of service demanded is equal to the amount supplied, the user fee is equal to the average cost of providing the services. If the average cost is in turn equal to the marginal cost, the model is a useful estimator of the costs that would be incurred as a result of an additional tourist influx. The likelihood of these values being equal is reviewed later in this section.

The cost of providing services is only rarely considered in studies dealing with tourism. Tax revenues generated by tourists are a frequently included topic, largely because many reports are done for the purpose of showing how good tourism is, and because the methodology used to estimate tax revenues can be easily attached to techniques used to estimate total production. Entirely different approaches must be developed to estimate costs. Those studies that address the issue often estimate the average user fee attributable to the services provided all the people. For example, a study recently completed by Mathematica for the State of Hawaii estimated the average use fee by dividing the total State budget by the total number of person days spent in the State by both residents and tourists.[2] The result was the "average cost" per person day.* This formulation does not take account of different types of service consumption profiles among residents and different tourist types. For instance, we know tourists do not require education services except as they are consumed by the dependents of people employed in the tourism industry. However, we would expect tourists to consume some services, such as those provided by a State Parks and Recreation Department, at a much faster rate than residents.

*The Mathematica study says that it estimates the average cost of the services consumed by tourists. However, their definition of average cost is equivalent with the definition of user fee used in this application.

It is not clear whether the costs incurred by the agencies that provide fewer services to tourists than to residents and the costs incurred by those providing more services to tourists average so that the per diem amount spent on tourists by the entire government equals the amount spent on residents. The purpose of this model is to allocate, on the basis of the amount of service consumed, the money spent by each of several agencies in providing services to both residents and tourists.

One of the major failings of many models estimating the costs of tourism is that they often address tourists as though they were residents, and draw conclusions based upon the comparative rates of consumption of the two groups. On the one hand, this leads to the conclusion that tourists are very costly since a community may have to hire additional police during the peak season to handle the added crowds. On the other hand, people will argue that tourists are certainly good for the community and perhaps even better than residents because they do not consume educational services, often the most expensive service a community provides. In either case, deciding whether a tourist is good or bad on the basis of whether he costs more or less than a resident is incorrect. Tourists should not be viewed as a special type of resident who consume either more or fewer services. Rather, they are the product of a particular industry--the tourism industry. Tourists are to the tourism industry what automobiles are to the automobile industry--products. No one thinks an automobile plant is good for a local government just because the cars do not take up seats in the classroom. Similarly, it is incorrect to think of tourists simply as residents with different habits.

There are significant differences between the products of the tourism industry and those of other industries. The first is that whereas most other industries ship their products to other locations, the products of the tourism industry--tourists--are brought to the place of production. This phenomenon is common among service industries, but is rare compared to other basic industries. The second major difference is that the products of the tourism industry are people. Since most urban services are directed towards people, it seems likely that tourists would consume a much greater amount of municipal service during their stay in a city than an automobile made in the city and later shipped to another location for sale. Therefore, in terms of the rate of service consumption of product, one might initially think tourists are among the most expensive. This suspicion warrants further investigation.

While a comparison of the levels of consumption of permanent residents and tourists is somewhat meaningless for the purpose of policy development, it is useful to compare the consumption of the two groups in an effort to determine the quantity of local government services consumed by tourists. This is the approach used by the public expenditure model. There are only three major sets of inputs: the departments that provide services directly to tourists and the cost of these services; the tourist types who consume the service and the number of person days spent in the city annually by members of each tourist type and permanent residents; and the probability-of-use coefficients and the relative-cost coefficients.

The most intriguing of the inputs are the probability-of-use and relative-cost coefficients. The probability-of-use coefficient measures the likelihood that a person who is in the City will use the services of a given department at some time during the average one-day period. The coefficient makes no attempt to measure the length of time during which the service is consumed nor the intensity with which it is consumed during the period of use. Rather, the coefficient simply predicts whether or not the services will be used at all.

The relative-cost coefficient considers two aspects of service consumption: the rate at which services are consumed and the duration of consumption. The net effect of the coefficient is that it measures the relative amounts of service consumed by different consumers during the periods of the average day in which they consume the service.

The other two inputs required by the model are comparatively straightforward. The source of the number of tourist days for each tourist type is discussed in Appendix II. For the cost model total tourist days are disaggregated only by the three primary trip purposes -- business, convention, and vacation -- and the type of accommodation.

The departments in the model are those departments and agencies of City government that provide services directly consumed by tourists. An obvious example of such a bureau is the Department of Parks and Recreation which provides lifeguards at the beach and was responsible for the development of both Mission Bay and Balboa Parks. The budgets of the departments are those funds spent by the agency and financed with revenues considered by the tourism impact model. Only these revenues are considered because inclusion of additional sources would mean a comparison of tax revenues and costs generated by tourists would not be made on an equal footing. The relative-cost and probability of use coefficients must be determined for each tourist type by department.

Because its role is to allocate the costs of urban services among user groups, the model itself does not provide the type of results easily incorporated into policy decisions. This accounting tool can be useful, however, when combined with the results of other forms of analysis, such as the tax section of the tourism impact model. The model would be of more value if the outputs could be used to predict the increase in expenditures that would necessarily accompany an increase in tourists. As discussed in Chapter IV, ADL initially felt such outputs would be best for San Diego. However, since a previous attempt to measure marginal costs in Maine had failed for lack of information, the user fee model was initially employed in San Diego to assure some information could be provided. Because of similar data problems in San Diego, a successful marginal cost model was never developed and the user fee model provided the only available information.

When combined with the results of the tax section of the tourism impact model, the public expenditure model becomes a vital component of a model which measures the fiscal impact of tourism on San Diego. As mentioned in the discussion of the tourism impact model, the tax revenues accruing to the City can be disaggregated into those generated at the direct level and those generated at the indirect and induced levels. Similarly, the public expenditure model can be disaggregated to measure only those expenditures connected with services provided at the direct level -- the portion of the model discussed in this section -- or those that provide services consumed at the indirect and induced levels -- the portion of the model referred to by a footnote at the beginning of this section.

The disaggregated models can be used to estimate the overall fiscal impact of tourism at both the direct -- direct level revenues and expenditures only -- and total levels -- all revenues and expenditures included. Both levels of analysis are considered in Chapter VI. Two ratios are constructed. One compares the revenues generated at the direct level with the costs incurred at that level, while the other considers all of the costs and revenues associated with all levels. Obviously, a ratio value of more than one means tourism generates revenues for the City in excess of the expenditures related to the services consumed by the industry. A value of less than one indicates the City is subsidizing that sector of the tourism industry with revenues collected elsewhere. If it can be argued that the user fee is an acceptable approximation of the marginal cost, the usefulness of the model would be greatly enhanced. ADL does not make these arguments, nor does it argue that the model provides an acceptable approximation of the marginal cost. Because of the importance these arguments could have for the usefulness of the model, they will be discussed here.

Two findings must be made before one can consider marginal costs to be approximated by the user fees calculated in the model. The first is to determine that marginal costs equal average costs and the second is to equate average costs and user fees.

A review of the efforts to measure the marginal costs of urban services reveals that standardized techniques have not been developed.[3] Many of the studies also do not address the issue of the quality of urban services. There have been a number of studies which measure the average cost of providing service where the cost of these services is affected by a number of variables. One common topic is to determine whether there appears to be economies of scale in the provision of local government services. Many studies show economies of scale until a community reaches a population of approximately 25,000 to 100,000.[4] After that point, the average cost appears to remain stable, regardless of City size. A few studies have shown increases when a community has a population between 250,000 and 750,000. However, even these studies that note an increase in per capita expenditures in large cities feel these increases are very small. Again, the studies do not address the issue of the quality of the services being provided in communities of different sizes or in different communities of the same size. Hence, we do not know how the cost of providing a set quality of service fluctuates with urban size. An attempt to incorporate the quality of urban services into a computation of per capita expenditure resolved that the information and technqiues required to measure quality still need to be developed. It found the quality measures it devised did not show clear economics of scale in the provision of sanitation, health, police and water and sewer services in Massachusetts cities and towns.[5]

Since more studies have shown expenditure per capita does not show significant differences among cities of the size range of San Diego, we can conclude the marginal cost of providing additional services closely equals the average cost, although it must be understood that the quality of the service may change. If this is also true with services consumed by tourists, it means the average levels of consumption predicted by the model would also be reasonable predictors of the cost of providing additional services to a larger tourist population if user fees equal average costs. During interviews with officials of the various departments respondents were asked whether they thought the marginal cost associated with an increase in the number of tourist days would be the same as the increase in costs associated with a similar increase in additional permanent resident days, assuming both had the same probability-of-use and relative-cost coefficients. Many respondents felt this would be true. Those who differed argued that because tourists are more often concentrated in a small area, there would be economies or diseconomies of scale for providing additional service. The police department, for instance, felt there would be diseconomies because the concentration might lead to increased crime. The fire department, on the other hand, felt there would be economies in that the cost of the equipment required for a major building fire could be spread across more structures.

The studies that have found approximate equality between average and marginal costs usually look only at the total expenditure of the government and not at the expenditures of different agencies. As shown above, different departments expect to incur either economies or diseconomies of scale as a result of additional population. Therefore, it would be necessary to know how the average cost changes for each of the services studied. This problem further clouds the hope of the model's outputs being reasonable estimators of marginal cost.

For the user fee to equal the average cost, the department must produce all the services possible with its budget and all these services must be consumed. Otherwise, the user fee will be higher than the average cost since the user will be required to pay for services either not produced or not consumed. However, to know the amount of service a department can produce on a given budget is a difficult task. For instance, most auditing departments have a busy period at the end of each fiscal year, while the workload during the rest of the year is somewhat less. However, it is not necessarily true that the department could produce this peak effort all year long and that its failure to do so reflects a waste of money during non-peak periods. Perhaps even under optimal conditions, the people in the deparmtent are unable to work at peak capacity for a period longer than the current peak period and that they are working at their peak capacity all year long but the peak varies with the season. Hence, there is no way to really define the peak producing capacity of a given budget.

One would hope that over the long run the City could provide the minimal amount of services necessary to meet the requirements of a constant level of demand. However, it is unlikely that demand remains constant for any appreciable length of time. If demand is constantly changing, the City cannot accurately forecast at the beginning of each budget year exactly how much service should be produced. Rather, demand will be underestimated in some years and overestimated in others. We could imagine that demand is met using a trial and error basis of supply, i.e., if people complain that not enough service is available, the supply is increased and if there is obvious wastage, the budget is reduced.

While there are constant fluctuations in demand, they are small in comparison to the total amount of services the City provides. Therefore, the City can probably produce a minimal amount of unnecessary service.

It may be inherent in the City's production function that funds are continually spent for services either not produced or not consumed. Examples are the lack of use of park facilities and concert halls at all times. If this wastage is inherent in the City's production function, it would not be removed even if the City were fully knowledgeable about the level of total service demand. If this is true, the average cost of services consumed should also include a portion of the cost of services not consumed, since they are created simultaneously and inseparably with the consumed services. Given that the user fee approach includes the cost of these non-consumed services, this would mean that the average cost would equal the user fee.

Unfortunately, this discussion cannot decide the issue of whether user fees and marginal costs are equivalent. While there does appear to be some evidence that indicates they may well be close in value, the clouds that hover over the concept of their being equal prevent such an assumption until it is possible to separately measure both user fees and marginal costs and then compare their values.

The second portion of the model deals with the costs of capital projects used by tourists. The structure is similar to that used for estimating the user fees attributable to services funded by the operating budget. The biggest difference is the technique used to estimate the annual cost of the improvements. Whereas the total operating cost budget for the present year could be included in the calculation with little concern paid to the level of operating costs in previous years, the capital portion of the model must take account of capital projects previously built, as many of them still provide services consumed by tourists. Other studies trying to estimate the amount of capital costs attributable to any one year have done so by summing the total amount of capital costs over several years and assuming the average expenditure should be borne during each year. This model took a slightly different approach. It assesses the payments made by the City for capital funds during the current years to current users. These payments include monies spent from the capital outlay fund which is essentially an operating fund, as well as funds used to make payments on bond issues previously used to construct capital improvements. In terms of projects funded with bonds, the model assumes the cost assessable to each year is the amount of bond payments made during that year. Obviously, this procedure does have some flaws. It does, however, relate directly to the level of City expenditure during that year and will spread the costs of capital projects over the life of the bonds. For projects constructed with monies from the capital outlay fund, the model allocates the expenditure during the current year to user groups. This is different from, and probably somewhat inferior to, an approach which assesses the average amount spent from a capital outlay fund during the past several years. However, a study of expenditures from the capital outlay fund revealed no dramatic fluctuation among years, so the amount spent during the current year is close to the average amount spent during the past several years. In addition, use of the current level of spending from the capital outlay fund is consistent with the assumption made for expenditures from bond funds, i.e., the amount actually spent during the current year is assessed to the current year.

All the assumptions inherent in the operating cost model are also applicable here. However, the assumption that the amount of service being consumed is equal to the amount of service that can be provided is even weaker. While there are some times when a capital improvement such as Mission Bay is filled to capacity and can, therefore, be viewed as providing the maximum possible amount of service, there are many other times when the number of people in the park do not tax its capacity and the amount of service being consumed is not equal to the amount being produced. However, all users bear the cost of this unused capacity. Because most of the capital facilities considered by the model can produce more service than they currently do, the estimates of user fees are greater than the average cost of providing the service.

Land Use Model

The land use model was constructed to meet the City's request for an analysis of the impact of tourism on land usage and assessment of the amount of commercial land used for tourism. The model estimates the amount of land and establishment square footage of those businesses in each of the twenty-five TIACs supported by tourist purchases. The computations made by the model are quite simple, however, they require several strong assumptions about the nature of relationships between the amount of sales and the amount of commercial square footage supported by these sales.

Many of the inputs required by the land use model are derived by the tourism impact model. What is needed from that model is the amount of tourist spending in each of the twenty-five TIACs by each tourist type. This is calculated simply by multiplying the total number of tourist days by the average per diem spending in each TIAC. Several other pieces of information from other sources are also needed. The first is the total volume of annual sales for all businesses fitting a given TIAC description and located within the City of San Diego. The second is the total land area occupied by these businesses and their total establishment square footage.

Once the required information is compiled, the calculation is quite simple. Establishment square footage supported by tourism is assumed to be:

$$TOURSQFT_i = TOURSALES_i * ESTSQFT_i/TOTSALES_i$$

where,

$TOURSQFT_i$ is the total square footage of all establishments in TIAC i supported by tourist purchases;

$TOURSALES_i$ is the total amount of tourist purchases in TIAC i;

$ESTSQFT_i$ is the total establishment square footage of all establishments in TIAC i;

$TOTSALES_i$ is the total sales of all establishments in TIAC i.

The commercial land area in each TIAC, which included the land under the structure and any surrounding properties related to the establishment, is estimated in similar fashion:

$$TOURLAND_i = TOURSALES_i * ESTLAND_i/ TOTSALES_i$$

where,

$TOURLAND_i$ is the amount of land in TIAC i supported by tourist purchases;

$ESTLAND_i$ is the total amount of land for all establishments in TIAC i;

$TOURSALES_i$ and $TOTSALES_i$ have been defined above.

The model does not attempt to allocate any particular establishment totally to tourist sales as it is unlikely that many establishments in the City cater only to tourists. Rather, the model allocates a percentage of each business, where the percentage allocated is equal to the percentage tourist purchases are of total purchases in all establishments of that type.

The outputs of the model are not designed to lead directly to policies but can act as inputs to City policy decisions. If the City decides the model shows too much land has already been developed for the tourist trade, it must conclude further promotion of the industry could only result in additional development. Therefore, further promotion would not be recommended. If the Council decides the amount of land currently used for tourism purposes is far less than they are willing to allocate, promotion should not be halted solely because of land use considerations. The outputs of the model would be useful if one could assume the sales per square foot ratio used by the model could also be used to estimate the additional square footage created by an increase in tourist purchases. However, as will be discussed below, this would require the acceptance of the assumptions that there is a certain level of sales required to support a square foot of business, that the model estimates this level correctly, and that this level will remain constant in the future so future construction can be estimated with its use. These assumptions can probably not be made.

The sales per square foot ratio is the major assumption. The model assumes a given volume of sales is needed to support each square foot of retail space and that this amount can be calculated by dividing the current level of sales by the number of square feet.

The calculation further assumes the current level of sales per square foot is necessary to keep the existing number of businesses in operation without necessitating a net change in the amount of square footage caused by the closing of some businesses or the opening of others. It is true that some level of sales is needed to keep a store in operation. It is not clear whether this level is strongly correlated with the square footage of the store, even when one looks at several different stores of the same type. Even if there was a particular break-even level, the lack of totally free entry and exist from the market would often cause an over or undersupply of square footage. Therefore, the model cannot be assured of ever estimating the exact level of sales required. If information concerning both sales and square feet was available for a several year period, it would have been possible to study the historical trend of the ratios and determine an average across them. However, such historical information was not available. The model did not attempt to support the assumption by providing data from other communities, although it is likely that such information would also be hard to locate.

Another assumption made by the model is that the volume of sales required to support an establishment square foot is indifferent as to whether those purchases were made by tourists or residents. Because tourist sales exhibit great seasonal fluctuations, it is possible they would support a different amount of floor space. The model makes no attempt to address this issue.

Because of the importance of these largely unsupportable assumptions, it is not possible to know whether the outputs the model calculates are valid much less to assume the model can be used to predict the amount of new square footage that would accompany an increase in tourist sales. The model's best use is as a tool to develop a pattern of comparable data over a period of years. This information can then be used to determine if the assumptions made by the model have any validity. As for its use in this application, it represents an approach seriously comprised by the availability of time, information and funding. However, because a certain level of sales are required to keep a business afloat, it probably does provide a rough estimate of the percentage of business space supported by tourism.

The Decision Analysis Model

The decision analysis model was designed to combine the most important outputs of each of the previous models and develop a ranking of the comparative desirability of the tourist types. This ranking would allow the City to see which tourists were best and worst overall based upon all of the important impacts. The decision analysis process was initially proposed as a means of helping the City cope with the large volume of information the study would produce. As discussed in Chapter IV, it was felt that without some means of putting all of the information compiled into a few principal measures, much of the information in the study would be discarded because one person would not be able to include all the information when making policy.

An overall measure could be developed by (1) the consultants or (2) City officials and representatives of the community. Because City officials are in a better position to know the City's values, the second technique was chosen.

The theory behind decision analysis is essentially the same theory underlying utility curves. Specifically, we hoped to determine the City's preferences among the several positive aspects of tourism and also to ascertain the quantity of tourism's negative impacts the City was willing to suffer to receive some of the positive. For instance, the models indicated tourism generated taxes, but tourists also consumed services. We imagined the City was willing to spend a certain amount for services consumed by tourists in order to receive their revenues. However, we did not know whether the City would be happy if they only broke even, if they were willing to subsidize tourism or if they required a subsidy from tourism. Similarly, the Mayor and others were concerned about population in-migration related to tourism. However, a reduction in tourism and thereby the amount of in-migration would also reduce the number of jobs available in the labor force. We imagined the City was willing to accept some in-migration in order to preserve jobs, but did not know the amount. The tradeoff is of critical importance when deciding on the policies the City should adopt. By determining the point of indifference City officials have among what particular combinations of impacts, we could construct the shape of their utility curves. Using the specific impacts of each tourist type generated by the several models, we can compare the amounts of utility each tourist generates. Obviously, those types with the greatest utility would have the largest benefit.

The potential usefulness of the decision analysis process was carefully explained to City officials. They were told that because only the impacts ADL had been able to quantify could be included in the utility curves, the results of the analysis should not be considered to be an overall assessment of tourism. Rather, they represent an evaluation of all quantifiable imapcts. Decision makers would still have to include all unquantifiable impacts into their final decision-making process. City officials were also told that because many of the models were not geared to measure marginal impacts of additional tourism, the usefulness of the utility curves to compare various types of future development was limited. The curves would only indicate whether the current type of tourism the City was hosting was really given the City positive utility and which of the existing tourist types provided the most utility per tourist day.

After discussion of the idea with Messrs. Blair, Moore, and Haden, the idea of the decision analysis model was accepted and they agreed to provide the cooperation of the City. Mr. Blair selected several people with Mr. Moore's approval to be on the committee; they were from both in and out of City government. The members of the committee were: (1) Ray Blair, (2) Larry Haden, (3) Dal Watkins, President of the Convention and Visitors Bureau, (4) Richard Nolan of the City's Environmental Quality Department, (5) Lucille Mortimer of the Economic Research Bureau, (6) David Smith of the City's Planning Department, and (7) Pauline Des Granges of the City's Parks and Recreation Deparmment. The work of the committee was completed in several group meetings.

The first several meetings centered around providing the members with background information concerning models, the type of outputs they would provide, and the assumptions behind the computations. Much of the information presented was similar to the discussions of the models in this Chapter. The committee was asked to include in the decision-making process those outputs it thought could have an important impact on its decision as to whether tourism should continue to be promoted and what type of tourist should be promoted. As a result, many of the outputs the models are capable of providing were not included separately in the decision analysis. For instance, the committee was indifferent as to whether employment was generated in a museum or at a golf course. Therefore, any employment generated in the two sectors was lumped together. Some members of the committee were concerned whether employment was generated in a restaurant as opposed to a campground as they felt the development of additional restaurants would also benefit permanent residents while the development of more campgrounds in the City would not be of benefit to the general population.

The variables the City chose to include are shown in Table V-1. The greatest number originate from the tourism impact model. The members felt employment in different groups of TIAC's would have different values for them. They were also concerned about the income levels associated with the jobs. Therefore, they decided that the total amount of wage and salary income generated by a particular tourist type was more important than the number of man-months of employment created. Therefore, the number of man-months of employment created are actually equivalent to the number of acceptable salary units generated. The members chose $8,500 as an acceptable annual salary. Hence, jobs created at less than this level would not be given as much utility as those created at higher wage levels.

After the important variables were indicated, the major work of the committee, which involved outlining the form of the utility curves, began. Because the final information from the impact models was not available, it was necessary to have committee members respond to hypothetical impacts of tourism. Given that the curves we were estimating were to be linear, this raised some problems. Utility curves among goods with positive utilities are thought to be hyperbolic in nature with the goods exhibiting diminishing returns to utility with scale. Hence, the initial ratios of the various things in one's possession affects the tradeoffs one is willing to make among

TABLE V-1

VARIABLES SELECTED FOR INPUT INTO DECISION ANALYSIS STUDY

Economic Impact

Wage Income

Variable was the number of equivalent wage months of employment which were generated by tourist spending in different groupings of TIACs. Wages generated at the direct, indirect, and induced levels were included. The TIAC categories were: hotels and motels, campgrounds, restaurants, gasoline service stations, air transportation, other transportation services, outdoor recreational activities and museums, all other sectors including retail and other entertainment facilities.

Tax Income

Variables were the amount of taxes collected by city, county, and state governments as a result of tourist spending. City taxes were further disaggregated into an estimate of gasoline tax receipts, transient occupancy tax receipts and all other taxes.

City Exepnditure Variables

City operating costs

City capital costs

Land Use Variables

Number of acres supported in each of the following sectors: hotels, campgrounds, airlines, other transportation services, outdoor recreation services, restaurants, and other retail stores.

Other Variables

Population increases caused by visitors returning as permanent residents.

SOURCE: ADL Decision Analysis Model

them. We anticipated this would be true in this exercise and, therefore, asked the committee to make tradeoffs when the ratios between the impacts were approximately what we anticipated the models would indicate. We also asked them to make tradeoffs for other ratios in the event our estimates of the models' results were incorrect.

The committee met several times to determine the tradeoffs it would make be ween two variables selected for inclusion in the analysis. In most cases the committee would be faced with having to choose the most desirable from among two combinations of different sizes of impacts for the two variables. Table V-2 shows the type of tradeoff the committee was asked to make. In this instance, we hypothesize a condition where the City is receiving $10,000 in tax revenues from tourist activity and the County is receiving $5,000. This is labeled as situation one in the Table. In situation two we hypothesize County tax revenues have risen to $7,000 and City revenues remain the same. The question asked of the committee is what level of City tax revenues would be needed to fill in the blank in situation two to make the members indifferent between situation one and situation two. If the members of the committee value the tax dollars that accrue to the two governments equally, they would indicate they would be happy if the City received only $8,000. If they valued taxes received by the County only half as much as they valued taxes received by the City, they would indicate the City would have to receive $9,000 for them to be indifferent.

The previous example is one where the members of the committee have positive utilities for each of the impacts. Because there are some negative impacts of tourism, some of the tradeoffs included both positive and negative impacts. Such an example is the combination of City taxes and City costs. In this instance, the user fees measured by the public expenditure model were assumed equal to costs. The bottom half of Table V-2 shows the type

TABLE V-2

HYPOTHETICAL TRADEOFF DECISION FACING DECISION ANALYSIS COMMITTEE

Situation	Variables	
	City Tax Revenues	County Tax Revenues
One	$10,000	$5,000
Two		$7,000

Situation	Variables	
	City Tax Revenues	City Expenditures
One	$0	$0
Two		$10,000

of tradeoff offered the members of the committee. In situation one we find the City is receiving no tax revenue and is making no expenditures for tourist-consumed services. In situation two we find that expenditures are set at $10,000. The question put before the committee was "How much must the City collect in tax revenues before you are indifferent between situations one and two?" If the City only required revenues to meet expenditures, they would indicate that $10,000 was needed. If the City expected to collect more than they spent, an amount greater than $10,000 would be required. By finding the amount required we could determine the tradeoff the City was willing to make between costs and tax revenues.

All of the variables included in Table V-1 were included in several tradeoff decisions. From each decision, it was possible to map out the tradeoff relationship among the variables. Because it was impossible to compare each impact with all other impacts, we were forced to assume the relationships among the variables were associative. This meant that if the committee was willing to sacrifice one acre of land to a restaurant in return for thirty-six man-months of equivalent wage employment and was indifferent between $10,000 of additional public expenditures and the use of one acre of land for a restaurant, they would be willing to incur $10,000 of public expenditure for thirty-six man-months of employment.

The assumption of associative tradeoff ratios is one of the greatest assumptions of the technique. In some instances, we found the associative property was not holding; the problems were presented to the committee and they were requested to reconsider their preferences so consistency could be achieved.

In many instances, the committee could not come to a consensus about the relative value or harm of a particular impact. There were also cases in which some members felt that a particular type of impact was a positive, while other members felt the same impact to be negative. Therefore, two utility curves were formed to reflect the different sentiments present in the group. One places tourism in its most favorable light, i.e., the positive impacts are given the greatest weights and the negative impacts the smallest, and the other is most disfavorable, i.e., the smallest weights were given to the positive points and the largest weightings were given to the negative impacts. The two curves are also useful in that they reflect the different points of view held by different segments of the City. If both curves lead to the same policies, it would then be possible for people who have heretofore disagreed about the role tourism should play in the community to back the same policies. If the policies flowing out of the curves are not the same, the results of the exercises would serve to point out where the most important differences between the two groups lie.

Another major assumption of the model is that the participants on the committee were equipped to make the tradeoffs they were asked to consider. Although all of them were at the decision-making level, this was the first time any of them had participated in this type of exercise. Long portions of several meanings were spent explaining to committee members the meaning of the tradeoffs being put before them and the factors they should consider when making their decision. In addition, members of the committee were visited between meetings to allow them a chance to ask questions about the process they still did not understand. The committee was also provided with a synopsis of all the previous meetings and the meaning of the decisions they had made. Nevertheless, some members of the committee expressed that in some of the areas, they felt uncomfortable making the decisions requested of them. In addition, it was impossible for some of the members to attend every meeting. In such cases, the decisions reached during these meetings would be reviewed with them to see if they had any disagreements. While most did not disagree, we cannot be sure that this was not as a result of a desire to not impede the procedure.

One method of testing the responses would be to stage the meetings again and see if the committee would come to the same conclusions. While it was not possible to conduct a second series of meetings, many of the tradeoff decisions put before the committee were repeats of tradeoffs they had faced in previous meetings. In instances where the response of the committee differs from day to day, the inconsistency was indicated and committee members resolved it. Therefore, there is good reason to believe that the curves do indicate the opinions the committee members had at that time.

The final critical assumption for the process is to accept the outputs from the previous three models as inputs. Discussions of these models have shown some instances where the outputs are of questionable validity. Hence, their use in the decision analysis means the decision analysis curve may not be measuring the actual impacts of the tourist but only some crude estimates. Hence, the utility the curve assigns to that tourist will be incorrect. Chapter VII explores the different conclusions reached by the model when different inputs are used.

As stated, the process created two utility curves, one for maximum and one for minimum utility:

Maximum Utility:

$$
\begin{aligned}
\text{Utility} = {} & E1 + .5E2 + 1.7E3 + .5E6 + .5E7 + .7E11 + 2.6E15 + \\
& 2.2E0 + .4ER1 + .2ER2 + .7ER3 + .2ER6 + .2ER7 + .7ER11 \\
& + .8ER15 + .9ER0 + .005CT6 + .01CT1 + .025CTO + .018CNT \\
& + .01STATE - .018CO - .022CC - .85TOUR - .45LT1 - .45LT2 \\
& + 1.8LT3 - .45LT11 + 2.7LT15 - .4LT7
\end{aligned}
$$

Minimum Utility:

$$\text{Utility} = E1 - 3.5E2 + .7E3 - 2.7E6 - 1.1E7 - 2.7E11 + .5E15 + .5EO + .001CT6 + .005CT1 + .013CTO + .013CNT + .003STATE - .033CO - .041CC - 1.7TOUR - .9LT1 - 2.7LT2 - .9LT3 - .9LT11 + 1.8LT15 - .7LT7$$

where, E1 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in TIAC 1;

E2 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in TIAC 2;

E3 is the equivalent number of man-months of employment created in San Diego as a result of expenditures in TIAC 3;

E6 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in TIAC 6;

E7 is the equivalent number of man-months of employment in San Diego as a result of expenditures in TIAC's 7, 8, 9, and 10;

E11 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in TIAC 11;

E15 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in TIAC's 15, 16, 19, and 20;

E0 is the number of equivalent man-months of employment created in San Diego as a result of expenditures in all other TIAC's;

ER1 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in TIAC 1;

ER2 is the number of equivalent man-months of employment created in the other regions as a result of expenditures in TIAC 2;

ER3 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in TIAC 3;

ER6 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in TIAC 6;

ER7 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in TIAC's 7, 8, 9, and 10;

ER11 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in TIAC 11;

ER15 is the number of man-months of employment created in the other two regions as a result of expenditures in TIAC's 15, 16, 19, and 20;

ER0 is the number of equivalent man-months of employment created in the other two regions as a result of expenditures in all other TIAC's;

CT6 are the taxes, mostly gasoline tax, that are received by the City as a result of an expenditure in TIAC 6;

CT1 are the taxes, mostly the transient occupancy tax, received by the City as a result of an expenditure in TIAC 1;

CTO are the taxes received by the City as a result of expenditures in all other TIAC's;

CNT are the taxes received by the County as a result of expenditure in all TIAC's;

STATE are the taxes received by the Sttte as a result of expenditures in all TIAC's;

TOUR is a coefficient that estimates the number of tourists who will move to San Diego as premanent residents per tourist dyy because of a vacation taken in the City;

LT1 is the number of acres of TIAC 1 establishments supported by expenditures in TIAC 1;

LT2 is the number of acres supported by expenditures in TIAC 2;

LT3 is the number of acres supported in the respective TIACs by expenditure in TIACs 3, 4, 5, 21, 22, 23, 24, and 25;

LT11 is the number of acres supported in TIAC 11 establishments by expenditures in TIAC 11;

LT15 is the number of acres supported in establishments of the respective TIACs by expenditures in TIACs 15, 16, 19, and 20;

LT7 is the number of acres supported in establishments of the respective TIACs by expenditures in TIACs 7, 8, 9, and 10.

In each case, the utility the City derives from a particular tourist type can be determined by placing the impacts each tourist type has on each variable in the equation and summing the products of the coefficients and variable values. We measured the utility generated per 1,000 tourist days. The guideline is the same as the one used for comparing the economic impacts of tourists. It is especially valuable in comparing the per tourist value of individual tourist types.

A third curve was created by averaging the two previous curves. Its major flaw is that, for those impacts which are felt to be beneficial in one curve but detrimental in another, the averaging process tends to lessen their impact as it averages a positive coefficient with a negative one.

<u>Average Curve</u>:

$$
\begin{aligned}
\text{Utility} = {} & E1 - .5E2 + 1.2E3 - .4E6 - .3E7 - .4E11 + 1.6\ 15 + 1.4EO \\
& + .2ER1 + .1ER2 + .35ER3 + .1ER6 + .1ER7 + .35ER11 + \\
& .5ER15 + .5ERO + .003CT6 + .008CT1 + .019CTO + .015CNT \\
& + .006STATE - .023CO \quad .029CC - 1.3TOUR - .68LT1 - 1.58LT2 \\
& + .45LT3 - .7LT11 + 2.3LT15 - .55LT7
\end{aligned}
$$

The utility values computed by all three curves are shown in Chapter VI.

NOTES

[1] A further discussion of the models which discusses the technical approach used and the types of information utilized can be found in Appendix II.

[2] Mathematica, "An Island-Specific Analysis of The Hawaii Visitor Industry," Princeton, August, 1970, p. I-12

[3] Susskind, Lawrence, Buckle, Leonard, and Buckle, Susan, "Criteria for Sub-state Regionalization of Public Services in Massachusetts: Potential Economies of Scale," M.I.T., Cambridge, August, 1971, pp. 70-71
Hirsch, Werner, "Expenditure Implications of Metropolitan Growth Consolidation," Review of Economics and Statistics, Vol. 41, No. 3
Hirsch, Werner, "Local and Areawide Urban Government Services," National Tax Journal, December, 1964
Tiebout, Charles, "Economies of Scale and Metropolitan Governments, Review of Economics and Statistics

[4] Hirsch, Werner, "Local and Areawide Urban Government Services," op. cit., p. 333

[5] Susskind, et. al., op. cit.

VI. INITIAL MODEL OUTPUTS AND THE DERIVATION OF POLICIES

Many of the recommendations made by the study were based upon findings discovered in the outputs of the four models discussed in the previous Chapter. This Chapter reviews the models' most important findings and traces the procedure by which the results were used by the consultants to design policies. Only small portions of the total outputs will be discussed in the tables presented in this Chapter.

While the tourist types addressed by the models included both residents and non-residents, all of the recommendations dealt only with the non-resident visitor. (The ADL study considered non-resident tourists to be those who did not live in either the City or County of San Diego.) Therefore, most of the discussion in this Chapter considers only visitors who live in Southern California, Northern California or the Rest of the World.

The Tourism Impact Model Outputs

As discussed in Chapter V, the driving force of the tourism impact model is final demand, which in this application, is represented by the purchases made by tourists. The greater the expenditure of a particular tourist type, the greater will be his impact upon the entire economy. Table VI-1 shows residents spent 70 million days participating in recreational activities in San Diego while non-resident visitors spent 31 million days. However, because the non-residents spent approximately $10 per person day compared to $3 for residents, they generated total economic activity of $735 million compared to $496 million for residents.

Comparing the table with estimates of the size of San Diego's other basic industries, tourism is shown to be the third largest, trailing both the military and aerospace sectors. The table shows a multiplier of 1.60 for the

TABLE VI-1

ECONOMIC IMPACT OF RESIDENT AND NON-RESIDENT TOURISTS
(000's)

	Resident Recreation	Non-Resident Visits	Total
Person Days	70,062	31,274	101,336
Direct Sales	$212,850	$333,381	$546,231
Production	495,695	735,843	1,231,538
San Diego	342,773	532,939	875,713
Rest of California	87,774	151,164	238,938
Rest of World	29,148	51,740	80,888
Proprietary Income	20,371	34,867	55,238
San Diego	10,147	16,880	27,027
Rest of California	6,774	11,618	18,392
Rest of World	3,450	6,369	9,819
Wage and Salary Income	93,490	159,369	252,859
San Diego	68,993	114,331	183,324
Rest of California	15,382	27,728	63,110
Rest of World	9,115	17,310	26,425
Employment (00's of man-months)	201	348	549
San Diego	163	281	444
Rest of California	21	37	58
Rest of World	17	30	47

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring 1974.

San Diego economy and an additional multiplier of 0.6 in the other two regions. Hence, every dollar spent by a non-resident in San Diego generates an additional $.60 of economic activity within the County and another $.60 of activity in the other two regions. Of the total sales volume that occurred in San Diego, approximately twenty percent became wage and salary income and an additional three percent became proprietary income. These ratios are similar for almost any particular disaggregation of all non-resident tourists.

Table VI-2 shows that while more person days were spent in two other accommodation types than hotels and motels, persons choosing that accommodation generated not only the greatest amount of total production--$356,365,000--but also the greatest amount per visitor day--$54.17. The three commercial accommodations--hotels/motels, campgrounds and rental cottages--generated more activity per day than the two non-commercial accommodations--day-trip and friend/relative. This is caused mostly by the expenditure those staying in commercial accommodations must make for their accommodation. In some instances, this single expenditure would be almost as much as the total daily expenditure for those choosing the non-commercial accommodations. This difference in expenditure levels among accommodations was to be the basis for many of the recommendations.

Approximately thirty percent of the wage and salary income attributable to each accommodation type leaks out of the San Diego region, compared to a leakage of approximately fifty percent of the proprietary income. This indicates the coefficients of the model assume significant percentages of San Diego businesses are not owned by people who reside in the San Diego region.

Sightseers have the greatest gross impact--production of $327 million--but business persons and conventioners have the highest per diem impacts--$45.*

*The outputs of the models which support the findings reviewed in this Chapter are summarized in the tables of Appendix III.

TABLE VI-2

ECONOMIC IMPACT OF NON-RESIDENT TOURISTS
BASED ON ACCOMMODATION
(000's)

	Day-trip	Hotel/ Motel	Campground	Friend/ Relative	Rental Cottage
Tourist Days	8,616	6,579	799	14,926	354
Direct Expenditure	$36,634	$155,988	$7,790	$124,184	$5,777
Production	85,942	356,365	16,415	264,344	12,777
San Diego	63,776	252,602	12,009	195,442	9,110
Proprietary Income	4,190	17,356	737	11,993	590
San Diego	2,057	8,183	363	6,008	269
Wage and Salary Income	18,305	80,159	3,152	55,056	2,696
San Diego	13,476	56,857	2,236	39,902	1,860
Employment (man-months)	40	175	7	119	6
San Diego	33	141	5	97	5

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

The differences in the per diem impact of visitors disaggregated by activity are not as great as the differences that appear when they are disaggregated by accommodation. A disaggregation of tourists by both activity and accommodation shows that for any given activity, those persons who stay in a commercial accommodation have the greatest impact and that, regardless of activity, those persons staying in hotels and motels have better economic impacts than almost anyone from any activity who chooses a different accommodation. Such a disaggregation serves to reinforce the conclusion that the most important characteristic needed to define a tourist's impact is his accommodation. For instance, Sightseers/Hotel-Motel generate $32,100 of production in San Diego per 1,000 visitor days compared to the $6,800 generated by 1,000 Sightseer/Daytrip days.

Almost ninety percent of all non-resident visitors to San Diego live in either Southern California or the Rest of the World. While the number coming from each of these two origins is approximately equal, those from the Rest of the World have a significantly higher economic impact--$413 million compared with $211 million. This difference in per diem impact is a result of the different mix of accommodations used by visitors from each origin. A disaggregation of visitors by accommodation and origin shows 84 percent of all visitors from Southern California are likely to stay with either friends or relatives or are in San Diego only during the day. Comparatively, 38 percent of all the visitor days from the Rest of the World are spent in one of the three commercial accommodations. In addition, persons from the more distant origins tend to spend slightly more in a given accommodation than a person from Southern California staying in the same accommodation. Persons from the Rest of the World who stay with friends and relatives have an average expenditure of $7.81 per day compared to a daily average of $6.40 for those persons who live in Southern California and stay with friends and relatives.

While the largest per diem impacts are made by visitors who stay in commercial accommodations, the total impact made by those why stay in a non-commercial accommodation is quite large. Therefore, if they were to suddenly stop coming, the consequential impact upon the City's economy would be severe. Hence, even though the model showed they are not the most beneficial tourist type, their total impact is so large that, at this point in time, the City cannot afford to discourage them unless it can be assured it would be able to attract more profitable tourists.

Table VI-3 ranks the production generaged in San Diego per 1,000 days of each of several tourist types. Accommodation is clearly shown to be the prime determinant of per diem impact. Nineteen of the first twenty places are held by tourists who stay in one of the three types of commercial accommodations. Only four tourist types who used commercial accommodations appeared in the last twenty listings. Therefore, we recommended the City not only promote activities, but also concentrate on those types who would stay in one of the commercial accommodations. Since persons from the more distant origins were both likely to spend more in a particular accommodation than persons from Southern California and were more likely to stay in one of the three commercial accommodations, the results were used to recommend promotional efforts be geared to attracting people from both Northern California and the Rest of the World who would stay in a commercial accommodation in San Diego.

Fiscal Impact Model Outputs

Because the tourism impact model ties the amount of tax revenues a particular tourist will generate to the amount he spends, those tourists with the highest levels of expenditures are also the ones who generate the most tax revenues. Hence, we would expect those tourists staying at a commercial accommodation will generate higher levels of taxes than those staying in

TABLE VI-3

RANKING OF PRODUCTION IN SAN DIEGO GENERATED PER 1,000 DAYS OF NON-RESIDENT TOURIST ACTIVITY

Activity	Accommodation	Origin	Production
Convention	Hotel/Motel	All	$54,000
Business	Hotel/Motel	All	48,500
All	Hotel/Motel	Rest of World	40,000
All	Hotel/Motel	All	38,400
Salt-Water Fishing	Hotel/Motel	All	37,500
All	Hotel/Motel	Northern California	37,000
Spectator Sports	Hotel/Motel	All	35,400
All	Hotel/Motel	Southern California	34,300
Other Outdoor Activities	Hotel/Motel	All	34,200
Salt-Water Fishing	Day-trip	All	32,800
Sightseeing	Hotel/Motel	All	32,100
Salt-Water Bathing	Hotel/Motel	All	32,100
Convention	All	All	32,000
Business	All	All	31,000
All	Rental Cottage	Rest of World	30,800
Other Outdoor Activities	Rental Cottage	All	30,000
Salt-Water Boating	Hotel/Motel	All	27,800
Salt-Water Fishing	Rental Cottage	All	25,800
All	Rental Cottage	All	25,700
Salt-Water Bathing	Rental Cottage	All	23,800
Sightseeing	Rental Cottage	All	23,200
All	All	Rest of World	21,700
All	All	Northern California	20,200

TABLE VI-3
(Continued)

Activity	Accommodation	Origin	Production
Spectator Sports	Rental Cottage	All	$18,800
Salt-Water Boating	Rental Cottage	All	18,700
All	Campground	Rest of World	18,300
Sightseeing	Day-trip	All	17,900
All	Friend/Relative	Northern California	17,800
All	Rental Cottage	Southern California	17,600
Other Outdoor Activities	All	All	17,500
Spectator Sports	All	All	17,500
Salt-Water Boating	Friend/Relative	All	17,300
Salt-Water Boating	Campground	All	17,300
All	All	All	17,000
Salt-Water Fishing	All	All	16,900
Sightseeing	Friend/Relative	All	16,300
Salt-Water Bathing	Campground	All	15,800
All	Campground	All	15,000
Sightseeing	Campground	All	14,900
Salt-Water Fishing	Campground	All	14,900
Spectator Sports	Day-trip	All	14,800
Other Outdoor Activities	Campground	All	14,300
All	Campground	Northern California	14,000
Business	Day-trip	All	13,400
Spectator Sports	Friend/Relative	All	13,200
All	Friend/Relative	All	13,100
All	Friend/Relative	Rest of World	12,500

TABLE VI-3
(Continued)

Activity	Accommodation	Origin	Production
All	Campground	Southern California	$11,600
All	Friend/Relative	Southern California	11,400
Salt-Water Fishing	Friend/Relative	All	11,000
Convention	Day-trip	All	10,000
All	Friend/Relative	Southern California	10,000
Salt-Water Bathing	All	All	9,300
Salt-Water Bathing	Day-trip	All	8,300
All	Day-trip	Southern California	7,900
Other Outdoor Activities	Friend/Relative	All	7,500
All	Day-trip	All	7,400
All	Day-trip	Southern California	7,400
Spectator Sports	Campground	All	7,200
Salt-Water Boating	All	All	6,900
Sightseeing	Day-trip	All	6,800
All	Day-trip	Northern California	6,500
Salt-Water Bathing	Friend/Relative	All	6,000
Other Outdoor Activities	Day-trip	All	3,200
Salt-Water Boating	Day-trip	All	1,900

SOURCE: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring 1974.

non-commercial accommodations. Comparatively, while the costs associated with a particular tourist are a function of both his activity and his accommodation, they do not exhibit the amount of fluctuation apparent in the different levels of revenues received from different tourist types. Therefore, the disparities in the revenue-expenditure ratios of different tourists are caused more by differences in the tax revenues they generate than by differences in the user fees associated with services they consume. Hence, the overall fiscal impact of a particular tourist is closely related to his accommodations. This is immediately seen in Table VI-4. Non-resident visitors are more likely to stay in a commercial accommodation than residents and, hence, have a more favorable fiscal impact. The City collects $1.99 for every $1.00 spent to provide services to a non-resident compared to revenue of $1.04 for every $1.00 spent on a resident. The table also points out the vast differences in revenues received by different levels of government. The State receives approximately $9.50 for every $1.00 received by the City. While this figure does reflect the amount received by the State before the subtraction of revenues it shares with local government, it is clear the State is a much larger beneficiary from tourist activity than the City. However, the expenses incurred by the State were not estimated, so it is not possible to estimate tourism's composite fiscal impact.

At the direct level, the City is seen to lose money on both resident and non-resident activity. However, when all revenues and expenditures are included in the analysis, tourism has a positive fiscal impact.

The accommodation with the highest direct and total revenue-expenditure ratio values is Rental Cottage--1.57 and 3.30, respectively. Those persons staying in hotels and motels do generate more absolute revenue per day than persons staying in rental cottages --$2.58 compared with $1.71--but they also consume more services--$.87 opposed to $.52. All of the accommodation types

TABLE VI-4

FISCAL IMPACT OF RESIDENT AND NON-RESIDENT TOURISTS
(000's)

	Resident Recreation	Non-Resident Visits	Total
Tourist Days	70,062	31,274	101,336
Total Revenue	$118,954	$163,962	$282,916
State Revenue	$81,779	$123,307	$205,086
County Revenue	$4,788	$5,747	$10,535
Direct City Revenue	$11,586	$9,695	$21,281
Direct City Costs	$27,712	$12,822	$40,534
Direct Revenue-Cost Ratio	0.42	0.76	0.53
Total City Revenue	$32,387	$34,908	$67,295
Total City Cost	$31,128	$17,513	$48,641
Total Revenue-Cost Ratio	1.04	1.99	1.38

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

with the exception of day-trippers have a total level ratio of greater than one. The three commercial accommodations have the highest ratio values. The per diem user fees associated with the services consumed by tourists staying in different accommodations do not show a great deal of fluctuation. The highest fee is associated with those persons staying in hotels and motels, $.87, and the lowest, $.39, with those in campgrounds. However, the tax revenues collected from the different accommodations range from a high of $2.58 per day for those persons staying in hotels and motels to a low of $.44 for day-trippers.

Conventioners, who had very good economic impacts, have only moderate fiscal impacts.* The direct user fee of a conventioner is $1.48 per day, caused mostly by the subsidy required to operate the Community Concourse. Even though this is almost four times the amount of any other activity, the revenue-expenditure ratio of conventioners is not extremely low because of the large amounts of tax revenues they generate. Conventioners generate daily revenues of $2.00 for the City, more than any other activity type. Only one activity, Salt-Water Bathing, does not generate enough tax revenue to have a total level ratio of greater than one. The highest ratio, 3.70 is held by business persons and three of the vacation activities, Sightseeing, Spectator Sports, and Other Outdoor Activities, have total ratios greater than two.

A further disaggregation by accommodation and activity shows that regardless of the activity, those persons who stay in a commercial accommodation usually generate more tax revenues than those who stay in a non-commercial accommodation and will also have a more favorable revenue-expenditure ratio value. For instance, sightseers staying in each accommodation have the following total ratio values:

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*The direct user fees associated with activities represent weighted averages of the user fees associated with the number of persons in each activity who stay in one of the accommodations for which the cost was actually calculated.

- Sightseeing/Hotel-Motel 3.36
- Sightseeing/Rental Cottage 2.80
- Sightseeing/Campground 2.58
- Sightseeing/Firend-Relative 2.14
- Sightseeing/Day-trip 1.22

While the user fee is approximately equal for a visitor from any of the three origins, the amount of tax revenue generated varies enough to cause significant differences in the net fiscal impact of visitors disaggregated by origin. Visitors who live in either Northern California or the Rest of the World have much better fiscal impacts than those who live in Southern California. A disaggregation of tourists by origin and accommodation shows that the higher level of expenditure by tourists in the more distant origins in a given accommodation will improve their fiscal impacts. The total revenue-expenditure ratio for persons from Southern California staying with friends and relatives was 1.43 compared to a value of 1.70 for persons from the Rest of the World who selected the same accommodations.

Table VI-5 ranks the tourists in terms of their total revenue-expenditure ratios. Of the top twenty tourist types, none used a non-commercial accommodation. Nineteen of the top twenty are also among those types with the greatest per 1,000 day production impact. Both Tables VI-3 and VI-5 reinforce the importance of the accommodation as the determinant of a tourist's value.

A review of the City's service structure revealed it would be difficult for it to alter its method of providing services so tourists would receive fewer services. In addition, it was not possible for the City to charge user fees as many of the services were public goods. Furthermore, the City could probably not place a greater tax burden upon tourists without simultaneously increasing the burden upon permanent residents. Therefore, there are few steps

TABLE VI-5

RANKING OF TOTAL CITY REVENUE-EXPENDITURE RATIOS OF NON-RESIDENT TOURISTS

Activity	Accommodation	Origin	Ratio
Business	Hotel/Motel	All	4.55
Other Outdoor Activities	Rental Cottage	All	3.81
Business	All	All	3.70
All	Rental Cottage	Rest of World	3.62
Salt-Water Fishing	Rental Cottage	All	3.45
Other Outdoor Activities	Hotel/Motel	All	3.41
Sightseeing	Hotel/Motel	All	3.36
Spectator Sports	Hotel/Motel	All	3.31
All	Rental Cottage	All	3.30
Salt-Water Bathing	Rental Cottage	All	3.27
Salt-Water Bathing	Hotel/Motel	All	3.27
All	Hotel/Motel	Rest of World	3.17
Salt-Water Fishing	Hotel/Motel	All	3.10
All	Hotel/Motel	All	2.97
Salt-Water Boating	Hotel/Motel	All	2.91
All	Campground	Rest of World	2.90
Sightseeing	Rental Cottage	All	2.80
All	Hotel/Motel	Southern California	2.77
All	Rental Cottage	Southern California	2.73
All	Hotel/Motel	Northern California	2.71
Salt-Water Boating	Campground	All	2.68
Other Outdoor Activities	Campground	All	2.64
All	Campground	All	2.63

TABLE VI-5
(Continued)

Activity	Accommodation	Origin	Ratio
Sightseeing	Campground	All	2.58
Salt-Water Fishing	Campground	All	2.58
All	Campground	Northern California	2.55
Salt-Water Bathing	Campground	All	2.52
Spectator Sports	Rental Cottage	All	2.50
Salt-Water Fishing	Day-trip	All	2.49
All	All	Rest of World	2.44
Spectator Sports	All	All	2.38
Sightseeing	All	All	2.35
Spectator Sports	Friend/Relative	All	2.24
Other Outdoor Activities	All	All	2.23
All	All	Northern California	2.20
All	Campground	Southern California	2.17
Sightseeing	Friend/Relative	All	2.14
Business	Day-trip	All	2.07
All	Day-trip	Rest of World	2.06
Salt-Water Boating	Rental Cottage	All	2.00
All	All	All	1.99
Salt-Water Fishing	All	All	1.88
Convention	Hotel/Motel	All	1.74
All	Friend/Relative	Rest of World	1.70
Spectator Sports	Day-trip	All	1.66
Salt-Water Boating	Friend/Relative	All	1.58
All	Friend/Relative	Southern California	1.43

TABLE VI-5
(Continued)

Activity	Accommodation	Origin	Ratio
All	All	Southern California	1.42
Salt-Water Fishing	Friend/Relative	All	1.41
Salt-Water Bathing	All	All	1.32
Sightseeing	Day-trip	All	1.22
Convention	All	All	1.13
Salt-Water Bathing	Day-trip	All	1.08
Other Outdoor Activities	Friend/Relative	All	1.05
All	Day-trip	Northern California	1.01
Spectator Sports	Campground	All	1.00
All	Day-trip	All	0.96
All	Day-trip	Southern California	0.89
Salt-Water Bathing	Friend/Relative	All	0.85
Salt-Water Boating	All	All	0.79
Other Outdoor Activities	Day-trip	All	0.37
Convention	Day-trip	All	0.29
Salt-Water Boating	Day-trip	All	0.23

SOURCE: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring 1974 available to the City that would improve the fiscal impact of a particular tourist type. For the City to improve the fiscal impact of its tourist population, it must alter the characteristics of that population. Specifically, we recommended the City attract those tourist types with the best fiscal impacts and at the same time stop attracting those with the least favorable impacts. The models provided the information needed to determine which were the most profitable tourists.

Land Use Model Outputs

Since the land use model assumes the amount of commercial land supported by a particular tourist types is in direct relationship to total economic impact, the comparative effects of different tourist types will be very similar to the differences in their economic impacts. Our analyses bear out this assumption. Non-resident tourists are shown to support approximately 330 acres of commercial land area in San Diego or about one-half square feet per tourist day. Most of the land is in the areas of lodging and food and beverage, although the acreage of entertainment establishments supported by tourism is substantial.

Those persons who stay in commercial accommodations support considerably more land than those persons who use the non-commercial accommodations. Persons who stay in hotels and motels support one square foot of land per day while those on day-trips support less than one-fifth of a square foot. However, the amount of additional land is roughly in the same proportion to the amount of land supported by the other types as their expenditure level is greater than the other types. Persons staying in the commercial accommodations are also shown to support more land in almost every other major sector, thus indicating their overall higher levels of expenditure.

Those activities which have the greatest economic impact support the most land. There is some difference in the amount of land supported in each sector.

For instance, vacationers support more land in the entertainment sector per person day than do those persons in San Diego either for business or a convention.

Because visitors from the Rest of the World make the greatest impact upon San Diego of any origin group, they support more land area than any other gourp. Visitors from Southern California whose level of daily expenditure is close to that of the visitor from the Rest of the World, support more land per tourist day than the visitor from Southern California, but because there are comparatively few tourists from Northern California, more land is supported by all the tourists from Southern California. The amount of land supported by a tourist from the Rest of the World who stays in a particular accommodation will generally be greater than the amount supported by a person from Southern California who stays in the same location, simply because the person from the Rest of the World will probably have a greater per diem expenditure.

Table VI-6 shows the amount of land supported by non-resident tourists based on accommodation. A comparison of those tourist types who supported the most land per 1,000 days showed a close correlation with the economic impact of different tourist types discussed in Table VI-3. Because the consumption of land was felt to be a detrimental impact of tourism, the fact that those tourists with the highest levels of expenditure tend to consume more land than those with low levels will diminish the advantage their higher level of expenditure generates in terms of income and employment. However, the construction of the models makes this phenomenon unavoidable. Because the amount of land a particular visitor supports is based upon his expenditure, those with greater levels of expenditure will be penalized. The effect of this penalty can only be determined by knowing what value is given to the land supported by the tourist. That question is answered in the decision analysis model.

TABLE VI-6

COMMERCIAL LAND AREA SUPPORTED BY NON-RESIDENT TOURISTS BASED ON ACCOMMODATION
(000's of square feet)

Tourist Type	Thousand of Tourist Days	Land Use: Lodging	Food and Beverage	Trans-portation	Enter-tainment	Miscellaneous and Retail	Total
Day-trip	8,616	0	973	183	433	34	1,623
Hotel/Motel	6,579	2,553	2,392	533	849	193	6,520
Campground	799	85	97	50	58	17	307
Friend/Relative	14,926	90	3,093	1,091	1,021	152	5,447
Rental Cottage	354	107	43	5	9	5	169

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

Decision Analysis Outputs

Table VI-7 shows the tourist types ranked by the amount of utility they generate for the City as estimated by the average utility curve. Only three tourist types--Other Outdoor Activities/Day-trip, Salt-Water Boating/Day-trip, and Convention/Day-trip--had negative utilities, meaning that based upon the committee's values, their overall impact upon the City was detrimental. The most common defining characteristic of those tourists who generate the greatest utility is a commercial accommodation. Only one of the top twenty tourist types defined does not include a commercial accommodation in its definition. The table also shows that for a given accommodation, persons from either Northern California or the Rest of the World will probably generate more utility for the City than a visitor from Southern California. Similarly, for any given activity, those persons staying in a commercial accommodation will usually generate more utility than those persons using a non-commercial accommodation.

The table is similar in its ranking order to Tables VI-3 and VI-5. In fact, fifteen specific tourist types are among the top twenty tourist types in each table. The similarity with Table VI-3 is greater than with Table VI-5, indicating the economic impacts had the greatest influence upon the utility of a particular tourist.

The three tourist types who were deemed detrimental all had very poor fiscal impacts. In the case of the Conventioner on a day-trip, this poor fiscal impact was combined with a greater amount of land supported because of his slightly higher level of expenditure than the other two tourist types.

The utilities estimated using the maximum utility curve show all tourist types were deemed beneficial to the City. There is a great deal of similarity between the order of the rankings of the average and maximum value curve because the maximum value curve heavily emphasizes the economic impacts that

TABLE VI-7

UTILITY GENERATED PER 1,000 DAYS OF NON-RESIDENT TOURIST ACTIVITY--AVERAGE VALUE CURVE

Activity	Accommodation	Origin	Utility
Business	Hotel/Motel	All	125.8
Convention	Hotel/Motel	All	113.9
Salt-Water Fishing	Hotel/Motel	All	106.7
All	All	Rest of World	99.1
All	Hotel/Motel	All	93.2
All	All	Northern Cali.	92.6
Spectator Sports	Hotel/Motel	All	87.5
Other Outdoor Activities	Hotel/Motel	All	85.9
Sightseeing	Hotel/Motel	All	79.6
All	All	Southern Cali.	79.5
Salt-Water Bathing	Hotel/Motel	All	77.6
Business	All	All	77.2
Salt-Water Fishing	Day-trip	All	75.4
Other Outdoor Activities	Rental Cottage	All	74.5
Salt-Water Boating	Hotel/Motel	All	66.1
Salt-Water Fishing	Rental Cottage	All	62.0
All	Rental Cottage	All	61.6
Salt-Water Bathing	Rental Cottage	All	57.3
Sightseeing	Rental Cottage	All	53.1
Convention	All	All	52.8
All	All	Rest of World	52.3
All	All	Northern Cali.	50.6
All	Campground	Rest of World	44.8
Spectator Sports	All	All	43.9
Sightseeing	All	All	43.6
All	Friend/Relative	Northern Cali.	43.4
Salt-Water Boating	Campground	All	42.4
Salt-Water Boating	Rental Cottage	All	42.3
Spectator Sports	Rental Cottage	All	41.2
Other Outdoor Activities	All	All	39.9

TABLE VI-7
(Continued)

Activity	Accommodation	Origin	Utility
All	All	All	40.0
Sightseeing	Friend/Relative	All	39.8
Salt-Water Boating	Friend/Relative	All	39.2
All	Rental Cottage	Rest of World	38.7
Salt-Water Fishing	All	All	38.7
All	Rental Cottage	Southern Cali.	37.4
Salt-Water Bathing	Campground	All	35.3
Spectator Sports	Friend/Relative	All	35.3
Other Outdoor Activities	Campground	All	35.0
All	Campground	All	34.5
Sightseeing	Campground	All	34.4
Salt-Water Fishing	Campground	All	34.0
Spectator Sports	Day-trip	All	32.5
All	Campground	Northern Cali.	31.3
All	Friend/Relative	All	29.8
Business	Day-trip	All	29.0
All	Friend/Relative	Rest of World	28.9
All	Campground	Southern Cali.	25.2
Salt-Water Fishing	Friend/Relative	All	23.4
All	All	Southern Cali.	22.0
All	Friend/Relative	Southern Cali.	21.1
All	Day-trip	Rest of World	20.4
Salt-Water Bathing	All	All	17.1
Salt-Water Bathing	Day-trip	All	15.0
Spectator Sports	Campground	All	14.3
Sightseeing	Day-trip	All	13.2
Other Outdoor Activities	Friend/Relative	All	12.4
All	Day-trip	Northern Cali.	12.0
All	Day-trip	All	11.1
All	Day-trip	Southern Cali.	10.4
Salt-Water Boating	All	All	9.4
Salt-Water Bathing	Friend/Relative	All	8.2

TABLE VI-7
(Continued)

Activity	Accommodation	Origin	Utility
Other Outdoor Activities	Day-trip	All	-.5
Salt-Water Boating	Day-trip	All	-4.3
Convention	Day-trip	All	-8.2

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

appear to have dominated the average value curve. Because the maximum value curve places a higher value on economic impacts, Convention/Hotel-Motel, which is shown in Table VI-3 to have the largest per day economic impact, it becomes the most valuable tourist type. Most of the changes between the tables are only over a few positions, and because the utility values are simply ordinal numbers, one cannot know what additional utility is added to the tourist.

In contrast to the maximum value curve, the minimum value curve shows significant differences from the average value in the order of the ranking. The minimum utility curve, which focuses more of its weight upon the fiscal and land use impacts, places the conventioner who stays in a hotel or motel as fifteenth, whereas he had been first in the maximum value curve. Similar losses in the rankings can be seen for other tourists who have poor fiscal impacts.

Twelve tourist types are deemed by their utility values to be detrimental to San Diego. Of these detrimental tourists, only one used a commercial accommodation.

Two features of the curves are the most striking in terms of influencing future policies. The first is that for those tourists who are commonly considered to be promotable, all of the utility curves view their impacts as being beneficial to the community. Therefore, focusing upon these impacts alone, it is possible to say that all of the people on the committee could support the present tourism industry. The second important feature of the results of the three curves is the similarity in the order of the rankings each curve generates. With the exception of conventioners, few of the other tourist types shift by more than three places in the rankings. Therefore, the curves all agree on what types of tourists are the most beneficial to the community. Hence, if one assumes these same tourist types will also have the highest marginal utilities, all of the members of the committee can endorse promotion efforts aimed at the same type of tourists. Similarly, since the same tourist types also appear at the bottom of each table, agreement as to which type of tourist should be discouraged should also be obtainable.

The Derivation of the Recommendations Provided the City

Several recommendations made to the City were based upon the type of information shown in the tables in this Chapter. The process used to develop a few of these recommendations will be reviewed to see how the models were used to assist in the development of potential policies.

One recommendation given to the City was that CONVIS should be instructed to focus its program on attracting the vacationer from either Northern California or the Rest of the World who would stay in a commercial accommodation and hopefully a hotel or motel.[1] These tourist types were selected for special attention because the results of the models indicated they had one of the best composite impacts upon the City of all the tourist types considered. While they did have the most detrimental impact upon land use, the values of the decision analysis committee, as reflected in the utility curves, allowed this impact to be overweighed by their positive economic and fiscal impacts. Hence, the recommendation was based entirely upon an analysis of the results of the several models.

The report also recommended the City continue to attract conventions.[2] Conventioners were shown to be among the best of all visitors in the economic model. While their fiscal impact was less favorable, the user fee associated with additional conventioners would decrease because most of the expenses related to them represented allocation of the fixed costs of the Community Concourse. The approach of the public expenditure model would show that additional conventioners would lower the user fee attributable to each conventioner and would, therefore, improve their overall impact. Again, the models served as the basis for the recommendation.

The models also pinpointed some of the more important issues facing the construction of a new convention center. While estimates of the cost of a new center were not made, it was clear they would be far greater than the costs currently being borne for the Community Concourse. Therefore, unless it could be assured that substantially more conventions could be attracted to the City because of the new center, the user fees associated with each conventioner would further increase and thereby decrease his overall utility. While it was not done, the models could be used to estimate the number of conventioners needed to improve the overall utility of conventioners for a given cost of a new convention center. The final recommendation, based upon analysis using the concepts of the models, was that the City should be assured it could maintain an adequate utilization rate of the new center and that a new use be found for the existing Community Concourse before a new center be constructed.[3]

The data provided by the models could not be used to determine the proper allocation of transient occupancy tax receipts. While it had been possible to conclude that tourism in general was beneficial to the City and that some particular tourist types seemed to have significant positive impacts, this information could not alone be used to determine the level to which CONVIS should be funded. Such a decision would have to be made on the basis of the competing priorities for the funds and the effectiveness with which the Convention and Visitors Bureau could use the funds it was given. The analysis made no effort to determine how effectively the CONVIS allocation had been spent in the past, as that was not part of the task.

The study did recommend the contributions of the City be matched by those of the private sector. This recommendation was not based on the models, however, but instead relied upon the initial City Council resolution regarding the disbursement of Transient Occupancy Tax funds, the comparative situations in other California communities and the bias of the consultants.[4]

The models showed particular tourist types could have impacts that were either significantly superior or inferior to those of the average tourist. The consultant similarly suggested other industries not related to tourism could also have impacts that were better than some tourist types and worse than others. Hence, the recommendation was made that the City not decide to shift their development efforts to the tourism industry but rather consider the continued development of the tourism industry as only one aspect of an overall development program. While no evaluations of other industries were made with the model, the approaches used by the models could be used to determine the relative merit of the other industries San Diego could develop.[5]

NOTES

[1]Arthur D. Little, Inc., "Tourism in San Diego: Its Economic, Fiscal and Environmental Impacts," San Francisco, May, 1974, p. 155

[2]*Ibid.*, p. 154

[3]*Ibid.*

[4]*Ibid.*

[5]*Ibid.*

VII. SENSITIVITY TESTING THE MODELS

We have now traced the study of tourism in San Diego from its initial conception through the recommendations provided the city. A number of factors, including both the desires of the city and the personal preferences of the consultants, caused many of the recommendations to be based on the four analytical models outlined in Chapter V. We now come to the issue of investigating the effect the form of the particular models had upon the outcome of the study. Was it possible, given a thorough knowledge of the structure of the models, to estimate the results they would provide, even before they were run?

We shall be concerned about the sensitivity of the models employed. The use of sensitivity analysis can be an educative process for both the consultant and the client. Its use forces them to come to a better understanding of the issue under study. Sensitivity analysis can teach both what the really important assumptions and inputs to the models are. Furthermore, it can indicate the models' usefullness as regards their ability to accurately estimate the outputs they hope to measure. If only small changes in the inputs cause dramatic changes in both the findings and recommendations, the findings cannot be faithfully accepted unless the confidence in the inputs is very high. In a check of the models' sensitivity several of the most important inputs have been altered to show what effect this had on both the models' results and the recommendations derived from these results.

The Effects of the Models' Structure Upon the Results

One major recommendation was that the city should promote those tourist types with the highest level of expenditure. Generally, these tourists stayed in one of the three commercial accommodations. A study of the structure and inputs into the models reveals this would be an obvious conclusion. First, a review of the multipliers in the tourism impact model shown in Appendix II, Tables 4-8, indicates no significant differences in the multiplier impact associated with different TIACs. In addition, since all tourists tend to distribute their dollar across the different TIACs in roughly the same proportions, the importance of those differences that do appear in the multipliers is further diminished. Therefore, only different levels of per diem expenditures can cause different amounts of economic impact to be caused by different tourist types. A review of these levels shows they fluctuate from a low of less than $1 per day for certain types of day-trippers to over $30 for some tourists staying in either hotels or motels. A comparison of tourist types ranked by per diem spending and production generated per tourist day shows a high degree of correlation. Hence, while it is not possible to estimate the total amount of production a particular tourist generates without using the multipliers, it is possible to estimate the comparative impacts of different tourists using just their levels of spending as a guide.

The level of spending also serves as a good guide in estimating the comparative fiscal impacts of different tourist types. The tax revenues collected from tourists are directly tied to the sales and production they generate, since tourists only pay taxes as they are passed on in the price of the goods and services they purchase. Since production is closely correlated to level of expenditures, tax revenues are also correlated with a tourist's level of per diem spending.

The other side of the fiscal picture, namely the user fees associated with the services consumed by the tourist, shows its highest correlation with simply the question of whether the tourist is in the city during a given day. While there are some fluctuations in the user fees associated with different tourist types, these fluctuations, with the exception of conventioners, are relatively minor. Hence, the cost side of fiscal impact is relatively fixed. However, this finding cannot be determined without actually collecting the coefficients and running the model. Therefore, the rankings of tourist types in the public expenditure model cannot be made before implementation of the model with the same confidence as can the rankings of their economic impacts. However, because tax revenues are closely correlated with per diem spending, those tourists with higher levels of service consumption associated with different tourist types caused the correlation between good fiscal impact and per diem spending to be less than that found between production and spending.

The land use model uses as one of its primary inputs the level of per diem expenditure of different tourist types and as the other, the ratio of total sales to total square footage in each of the TIAC categories. While these ratio values differ significantly among the TIACs, their impact upon the amount of land supported by each tourist type is diminished because of the similarity with which different tourist types distribute their dollar across the TIAC's. Therefore, as can be shown by a correlation of Tables VI-3 and VI-6, the total level of spending is the basis for the amount of land supported by different tourist types. Hence, a study of the levels of per diem spending by different tourists enables one to forecast reasonably well the results of the land use model.

If one were given the structure of the decision analysis curves and also knew which variables had the most important impacts on the results of the three previous models, it would be possible to determine which variables would have the greatest impact on the decision analysis. Obviously, because the most important variable in each of the other models had been the level of per diem expenditure, it is also the most important variable in the decision analysis model. As found in Chapter VI, only two of the twenty tourist types with the highest level of production generated per thousand tourist days were not among the twenty tourist types with the highest levels of utility. Those no longer among the top twenty had comparatively poor fiscal impacts.

Even without the structure of the curves, it would be possible to roughly estimate the comparative utility derived from different tourist types simply because the previous three models had showed the distribution of the impacts across the TIAC's is similar for all tourist types. Hence, those tourists having the greatest levels of expenditure would generate the most utility, either positive or negative, depending on the exact form of the curves.

The previous discussion has shown a simple knowledge of the expenditure patterns of the different tourist types would have allowed one to closely approximate the rankings of their benefits, and hence, to recommend to the city that efforts be made to attract these particular tourist types. We shall now look at what effect changes in these values will have on both the results of the models and the recommendations derived from these results.

Sensitivity Testing

Sensitivity testing can prove to be an educative experience for both the developers and users of a modeling technique. If properly used, sensitivity testing can make several strong statements about the ability and limitations of models in the decision-making process. First, it can isolate those important variables and assumptions made by the models. By altering the values of the inputs it is possible to know the effect small changes in input values have on output values. In addition, by changing some of the equational relationships assumed by the models' structure, we can introduce other factors into the relationships to see if they more or less accurately predict actual conditions. Furthermore, if we are undecided as to which of several approaches or inputs measures are the best, sensitivity testing allows us to understand the range of values within which the output of the models must be couched. Finally, it necessitates close scrutiny of the models, which can lead to a greater understanding of the problem.

An example of sensitivity testing has already been shown in the decision analysis model. In this instance, not only was a curve constructed that represented the points around which the members of the committee would accept under compromise circumstances, curves were also constructed that represented the extremes of the tradeoffs different members of the committee most wanted to make. As was shown in Chapter VI, while the level of utility a particular tourist generated under the assumptions of each curve differed, there was little change in the rankings of the utilities provided by each tourist; nor were there significant changes in the number of tourist types who were deemed detrimental. The importance of the change in the number of tourists deemed detrimental is further diminished by the fact that even in those curves in which their utilities were positive, they had among the lowest of the positive utilities of all tourist types and should have, therefore, received only minimal consideration for promotion. Since the city can do little to either discourage a particular tourist or improve his impacts, the question of whether a tourist is of relatively minor positive value or actually detrimental is not that important. Hence, the policy recommendations reached using the different curves were approximately the same, and it was possible to argue that persons who had differing opinions about tourists could back the same policies towards the industry.

Similar sensitivity testing has been conducted on both the tourism impact and public expenditure models to determine if alterations in their inputs will result in (1) either the same or different results, and (2) either the same or different policy recommendations. Because most of the recommendations of the study were based on tourist type comparisons and not on the actual level of production or public expenditure related to a particular tourist type, it will be changes in the rankings of tourist types that will be most important. Hence, if under one set of assumptions the economic benefits generated by each tourist type decline by 10% but the rankings of the benefits per day by tourist type do not change, it can be argued that the models are useful to San Diego because the recommendations made to the city will not be significantly altered. If the recommendations had been based on the merit of tourism as opposed to other sectors of San Diego's economy, the absolute changes in the magnitudes of the impacts caused by different assumptions in the sensitivity analysis would also be important since the recommendations would be based on which of several industries had the best impact rather than on the issue of which segment of a particular industry was the best. Therefore, while the major concern of this analysis will be to see if the policies generated by the different assumptions will vary from those outlined in Chapter VI, we shall also be concerned about the absolute changes in the outputs from one set of approaches to the next.

While sensitivity analysis can be performed on both the structural assumptions of and the inputs to the models, the sensitivity analysis performed here considers only changes in the values of the inputs. Three sets of inputs considered to be both among the least reliable and the most important to the results of both the tourism impact and fiscal models were altered. Specifically, changes were made to the expenditure patterns of the tourist types, the leakage assumptions concerning production, wage and salary income and employment, proprietary income, and the probaility-of-use and relative cost coefficients of the public expenditure model.

This Chapter has indicated the most important single set of inputs to all of the models are the expenditure patterns. They are almost directly correlated with the economic activity generated by a particular tourist type and the amount of land he supports and somewhat less directly associated with the fiscal impacts of different tourist types. Because of these strong influences, the results of the decision analysis are also heavily dependent upon the expenditure patterns. Hence, changes in these patterns have more impact on the recommendations than changes to any other single set of coefficients. These inputs will also have the greatest impact on the absolute volume of economic activity generated by a particular tourist type.

The changes made to the expenditure patterns are based on the standard deviations found in the responses of those tourists interviewed in one of the surveys. As explained in Chapter V, approximately 1500 tourists were interviewed during the course of the study to obtain information about the amount they had spent in San Diego stores representing each of the 25 TIAC categories. They were then classified into one of the Activity/Accommodation/Season/Origin groups and the responses of all tourists fitting that definition were used to construct the average expenditure pattern for that group. Respondents representing the selected tourist types were interviewed randomly in an effort to ensure a representative sample of all persons in a particular type were reached. Hence, there is no reason to believe the expenditure patterns used in the study are not equal to the average expenditures of all persons fitting the description of a specific tourist type. However, because the actual frequency of the distribution of expenditures by persons in a given tourist type is unknown, it is not possible to prove the expenditure patterns used equaled the average. Because estimation of the confidence interval associated with each particular expenditure would be an awesome computational task, the expenditure patterns have been changed by their standard deviation. We would expect a wide range of expenditure patterns for different persons classified in the same tourist type and, therefore, large standard deviations. Because of the efforts made to make the interviewing process as random as possible, the standard deviation should be greater than the difference between the computed and actual averages. Therefore, this alteration is more severe than actually necessary. If the results are not changed, it can be safely assumed they would not be changed by use of the actual averages.

Two new expenditure patterns were constructed for each tourist type. One represented the average level of expenditure, which was used in the report, plus the standard deviation, while the other equalized the average expenditure minus the standard deviation.* The standard deviation was used as a measure of the amount of fluctuation that can be expected, simply because it is an often-used estimate of the amount of spread that exists in a given sample.

The new expenditure patterns showed the standard deviation is quite large. For instance, the average daily expenditure for all non-resident tourists was $10.66. The standard deviation was $7.38. The average expenditure of all non-resident day-trippers was $4.60 and the standard deviation in their responses was $2.63. Hence, the total amount of production caused by a particular tourist type will be significantly affected by these changes. However, unless different tourist types exhibited different standard deviations, the comparative benefits they generate will not change.

The discussion in Appendix II indicated some of the coefficients for which the least solid information was available were those dealing with the leakage of production, income, and employment. As stated there, these coefficients were constructed from a number of different sources, including interviews with individual businesses, officials representing various public agencies, and business spokesmen and the background of the consultants. The coefficients sued in the models were a combination of both the median and mean values obtained from the various sources. Because none of the sources used had access to hard information concerning the

*In cases where the standard deviation was greater than average, the expenditure in that TIAC was set to zero for the low set of patterns.

actual amount of leakage, the estimates cannot be strongly supported. To determine the effect different values of the estimates could have on the outputs and recommendations of the study, the models were run using two different sets of leakage assumptions. One set represented the responses that indicated the most amount of leakage from San Diego to other regions while the other equals those responses that maximized the portion of the multiplier that remains in San Diego County.

While variations in these coefficients cannot be expected to alter the inter-tourist type comparisons, they can add or detract to the utility the City receives from tourist. For instance, most of the public services consumed by the tourism industry are consumed at the direct level. As shown in Chapter VI, it was the tax revenues and production generated at the indirect and induced levels that helped to improve the fiscal impacts of all tourist types. A greater leakage of these benefits could lessen the attractiveness of tourists.

The coefficients will also be important in instances where the model is used to try to attract new firms to San Diego. If the coefficients show large amounts of production are leaking to other regions, it would become more lucrative for a supplying firm to consider opening an operation in San Diego. Conversely, if the leakages are smaller than originally anticipated, a new firm may have a more difficult time finding customers. While the City did not request such information in this study, the implications of the coefficient values are obvious.

Most of the changes of the coefficients were not large. For instance, the study assumed that only twenty-five percent of the indirect production required from SIOC 5, Other Durable Manufacturers, was actually produced in San Diego, while sixty-five percent was imported from the Rest of California and the remaining ten percent from the Rest of the United States.

The two new sets of coefficients used the following values for the percentage of production in SIOC 5 generated in each region:

	Low Leakages	High Leakages
San Diego County	45%	10%
Rest of California	30	70
Rest of United States	5	20

The relative cost and probability-of-use coefficients were also altered. In each case, the changes tended to decrease the difference in costs found among different tourist types.

One set of coefficients adopted the approach used by several other studies that have addressed the costs of the public services consumed by tourists -- namely, it assumed both residents and tourists consume the same amount of service.[1] In the format of the model, equal consumption is obtained by assuming both residents and tourists have the same relative cost and probability-of-use coefficients for each service. Under these assumptions, per day costs of $.41 were assigned to both tourists and residents. In the case of almost all the tourist types, this represented an increase from the costs they had been previously assigned. For conventioneers, however, this figure represented a decline of almost $1.00 in direct costs. Obviously, those tourists whose prior cost had been above the $.41 level would now have increased utility and improved fiscal impacts, while the fiscal impacts and utility of those who had smaller costs would be lessened.

The second set of changes of the coefficients concentrated on those sectors where the smallest changes in the values of the coefficients would cause the greatest changes in the results of the models. In the operating section of the model these sectors were deemed to be:

- The Community Concourse;
- Water utilities;
- The Convention and Visitors Bureau; and
- The Bureau of Parks as part of the Department of Parks and Recreation.

In the Capital Cost Model coefficients for the Community Concourse Obligation payments were chanted. The changes made were fairly small in an absolute sense. For instance, the new coefficients raise the probability of use of the Community Concourse from .1 to .2 for all consumers except conventioneers. While such a change will have almost no effect on the cost of the Community Concourse services consumed by more tourists, it will dramatically reduce the cost associated with each conventioneer. Similarly, most of the changes in the other coefficients will more evenly distribute the costs of the service among the tourist types. The changes made to the coefficients are listed in Appendix IV, Table 1.

Several runs of all of the models were conducted with various combinations of the changed coefficients. The most interesting results of these runs will be discussed below. The most important findings of the exercise are that while absolute impacts of the tourists varied from one set of assumptions to the other, the comparative rankings of values of the different tourist types showed relatively minor changes.

Table VII-1 shows the new production coefficients generated using the assumptions in San Diego than was indicated by the initial runs. A comparison with Table 4, Appendix II, shows only minor changes in the size of the total multiplier; for instance, the multiplier for TIAC 6, Gasoline Stations, changes from its initial value of 1.837 to a new value of 1.831. However, there is a much greater difference in the amount of production that occurs in each region. Using the initial assumptions of the model, 76% of the production

TABLE VII-1

MULTIPLIER USED FOR PRODUCTION GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (LOW LEAKAGE ASSUMPTIONS)

		Production Accruing To:			
	TIAC	San Diego County	Rest of California	Rest of United States	Total Production Multiplier
1.	Hotels, Motels and Tourist Courts	$1.893	$.417	$.161	2.471
2.	Camps and Trailer Parks	1.753	.367	.132	2.252
3.	Eating and Drinking Places	1.695	.311	.127	2.133
4.	Food Stores	1.493	.237	.080	1.810
5.	Liquor Stores	1.470	.228	.075	1.773
6.	Gasoline Service Stations	1.511	.241	.079	1.831
7.	Buses, Taxis	1.712	.382	.121	2.215
8.	Tolls	2.700	.750	.292	3.742
9.	Automotive Rental and Leasing	1.762	.417	.138	2.318
10.	Automobile Parking Fees	1.838	.443	.153	2.434
11.	Air Transportation	1.660	.409	.143	2.212
12.	Movie and Theater Admission	2.140	.365	.138	2.643
13.	Hunting/Fishing Licenses	2.760	.772	.303	3.835
14.	Bowling Alleys, Billiard and Pool Establishments	2.187	.382	.147	2.716
15.	Public and Private Golf Courses	2.265	.411	.169	2.845
16.	Professional and Semi-Professional Sports	2.294	.419	.167	2.880
17.	Amusement Parks	2.199	.388	.155	2.742

TABLE VII-1
(Continued)

TIAC	San Diego County	Rest of California	Rest of United States	Total Production Multiplier
	Production Accruing To:			
18. Horse and Automobile Race Tracks	2.291	.419	.170	2.880
19. Museums, Art Galleries and Zoos	1.788	.351	.132	2.271
20. Amusement and Recreation Services	2.182	.380	.149	2.711
21. Miscellaneous Retail Stores	1.584	.267	.093	1.944
22. Apparel and Accessory Stores	1.574	.264	.092	1.930
23. Personal Services	1.751	.353	.128	2.232
24. Miscellaneous Repair and Business Services	2.059	.593	.226	2.877
25. Telephone Communication	1.465	.197	.075	1.737

Source: ADL Tourism Impact Model.

related to TIAC 6 takes place in San Diego. Using the assumptions behind Table VII-1, however, almost 83%, or the total production, occurs within San Diego County. The initial coefficients assumed 71% of all production associated with a final demand in TIAC 23, Personal Services, occurred in San Diego, while the changed set assumes 78% of total production occurs within the county.

The total multipliers associated with the high leakage assumptions do not show significant changes from those in Table V-4. However, the percentage of the multiplier that occurs in San Diego does decline. For instance, this set of coefficients allocates only 72% of all production associated with TIAC 6 to San Diego and 65% of the production generated by final demand in TIAC 23.*

There are significant differences between the San Diego multipliers computed by the two assumptions. For instance, the low leakage assumptions estimate a San Diego multiplier for TIAC 8, Tolls, of 2.700, while the high leakage assumptions assumes the same coefficient to be 2.129, a difference of over 75%. However, the difference found in most TIACs is closer to 15%.

The wage and salary income multipliers calculated for each TIAC is a result of assumption of high San Diego retention of economic activity show fluctuations similar to those demonstrated by the production multipliers. The model initially assumed 69% of total wage and salary income generated in TIAC 6, Gasoline Stations, remained in San Diego as compared to 76% of total production. The new multipliers assume 78% of income remains in the county as a result of the 82% of total production that occurs there. The high leakage assumptions distribute only 58% of total income to the region as a

*The model outputs which support the findings reviewed in this chapter are summarized in the tables of Appendix IV.

result of 72% of the production. The difference in the amount of income that remains in San Diego under the high and low leakage assumptions is 20%. Similar differences can be found in other TIACs. Because at both the direct and indirect levels, the wage rates in each region are assumed to be equal, the employment multipliers connected with the high and low leakage assumptions show approximately the same fluctuation as the wage and salary income multipliers.

Under the initial assumptions of the model, proprietary income showed a far larger rate of leakage than either production or wage and salary income. Similarly, the proprietary income multipliers associated with the low leakage assumptions indicate larger leakages than do the previous tables concerning production and wage and salary income. As was found in the case of each of these previous impacts, the change in the leakage assumptions does not significantly alter the total multiplier associated with a particular TIAC, but rather distributes that multiplier difrerently among the three regions. For instance, the initial assumptions outlined in Appendix II, Table 7, allocate .026 of the total TIAC 6 proprietary income multiplier of .060 to San Diego County. The low and high leakage assumptions, respectively, allocate 53% and 35% of their proprietary income multiplier for TIAC 6 to San Diego.

One implementation of the models was made using each of the two sets of leakage assumptions. The set of leakage assumptions that assumed the most leakage from San Diego was iterated in conjunction with expenditure patterns, a standard deviation below the average for each tourist type. The relative cost and probability-of-use coefficient changes shown in Appendix IV, Table 1, were also used in this application. The other iteration combined leakage estimates that assumed the smallest amount of leakage from the San Diego region and expenditure patterns a standard deviation higher than the average pattern. In this run, all persons within the city were assumed to consume equivalent amounts of public services. The first run will minimize the economic benefits of tourism by not only assuming tourists spend less than assumed by the study, but also that more of the production, income and employment leaks out of the San Diego region. The second run maximizes the economic benefit of tourism to San Diego in that it assumes that not only do tourists spend more than was originally assumed but that a larger percentage of the total multiplier benefit remains in San Diego. The first run also assumes costs slightly more equal across all tourist types, thereby improving the fiscal impact for a given level of expenditure. The second iteration, which assumes all tourists consume equivalent amounts of public services, will injure the fiscal impacts of those visitors, such as business persons, who have formerly been assumed to consume fewer-than-average services, but will greatly improve the fiscal impacts of conventioneers. The results of the run show those persons whose costs are increased are not hurt as much as those persons whose costs are lowered are helped.

The first run to be discussed assumed both high rates of leakage from the San Diego economy and low levels of tourist expenditure. The total production impact of non-resident tourists disaggregated by activity is \$305 million in San Diego and an additional \$203 million in the other two regions. This total impact is 30% less than the total impact found in the run of the model in Chapter VI; the difference is a reflection of the lower level of expenditure since the composite multipliers differ by less than 10%. As was true in the initial implementation, sightseeing is still the largest single activity, accounting for approximately 35% of all economic impacts and 42% of all visitor-days. The largest per-day impact is once again held by conventioneers with business following closely. Salt-Water Boating, which had the lowest per diem impact in the original runs because of a low per diem expenditure of \$4.34, was again the lowest, with a new expenditure level of \$3.40. This activity did, however, show the smallest standard deviation.

In spite of a lowered rate of expenditure, persons staying in hotels and motels still generate considerably more activity than visitors using any other form of accommodation. Their per diem spending declined by \$7.55 to a new level of \$16.16. Nevertheless, they still accounted for almost 50% of all the production generated by all visitors. Persons staying in rental cottages continue to have a comparatively large per diem impact because of a per diem expenditure of \$15.90.

The 20 tourist types who generate the most production in San Diego per 1000 days are ranked in Table VII-2. In the original ranking of production per 1000 days in Table VI-3, Conventioneers/Hotel-Motel were found to create \$54,000 in production. While the same tourist type still leads the list, the amount of production generated has fallen to \$31,500. The declines are caused by both the lower level of expenditures and the higher rates of leakate but are mostly dependent on the level of expenditure. Under the original rates of leakage, the lower expenditure pattern would have caused the production generated by Conventioneers/Hotel-Motel to decline to \$33,800. Hence, the greater leakage assumptions caused a change in total production equal only to 11% of the change caused by the new expenditure pattern.

The most striking feature of Table VII-2 is the similarity in the ordering of the tourist types to that found in Table VI-3. Eighteen types in Table VII-2 are also among the top 20 in Table VI-3. Hence, in spite of the changes in the inputs, the comparative merits of different types remain largely unaltered. Therefore, the conclusions and recommendations of the model remain virtually unchanged by the substitution of inputs.

This iteration included the fiscal benefit of tourism. As expected, the combination of lower expenditures and higher leakages diminish the tax revenues received by the city from the \$35 million initially estimated to a new level of only \$23 million. Using the initial assumptions concerning

TABLE VII-2

RANKING OF PRODUCTION IN SAN DIEGO GENERATED
PER 1000 DAYS OF NON-RESIDENT TOURIST ACTIVITY
(LOW EXPENDITURE - HIGH LEAKAGE ASSUMPTIONS)

Activity	Accommodation	Origin	Production
Convention	Hotel/Motel	All	$31,500
Salt-Water Fishing	Hotel/Motel	All	29,000
All	Rental Cottage	Rest of World	28,000
Business	Hotel/Motel	All	27,900
Other Outdoor Activities	Rental Cottage	All	27,700
Spectator Sports	Hotel/Motel	All	27,600
Salt-Water Bathing	Hotel/Motel	All	26,700
Other Outdoor Activities	Hotel/Motel	All	25,100
All	Hotel/Motel	Rest of World	24,900
All	Hotel/Motel	Northern Calif.	24,600
All	Hotel/Motel	All	24,100
All	Rental Cottage	All	23,100
Salt-Water Fishing	Rental Cottage	All	22,900
All	Hotel/Motel	Southern Calif.	21,900
Salt-Water Boating	Hotel/Motel	All	21,500
Salt-Water Bathing	Rental Cottage	All	20,300
Salt-Water Boating	Rental Cottage	All	19,900
Sightseeing	Hotel/Motel	All	19,400
Spectator Sports	Rental Cottage	All	17,700
Convention	All	All	17,500

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

costs, this would mean the new value of the total ratio would be 1.39, compared to an old value of 1.99. Persons staying in hotels and motels still have the most favorable fiscal impacts, with a total level ratio of 2.45 under the new assumptions concerning costs. Using these assumptions, the per day use fees of a person in a hotel or motel declines from $.52 to $.50 per day. The costs associated with the average non-resident visitor increased from $.41 per day to $.44 per day, indicating a comparatively higher level of consumption by visitors as opposed to residents. Conventioneers, which benefit the most from the new coefficients, exerience a decline in costs from an old level of $1.48 per day to a new rate of $1.26. However, because of the lower expenditure pattern, their direct level revenue-expenditure ratio remains approximately constant.

Table VII-3 lists the 20 tourist types with the highest total ratios. A comparison with Table VI-5 shows that while the ratio values of the top tourists are considerably lower because of the new coefficients, the tourists that appear in the tables are approximately the same. Nineteen types in Table VII-3 are also among the 20 types with the highest ratio values in Table VI-5. Business/Hotel-Motel, which initially had the highest ratio of 4.55, still has the highest ratio, but is has declined to 3.75. As was true with the results of the tourism impact model, the change in coefficients have lowered the benefits of each tourist type, but the rankings of the tourists have remained constant. Hence, many of the recommendations the models were used to develop would not be altered by the change in coefficients. The recommendation to attract those tourist types who stay in commercial accommodations could still be based on the conclusions of the two models.

The decision analysis model provides further proof that the basic nature of the recommendations is not altered by the change of input coefficients. Table VII-4 ranks the top 20 tourist types by the utility they generate under the assumptions of the average utility curve and also lists the amount of

TABLE VII-3

RANKING OF TOTAL CITY REVENUE-EXPENDITURE RATIOS OF NON-RESIDENT TOURISTS (LOW EXPENDITURE - HIGH LEAKAGE ASSUMPTIONS)

Activity	Accommodation	Origin	Ratio
Business	Hotel/Motel	All	3.75
Other Outdoor Activities	Rental Cottage	All	3.69
All	Rental Cottage	Rest of World	3.48
All	Rental Cottage	All	3.15
Spectator Sports	Hotel/Motel	All	3.08
Salt-Water Bathing	Hotel/Motel	All	3.07
Other Outdoor Activities	Hotel/Motel	All	3.03
Business	All	All	3.03
Salt-Water Fishing	Rental Cottage	All	3.01
Salt-Water Fishing	Hotel/Motel	All	2.96
Salt-Water Bathing	Rental Cottage	All	2.94
Sightseeing	Rental Cottage	All	2.73
Salt-Water Boating	Rental Cottage	All	2.72
Salt-Water Boating	Hotel/Motel	All	2.64
Spectator Sports	Rental Cottage	All	2.61
Sightseeing	Hotel/Motel	All	2.59
All	Rental Cottage	Southern Calif.	2.54
All	Hotel/Motel	Rest of World	2.51
All	Hotel/Motel	All	2.45
All	Hotel/Motel	Northern Calif.	2.36

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

TABLE VII-4

UTILITY GENERATED PER 1000 DAYS OF
NON-RESIDENT TOURIST ACTIVITY
(LOW EXPENDITURE - HIGH LEAKAGE ASSUMPTIONS)

Activity	Accommodation	Origin	Average	Maximum	Minimum
Salt-Water Fishing	Hotel/Motel	All	99.8	151.3	56.4
Convention	Hotel/Motel	All	91.4	135.5	54.7
All	Rental Cottage	Rest of World	84.8	127.6	48.6
Spectator Sports	Hotel/Motel	All	84.7	126.2	49.2
Other Outdoor Activities	Rental Cottage	All	82.5	123.5	47.9
Business	Hotel/Motel	All	82.0	121.6	48.9
All	Hotel/Motel	Northern Calif.	77.8	116.1	45.8
Salt-Water Bathing	Hotel/Motel	All	77.0	114.3	45.8
Other Outdoor Activities	Hotel/Motel	All	76.6	114.0	44.9
All	Hotel/Motel	Rest of World	73.8	109.7	43.8
All	Hotel/Motel	All	71.5	106.2	42.5
Salt-Water Fishing	Rental Cottage	All	68.6	102.4	39.9
All	Rental Cottage	All	67.9	101.7	39.5
Salt-Water Boating	Hotel/Motel	All	63.6	94.7	37.5
All	Hotel/Motel	Southern Calif.	62.8	92.8	37.6
Sightseeing	Rental Cottage	All	61.5	92.3	35.6
Salt-Water Bathing	Rental Cottage	All	59.4	88.9	34.6
Salt-Water Boating	Rental Cottage	All	59.0	88.3	34.1
Sightseeing	Hotel/Motel	All	56.1	83.0	33.6
Spectator Sports	Rental Cottage	All	50.6	75.2	29.8

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

utility a particular tourist generates has been changed by the alteration of the coefficients, the basic findings and recommendations based on that table remain unchanged. The similarity between Tables VI-7 and VII-4 is strong. Only 23 tourist types share the top 20 spaces on both tables. None of the top 20 types in Table VII-4 uses a commercial accommodation. Visitors from Northern California and the Rest of the World who stay in a particular accommodation usually generate more utility than a visitor from Southern California who chooses the same accommodation.

Introduction of the original level of costs into the utility equation for Conventioner/Hotel-Motel lowers their average curve utility by 4.9 points but does not move them down the table.

While the alterations do have large impacts on the total level of activity, their impact on the recommendations is small. A review of the outputs to determine which are the best tourist types still finds those persons who use a commercial accommodation are viewed by all models except the land use model to be better than those persons not using a commercial accommodation.* Furthermore, the decision curves, while indicating less utility for each tourist type continues to say most tourists are beneficial to San Diego, the same conclusion reached in Chapter VI.

The second run combined expenditure patterns a standard deviation greater than the average expenditure with the assumption that less production, income, and employment leaked from the San Diego region than had originally anticipated. The iteration also assumed equal costs of $.41 per day for all tourist types regardless of either accommodation or primary activity.

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*The land use model had initially estimated those persons staying in commercial accommodations to be the least favorable. The decision analysis, however, gave greater weight to the positive aspects of these tourists.

As can be expected, this run showed far higher economic impacts than either of the previous two runs. For instance, the average expenditure rose from $10.66 to $18.04 -- a 70% increase. The economic impacts of all tourists disaggregated by accommodation increased dramatically with the introduction of the new inputs. While the level of expenditure for the average tourist increased 70%, the total amount of production occurring in San Diego increased by over 82%. This additional 12% was caused by the changes in the leakage coefficients. The San Diego production impact of persons staying in hotels increased from an original level of $253 million in Table VI-2 to a new level of $377 million -- indicating a smaller than average standard deviation. Similar increases were noted in the other accommodations.

The results of Chapter VI estimated that approximately 50% of the proprietary income created by the initial tourist expenditure did not accrue to San Diego. The new assumptions lowered this amount to 35%. As a result, total proprietary income remaining in San Diego increased by over 125%.

A disaggregation of the impact disaggregated by activity shows approximately similar impacts. For instance, the amount of employment generated in San Diego by conventioners increased by 60% to 56,000 man-months. Similarly, an increase of $1.80 in the per diem expenditure of persons engaged in outdoor activities caused an increase of almost $4 million in the wage and salary income generated in San Diego.

While the impacts of all tourist types changed dramatically from the amounts estimated in Chapter VI, the comparative amounts generated by different tourist types did not show dramatic changes. Table VII-5 shows the most production per 1000 days is still created by those tourist types who use one of the commercial accommodations. Only one of the 20 types listed in the table does not stay in a commercial accommodation. The increases in production using the new sets of coefficients are dramatic. Conventioners/Hotel-Motel now generate $82,200 of production in San Diego alone, more than they had previously caused in all three regions.

The fiscal impacts of tourism are also improved by the new coefficients. The estimated city revenues increase from $35-57 million while the costs of the services tourists consume directly remains unchanged. State tax collections increase by $84 million to a new level of $207 million. Because the costs associated with them increased by $.12 as a result of the new coefficients, the total revenue-expenditure ratio for persons staying in rental cottages declined from 3.30 to 2.73. The ratios of all the other accommodation types, with the exception of Campground, increased. The ratios are in the same order as the level of per diem expenditures made by tourists staying in each type of accommodation.

Table VII-6 ranks the 20 tourist types with the highest total ratio values. As in previous tables ranking these values, the tourist types with the highest ratios are those who stay in one of the three commercial accommodations. None of the types include a commercial accommodation in their rankings. Whereas Table VII-3 showed a general decline in the values of the ratios, this set of coefficients often causes an increase. For instance, the ratio of a Conventioner/Hotel-Motel increases from a value of 1.80 in Table VI-10 to a new value of 4.27. However, the ratios of many types do decline as a result of the new cost assumptions. For instance, the ratio of a Businessman/Hotel-Motel declines from 4.55 to 4.08. However, while some ratio values and absolute impacts of different tourist types do change, the basic recommendations based on the results do not. The outputs still indicate that to improve the fiscal impact of tourism the city should attract those tourist types who will stay in one of the commercial accommodations.

This recommendation is further strengthened by the results of the decision analysis model. As with Table VII-4, Table VII-7 ranks the tourist

TABLE VII-5

RANKING OF PRODUCTION IN SAN DIEGO GENERATED PER 1000 DAYS OF NON-RESIDENT TOURIST ACTIVITY (HIGH EXPENDITURE - LOW LEAKAGES ASSUMPTIONS)

Activity	Accommodation	Origin	Production
Convention	Hotel/Motel	All	$82,800
Business	Hotel/Motel	All	77,500
All	Hotel/Motel	Rest of World	60,100
All	Hotel/Motel	All	57,300
Salt-Water Fishing	Day-trip	All	54,900
Business	All	All	54,900
All	Hotel/Motel	Northern Calif.	52,900
Convention	All	All	51,200
All	Hotel/Motel	Southern Calif.	50,800
Sightseeing	Hotel/Motel	All	49,700
Salt-Water Fishing	Hotel/Motel	All	47,500
Other Outdoor Activities	Hotel/Motel	All	45,100
Spectator Sports	All	All	44,700
All	All	Rest of World	43,500
Sightseeing	All	All	40,100
Salt-Water Bathing	Hotel/Motel	All	39,900
All	Rental Cottage	Rest of World	35,800
Salt-Water Boating	Hotel/Motel	All	35,600
Salt-Water Boating	Campground	All	34,500
Other Outdoor Activities	Rental Cottage	All	33,000

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

TABLE VII-6

RANKING OF TOTAL CITY REVENUE-EXPENDITURE RATIOS
OF NON-RESIDENT TOURISTS
(HIGH EXPENDITURE - LOW LEAKAGE ASSUMPTIONS)

Activity	Accommodation	Origin	Ratio
Convention	Hotel/Motel	All	4.27
Business	Hotel/Motel	All	4.08
All	Hotel/Motel	Rest of World	3.86
All	Hotel/Motel	All	3.76
Sightseeing	Hotel/Motel	All	3.67
All	Hotel/Motel	Southern Calif.	3.58
Business	All	All	3.46
All	Hotel/Motel	Northern Calif.	3.45
Other Outdoor Activities	Hotel/Motel	All	3.39
Convention	All	All	3.32
Spectator Sports	Hotel/Motel	All	3.26
All	All	Rest of World	3.24
Sightseeing	All	All	3.18
Salt-Water Bathing	Hotel/Motel	All	3.16
Salt-Water Boating	Hotel/Motel	All	3.14
Other Outdoor Activities	Rental Cottage	All	3.03
All	Rental Cottage	Rest of World	3.01
Salt-Water Fishing	Hotel/Motel	All	2.97
Salt-Water Fishing	Day-trip	All	2.96
Salt-Water Boating	Hotel/Motel	All	2.86

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

TABLE VII-7

UTILITY GENERATED PER 1000 DAYS OF NON-RESIDENT TOURIST ACTIVITY (HIGH EXPENDITURE - LOW LEAKAGE ASSUMPTIONS)

Activity	Accommodation	Origin	Average	Maximum	Minimum
Convention	Hotel/Motel	All	225.8	339.5	127.3
Business	Hotel/Motel	All	205.4	307.9	116.9
All	Hotel/Motel	Rest of World	163.8	245.9	92.5
All	Hotel/Motel	All	155.2	232.2	88.7
All	Hotel/Motel	Northern Calif.	147.1	219.2	85.5
Business	All	All	144.8	218.2	79.7
Salt-Water Fishing	Day-trip	All	144.0	219.4	76.8
Salt-Water Fishing	Hotel/Motel	All	142.1	214.8	80.0
Convention	All	All	139.3	209.5	78.9
Sightseeing	Hotel/Motel	All	135.6	202.8	77.2
All	Hotel/Motel	Southern Calif.	133.8	197.8	78.9
Other Outdoor Activities	Hotel/Motel	All	121.9	180.5	71.7
All	All	Rest of World	120.4	180.9	68.0
Spectator Sports	Hotel/Motel	All	119.1	176.5	69.2
Sightseeing	All	All	113.2	169.8	63.9
Salt-Water Boating	Campground	All	106.8	163.1	53.4
Salt-Water Bathing	Hotel/Motel	All	104.2	153.9	61.6
All	Rental Cottage	Rest of World	94.0	140.9	53.3
Salt-Water Boating	Hotel/Motel	All	92.4	137.0	54.1
All	All	Northern Calif.	90.2	136.1	49.7

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

types by the value of their average curve utility and shows the utility calculated using both the maximum and minimum value curves. Of the 20 types with the highest utility, 19 stay in a commercial accommendation. In addition, only 24 tourist types appear in the top 20 types of both Tables VI-7 and VII-7. None of the tourist types have negative utilities in any of the curves, a fact that should be unsurprising given an average increase of approximately 80% in the production each type generates in the county.

As has been true with all the other results, the introduction of the different coefficients does not change the basic nature of the policies one would derive from the models' outputs. About the only difference in the recommendations would be that if one were willing to assume the same relative cost and probability-of-use coefficients for each tourist type with respect to a new convention center, it now appears to be a more promising project than initially thought. Again, however, the types of conventions that should be attracted to the center are those which will attract people from origins so distant that large percentages of them will need to use a commercial accommodation.

Summary

In this chapter we have tried to determine which of the inputs to the models had the greatest impact upon the findings and recommendations and the effects changes in these impacts would have on the size of the outputs and more importantly on the findings and recommendations derived from the outputs. If the findings and recommendations remain constant in spite of the changes of the inputs, the city can be assured the recommendations should be pursued even if the models do not precisely estimate current conditions in San Diego. If the findings and recommendations do change with alterations in the inputs, the initial recommendations should not be followed unless the city is assured they accurately depict current situations in San Diego. This section briefly reviews the impacts the sensitivity analysis would have upon the major policies the models were designed to influence.

The one policy issue all of the models were directed towards concerned the comparison of the relative credits and debits of different tourist types, not so much in an absolute as in a comparative sense. In this area, the changes made in the inputs did not seem to have a dramatic impact upon the rankings of the relative worth of different tourist types. There appeared a high degree of correlation in the types who generated by the most production in San Diego, regardless of the set of inputs used. Similarly, the rankings of fiscal impacts was not greatly affected by changes in the coefficients. In a concluding statement on the rankings of the tourist types, none of the utility curves showed significantly different rankings for many of the tourist types as a result of a change in input values. While there were some changes, these were usually isolated to only a few specific tourists. Therefore, it does not appear these recommendations, which were the most important ones given to the city, were altered by the changes in input values.

However, the changes made were of a specific type. In one trial, all of the high expenditure patterns were used while in another, the low patterns were used. If an iteration had been completed that had included the low patterns of those tourists who initially had the highest average levels of expenditure and the high patterns of those tourists who initially had the low average patterns, changes might result. However, as Table VII-8 shows, even the low level of expenditure of those persons staying in commercial accommodations is often greater than the high level for those persons either staying with friends or relatives or in the city for a day-trip. Therefore, while such an iteration might decrease the gap between tourist types, those who stay in commercial accommodations will continue to generate more production per capita. Hence, the recommendations made by the models are further strengthened.

TABLE VII-8

RANGE OF PER DIEM EXPENDITURES FOR NON-RESIDENT TOURIST TYPES BASED UPON ACCOMMODATION

Accommodation	Average Minus Standard Deviation	Average Plus Standard Deviation
Day-trip	$ 1.97	$ 7.92
Hotel/Motel	16.17	32.41
Campground	9.51	12.36
Friend/Relative	4.86	11.85
Rental Cottage	15.90	17.23

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974

The city also expressed a desire to know whether tourism was good or bad for San Diego. As stated previously, because limitations were made on the number of impacts studied, the final report could not determine whether tourism would be found good or bad when all of its impacts were considered. The study did make an effort to determine if tourism was beneficial for San Diego solely on the basis of the elements studied in the report. It found with the exception of only a few tourist types tourism was good for San Diego. The sensitivity analysis made the same conclusion. Those tourist types the sensitivity analysis found detrimental were also among the ones found detrimental in the initial analysis.

There is a difference in the extent to which tourism is beneficial to San Diego under the different sets of assumptions. While this difference has been shown to be of relatively little importance when comparisons are simply being made between different types of tourists, it may be of importance when tourism and various tourist types are being compared with other forms of potential industrial development. In such a case, city leaders should pick the industry most beneficial to the community. While the model was developed primarily to allow for the comparison of different tourist types, it is reasonable to expect the model to be useful in comparing tourism to other industries. If we assume the average expenditure patterns used in the model estimate the actual averages so well that differences are insignificant, the results of the model can be satisfactorily used for this purpose. However, the altered expenditure patterns paint two very different pictures of the total volume of tourist activity and the amount of activity generated by a single tourist. The range between the two alternatives is too broad to make the results useful in this application. While the actual averages do lie between the alternatives, our inability to know where they lie makes this application one that should only be done after other efforts are made to reduce the confidence interval or with the knowledge that the predicted impacts may be incorrect.

Another espoused usefulness of the models was the assistance they could give to local economic development planners hoping to find the major leakages in the economic structure and take steps to reduce the leakages. Specifically, the models could indicate the amount of the required indirect and induced inputs that had to be imported from outside the local region. This amount could be expressed both as a percentage of the total indirect and induced inputs and also as an absolute value. If one is willing to accept the average expenditure patterns, the results can be used for this purpose. However, the alternative patterns drastically change the size of the leakage while the different leakage assumptions change the proportion of total production that becomes leakage. Again, because we cannot be sure the estimated average expenditures are actually equal to the actual average expenditures, the usefulness of the models is dulled. However, it would be possible for planners to use the lowest leakage estimates with confidence that the actual amount of leakage is no smaller.

A review of the models' usefulness in the policy questions for which they were designed has shown they do very well in two areas, and provide some information but with insufficient confidence in two other areas. The sensitivity testing effort has added to our knowledge of the models. Furthermore, it has shown most of the conclusions and recommendations made by the models are based on one set of input information -- the expenditure patterns. This finding indicates to both the consultant and the client that this information needs to be collected in a manner which yields higher confidence in the results. The analysis has shown two of the policy recommendations are highly influenced by this variable while the other two are not. Hence, it tells in what situations the model in its current state can be used. The sensitivity analysis does not necessarily invalidate the structure of the model as regards its abilities to recommend policies in the areas of interindustry comparisons and leakage estimates. Rather it indicates additional work will have to be conducted on improving the inputs before the outputs and recommendations can be accepted. The sensitivity analysis is an important educative device as it shows which assumption and which data inputs are most influential on the policy recommendations of the model. The final chapter will discuss how sensitivity analysis might have been employed as an integral part of model design to foresee some of these problems and thereby solve them during the modeling process.

NOTES

[1]Mathematica, "An Island-Specific Analysis of the Hawaii Visitor Industry," Princeton, August, 1970, p. I-12

VIII. THE ROLE OF MODELS IN PLANNING

Several aspects of the process of conceptualizing, developing, applying, and evaluating a series of models have been found to affect the reliability and usefulness of the models themselves. They have shown, for the most part, that models, while a useful concept, are unable to answer all of the questions put to them. In this chapter, we will determine what causes the difference between what is expected from a model and is actually produced, and what steps can be taken to narrow this gap. Based upon these findings, several recommendations concerning the proper use of models by both clients, consultants, and the planning profession in general will be made. Finally, a series of questions which have been uncovered by this work and whose answers would provide more information concerning the appropriate use of modeling techniques will be discussed.

When the city first issued the request for proposals, it asked for a study which could answer two basic questions: What economic, fiscal, and environmental impacts does tourism have on San Diego, and how should the city council allocate funds generated by the transient occupancy tax? The study design did not request a particular approach, but as noted in Chapter III, the RFP suggested that the consultant utilize some form of quantitative analysis in assessing the issues. However, the city budget director indicated he did not know how to assess the validity of quantitative analysis and did not really know what types of answers and reliability quantitative analysis would provide.

In the final ADL report, answers to the two questions were provided. However, as shown by the sensitivity analysis in Chapter III, the exactness of the measurement of tourism impact was severly limited by the quality of the data collected. In addition, several other possible impacts of tourism, which were briefly reviewed in Chapter IV, were not addressed by the study due either to a lack of money or an acceptable approach or both. Therefore, the quantitative assessment of tourism did not address several potentially important issues.

The consultant also proposed an allocation of the city's transient occupancy funds. However, ADL simply suggested the city once again reaffirm the position it has taken vis-a-vis this allocation in a city ordinance passed several years earlier. The information collected during the assessment of tourism impact was not used as the basis for this recommendation.

In comparing the list of desired outputs with the list of the information actually provided, one finds a rather wide gap. Several factors appear to be the cause. The first and perhaps most important is over-expectation on the part of all parties involved in the process. The city sent out an RFP which requested a definitive measurement of the impact of tourism and an answer to its transient occupancy tax allocation problem. No previous research has been done by anyone on the city staff to determine if techniques were available which could provide useful and reliable answers to these questions. Furthermore, CONVIS had even suggested the city minimize the amount of its own staff commitment to the project. As discussed in Chapter III, the city did not evaluate the different forms of tourism analysis which were being used in other areas. It submitted RFP which called for answers to specific questions without knowing whether the skills that might be required to answer the questions had been developed.

A thorough evaluation of existing procedures, as suggested in the summary of Chapter III, might have enabled the city to realize what problems might hinder the type of evaluation it requested. It might then have been able to reframe its proposal to ask questions about which data could be more easily and reliably obtained. If the city decided subsequently to ask the same questions, this search would provide an estimate of the amount of resources required to obtain information of desired reliability. The failure of the city to carry out this task led to the release of a statement which requested information which would be extremely difficult to provide given the city's insufficient allocation of resources to the study.

ADL was guilty of a similar type of over-expectation in that its proposal suggested that answers to the city's questions could be provided, even though those writing the proposal had never conducted a similar study which could be used as a basis for estimating the probable results. Furthermore, they were not familiar with other studies which had provided definitive answers to similar questions and had not developed an approach which they were sure could provide the desired information. As noted in Chapter III, public sector proposals often require a certain amount of "chest pounding" to show the consultant's ability to deal with the proposed problems. In addition, there is a bias toward proposing too many results as opposed to too few. These two forces can combine to produce systematic over-expectations on the part of the consultant. Because of the competitive nature of the industry, it may be counter productive to prepare a proposal which suggests that the desired information cannot be provided while other firms prepare proposals which suggest that it can.

The short time period which is available to complete many proposals is also a cause of the consultant's over-expectation. Unless a consultant has done similar work in the problem area beforehand, he is unlikely to have an appropriate methodology on hand. The short proposal period limits the amount of evaluation of similar work done elsewhere. The consultant is often required to hastily propose a work program without being able to seriously reflect upon the severity of the problems it will face during implementation. In addition the consultant is not reimbursed for porposal expenses. This will also limit the amount of time the consultant is willing to put into the preparation of a proposal.

Over-expectation on the part of both client and consultant contributed significantly to the gap between desired and provided outputs in the San Diego study. Several other factors can also help to create the gap. First is the issue of the quality of tools available to complete the study. In this instance, the tools employed by ADL in the economic analysis and fiscal impact section were not highly enough developed to provide the detailed types of information about which the city was concerned. They did provide a realistic and useful framework for making the desired type of anlayses, but were unable to provide the type of detailed information required to completely answer the issues posed in the RFP.

Similar failures are common and can often be attributed to one of several causes. First, there is a possibility that the type of model needed to develop the desired information is not available -- i.e., the technical capability to design and operate such a model does not exist. This was found to be the case when the consultant attempted to study the air pollution impacts of tourism. The type of model required to assess tourism impact had not been developed at the time the study was underway; therefore, there was no way in which the desired information could be provided.

A second reason for failure is that the consultants may not be aware of existing techniques which could be used to provide the desired type of information. A third possibility would be that the models employed by the consultant would embody the theoretical development required to provide the requested information but that the type of information required to operate them was either not available or was of low quality. These problems often occur in regional studies. In this instance, insufficient information was available concerning the multipliers for given sectors of the San Diego economy. As shown in Chapter VII, model outputs were highly sensitive to the quality of this information.

A final factor is the amount of money available for the study. In this instance, the city allocated approximately $100,000 without having any solid ideas as to what commitment of resources would actually be required to product the desired output. The lack of sufficient funds did hinder the quality of the study. For example, if more money had been available, additional interviews with tourists would have been possible. These interviews would have increased the confidence in the expenditure data, which was shown in Chapter VII to be the most important piece of information required by the model. Similarly, additional funds could have been used to complete development of a marginal cost model for the fiscal analysis and to add a capital formation sector to the economic impact model.

This lack is one of the most recurring causes of the gap between expected and delivered outputs. If both the city and the consultant had more accurately forecast the cost of conducting the study and of predicting the types of problems which would be encountered, either a reduction of scope or an increase in funds would have resulted. However, as noted in Chapter IV, most local governments are not in a position to fund new research for either the development of better theoretical models or the collection of necessary information. Therefore, when municipalities request studies which either need new techniques or large volumes of heretofore uncollected information, they are not likely to receive reports which meet the desired goals.

To an extent local governments cannot be faulted for their unwillingness to fund large model development projects. In many cases, the government can see only one immediate application of the model. Based upon this and the limited amount of funds available to the local government, it is foolish for them to allocate large sums for the development of a technique which will be used only once. A similar situation will exist for the type of information required by many techniques.

Finally, there is the problem of useful techniques requiring time series data which is not available and could not be constructed given any allocation of resources. This problem is acute for several types of analysis, particularly regression. As a result, some forms of analysis which might be theoretically sound and would provide the type of information desired cannot be used. In such cases, about all the consultant can do is to inform the city of the type of data collection program upon which it should embark so it can employ the model at a later date. For pressing problems, however, this is an unsatisfactory solution.

The gap between desired and produced output is caused by several factors, many of which are not readily susceptible to correction. However, there are several steps which can be taken by both the client and the consultant to minimize the gap in any given situation. Those recommendations which have been derived from a review of the modeling process used in the San Diego study are discussed below.

<u>The Client</u>

- Place more emphasis on the preparation of the RFP as a means of refining the problems under study; review techniques of analysis likely to be suggested by the consultant, and the probable quality of the results; and sugges, when appropriate, a specific technique for use by the consultant.

As discussed above, over-expectation first occurs when the client is preparing the RFP with insufficient knowledge of the complexity of finding answers to his problem. It will be a rare instance in which a given municipality's problem is unique. Therefore, a review of various sources which might show what other cities have and have not been able to do in an effort to cope with similar problems would provide a preliminary indication of the probable results of any study. If a client became familiar with the approaches which might be suggested by the consultant, he would be able to estimate on a preliminary basis the overall usefulness of the study results and possibly make a preliminary judgment of what those results might be. In addition, the client could determine whether the techniques needed to provide an accurate assessment of the issues were available and if not what further development might be needed to provide them. Preliminary estimates of the amount of money that would have to be committed to a successful study effort could then be made.

If the client thought the information which could be developed from existing techniques would be inadequate and that the resources necessary to develop approaches of the desired level of refinement were not available, he might then conclude that conducting a study at that time would be fruitless. On the other hand, he might find only a modest increase in resources committed to the study would enable the development of new technologies or the collection of specific pieces of data which would greatly increase the usefulenss of the study's results. In either case, more preliminary review would give the client a better notion of what he could expect for his dollar. Further, his increased familiarity with the problem and with the techniques of studying it would put him in a much better position from which to evaluate the proposals of the consultants.

Depending on the extent of the preliminary review and the client's faith in both its findings and in his ability to understand the problem, he can closely control the study and the quality of outputs by conceptualizing the framework for the study himself in the RFP. The RFP could be constructed at the desired level of specificity. In the extreme case, the consultant would be hired solely to implement the study design outlined in the RFP.

There is a danger attached to developing a detailed RFP. As discussed in Chapter III, consultants usually construct their proposal to be responsive to the wishes of the RFP. An RFP which outlines the study's design in detail may reduce the innovativeness found in consultant responses, in favor of proposals which indicate how well the consultant would be able to carry out the specific tasks requested by the client. Therefore, if the client's conceptualization of the problem and the appropriate methodology is incorrect, these problems may not be uncovered or discussed in the proposal. Thus, the client should prepare a detailed RFP only when he is reasonably sure his conceptualization of the study design will be better than that of the consultant.

Unfortunately, the above entails conflict: on the one hand, a broad outline of the problem and the suggested approach in the RFP may not lead to the design of a method of studying which will be able to provide the needed information; on the other hand, an extremely detailed conceptualization of the study in the RFP may inhibit innovativeness on the part of the consultant. There is no given compromise between these two positions which is always the optimal. Rather, the client must face this problem each time it appears and make his decision based upon the level of knowledge he feels he brings to the problem and his assessment of the qualities of the consultants to whom the RFP will be sent. Regardless of what position is taken in a given circumstance, it will still be to the client's benefit to maximize his knowledge of both the problems and the potential analytic techniques before the RFP is submitted so that he can allocate the appropriate amount of resources to the study and conduct a meaningful evaluation of alternative proposals.

- Conduct a more thorough evaluation of proposals, include on the review staff persons who are capable of understanding the forms of analysis which might be suggested. Also include these persons on the monitoring and review committees.

The city's budget director thought he could develop an idea of the types of methods that could be used to analyze tourism in San Diego from the various proposals and select the best proposal from this same comparison. However, no one on the selection committee had the technical background to competently evaluate the suggested methods of analysis. Therefore, it is not clear that the selection committee was capable of choosing the best submittal. Even if people with the technical background to evaluate the proposed forms of analysis did not participate in making the final selection, they could have been used to review the proposals and to assess the quality of the methodologies proposed and the probable usefulness of the resulting outputs.

Martin Ernst has suggested that the staff of the client must be able to understand the work if the models developed are to prove useful.[1] Therefore, not only can the inclusion of technical persons on the review help to ensure that a useful methodology is selected, it will also help to ensure the methodology can be interwoven into the general operations of the client agency.

What occurred in San Diego is in a sense an example of the Peter Principle, i.e., people were asked to choose among proposals they were incapable of properly evaluating. As local governments begin to make more and more use of analytic techniques as an aid in developing solutions to their problems, they must also develop the capability to assess these techniques and to determine which are feasible and can provide useful information, and which are not and cannot.

Just as the inclusion of a technical staff is important when selecting a proposal, it is equally important during times of monitoring and review. It is the technical staff which will use any model in continuing study. Therefore, they must be familiar with the techniques and must have an opportunity to discuss these techniques with the consultant.

- The client should decide whether the problem is one which is continually faced or one only rarely encountered.

This information should be given to the consultant to aid in the design of responsive proposals. Some of the problems consultants are asked to study occur infrequently while others continue through a long period of time. Given the limitations placed on most modeling efforts, knowledge of whether the problem is long or short term can alter the allocation of the study's resources to provide the best possible result.

If it only occurs infrequently, there is no reason for the consultant to suggest a continual monitoring process since the infromation collected will be of little use. Rather, all of the study's effort should be focused to provide the best possible answers during the time frame of the study.

If the problem is continuous, the RFP should request a solution which might be developed over a longer period. The client should suggest the consultant outline a method of studying the problem which will provide meaningful results over the long term. If certain information will be required to develop this approach which is not currently available, the RFP should instruct the consultant to provide the client with a list of the needed information, a methodology for collecting the information and the manner in which it should be used in conjunction with the methodology developed for the study. The goal of this process is to allow the client to continue to refine the model as it is used. Also the consultant can direct his attention towards developing a high quality model rather than constructing one which will provide answers of poorer quality on a shorter time-scale. If the model can be improved over a longer period of time and additional useful information can be developed, the methodology the consultant suggests might be different from the one which would be proposed if only a short time period would be available to complete the work.

- While the client should endeavor to help generate proposals which discuss specific tasks, he should also allow for flexibility.

In this study, the client attempted to add several items to the original scope of the study. The additions reflected his changing and developing needs which grew out of the failures of other studies to provide desired results and of his realization that the real questions being posed required a broader scope than suggested in the RFP. To meet these changing requirements, the client should encourage the consultant to address these additional areas while being mindful of the consultant's constraints.

In addition, it is only in rare cases in which the methodology proposed in the proposal can be applied with no modifications to the actual study. In order to be responsive to required changes in the methodology, contractual arrangements should allow for changes in methodology but should continue to ensure requirements for consultant performance. If the consultant should fail to meet his obligations, the client should not hesitate to terminate the contract.

The Consultant

- Prior to preparing the proposal, review the techniques which have been used to study the issue elsewhere, determine the extent to which they fulfill the needs expressed in the RFP and estimate what extra research and methodology development might be needed.

The purpose of this review is to enable the consultant to prepare a proposal which will more accurately predict the type of work which should be done and the costs involved in completing these tasks. In the absense of such a review, the consultant's ability to predict the difficulty of completing the tasks outlined in the RFP will be severely hampered, leaving him unable to accurately predict what products can be produced for the money available to the study. He may then run the risk of promising results in the proposal which cannot be produced.

Not only will the review tend to prohibit the consultant from promising work which he will be unable to complete, it can also aid him in developing a methodology to study the issues. If the consultant's background in the specific issue to be addressed by the study is limited, this review will provide some guidelines concerning how the study might be conducted. If the consultant is selected, the review will enable him to work from the knowledge that already exists rather than having to reinvent these same approaches. The resources committed to the study could be used to further advance knowledge in the field, rather than to redevelop what has already been done elsewhere.

The review will also enable the consultant to find problem areas which will tend to inhibit the success of the project. By gauging the seriousness of each problem in advance the consultant can more realistically forecast the usefulness and cost of the outputs.

- Propose a methodology which is cognizant of both the frequency of recurrence of the problem being researched and of the technical competence of the client.

In the above section, the client was advised to indicate whether the problem to be studied was one which was constantly faced or one which occurred only infrequently. The purpose of making this distinction was that it could influence the type of research program conducted by the consultant. The consultant, for his part, should take account of this factor when designing his methodology.

If the problems addressed by the study will occur only once, the consultant should develop the best methodology possible given the time and money available. Generally, this means that only basic types of information which are available universally can be used in conjunction with those methodologies which require that type of input. By first determining what types of information will be available to complete the study, the consultant can develop a methodology around them, rather than developing a technique which may have more theoretical validity but cannot be employed due to the lack of adequate information.

On the other hand, if the problem being addressed is continuous, the consultant should consider an entirely different approach. Rather than designing a methodology which can provide answers quickly but which might be theoretically incomplete, he should consider the possibility of developing a better methodology and then instructing the client concerning the additional action he must take as regards data collection and monitoring, etc., to make the methodology useful. While results may not be available from the methodology for a longer time period, their quality, when they do become available, will be much higher.

Whatever the time frame of the analysis, the consultant should propose techniques which can be understood by the client. Clients are often wary of techniques they cannot understand. More importantly, such techniques will not be used by the client once his association with the consultant has been concluded. Martin Ernst has concluded that "consultants perform best when dealing with clients of high ability, who have chosen to employ them for reasons of economy, cross-fertilization, speed of accomplishment, or any of a host of other reasons but who are quite capable of solving the same problem successfully by themselves if put to the test."[2] The development of overly complex models, while perhaps of greater theoretical value, are of little value to the client and should therefore be avoided.

- In preparing the proposal, the consultant should make explicit what confidence he will have in the outputs of the models given the resources available and how much this confidence would be affected by a change in the level of resources.

The amount and usefulness of the work a consultant can do on a particular study is determined by the amount of money available to him. As cited above, one of the greatest sources of over-expectation is that neither clients nor consultants adequately consider how the level of resources affects the types of products which can be provided. Both typically overestimate what can be produced for a given amount of money, either because they are overly optimistic or because they do not carefully consider the actual cost of completing certain work items. Whatever the cause, the result is a difference between what is sought in the RFP and promised in the proposal and what is finally provided.

Not only is this injurious to the client as he finds the study is unable to provide the desired answers, it also hurts the consultant, either by reducing his reputation in the eyes of the client or by forcing him to spend significantly more time on the study than the money would allow.

For these reasons, the consultant should estimate what products he can produce given the money provided by the client. In addition, he should also estimate how the type and quality of the outputs will be affected by minor changes in resource allocations. For instance, if a modest increase in resources will dramatically increase the validity of the results, the client may be encouraged to supply the additional resources. On the other hand if the quality of the work which can be done using the allocated resources could be closely approximated by a far smaller commitment, the client may be able to use the additional resources for other purposes where their marginal benefit is greater. In either case, the method helps the client to receive a greater amount of information per resource dollar.

While it may be difficult to convince consultants to suggest to the client a reduction of money following such a course may be in the consultant's favor over the long run if the client's respect for him increases as a result.

- Consulting firms should review the potential benefits of conducting unfunded research.

Few consulting firms conduct research unless they have been funded, primarily because development of a formal model is expensive. For a consulting firm to develop these models on its own would mean the cost of such development would have to be borne by the revenues generated through other sources of income. Since the only other sources are the revenues received for other work contracts, little is left for unsupported in-house development. If companies were to conduct such programs, they would either have to skimp on the amount of work they could do on other projects or increase their rates to an extent that they become noncompetitive with other consulting firms. Both of these alternatives are generally unacceptable.

Nevertheless, while this approach may not be useful in general, it may be proper to pursue development in some cases. One of the major reasons consultants are hired is that they can bring to specific problems expertise which is not held by the client. The development of in-house models for problems which the consultant knows are felt by many communities would aid in developing this expertise and improve the consultant's ability to obtain work in the field upon completion of the models. As Ernst has stated, consultants are often used to save time and the prior development of useful models could save time for clients. Obviously, any unfunded work will be done in fields where the consultant can be assured of a market rather than in those fields in which the market is not yet developed.

The Planner

- Upgrade state and local government bureaucracies to make them more receptive to analytical techniques and to increase their understanding of these approaches.

Many state and local governments are now beginning to use formal models to deal with problems. At present, some staffs lack the ability to understand and appreciate the capabilities of models and to make critical evaluations of what models can and cannot produce. As for any new technology, for it to become efficiently and effectively used by the clients, they must develop a more thorough understanding of its inherent characteristics. In some cases, this may involve improving the abilities of the persons in government who are in a position to judge and make policy decisions with model results.

Departments which are in a position to use models should ensure the personnel who deal with consultants have the training which will allow them to make the most effective use of modeling techniques. In some cases, this will involve retraining some members of the staff. Equally important, however, to the retraining is the assurance that those persons who possess the technical skills also recognize the limits of these skills and develop the capacity to work effectively with those who may not have equal technical skills but have other abilities which may mean the difference between success and failure.

- Initiate better communication of model development among users.

Unlike some clients of models, such as the defense establishment, there exists no single set of clients for urban models. Rather, individual communities facing the same problems often seek individual solutions, even though a modeling technique can be applied with only minor modifications to many different communities. One cause of this multiplicative effort is the lack of communication among both potential clients and consultants.

Planners must advocate better communication and continuing education for their profession. A number of vehicles are available to improve the communication of ideas including newsletters, journals, or conferences. Although several appropriate journals currently exist, they do not receive wide circulation and many communities are still unaware of the many techniques which have been developed. As part of his role, the planner must act to ensure the process of education is stepped up. This continuing educational process will be of great value to both client and consultant when work on any new project is begun.

- Planners should encourage the development of more research to address basic urban problems.

There are obviously many areas of concern in the urban field about which not enough is known. These problems impact communities throughout the nation. Many cities could benefit from generalized formal models which could then be adapted to the specific requirements of each community. Such research would reduce the many multiplicative efforts which are currently being undertaken. Since the benefits of any such effort would be felt over a large region, it may be desirable for the federal or state governments to assume responsibility for basic model development and leave implementation to the local governments themselves. This combined action could result in better models being developed from a larger resource base and a reduction of the net cost of model development to local government since the costs would be shared with many other areas. This concept is already part of the basis of many councils of governments and regional planning agencies.

Models As Educational Devices

One area in which models can be useful is in increasing the base of knowledge concerning urban problems. Even in situations where the consultant is unable to develop a model which meets all of the client's requirements, construction and operation of a model can be a useful experience for the client in terms of educational value. This increased education can then be used by the client to either improve the model later or to collect the necessary information to increase reliability of the model's outputs. In addition, some models may provide the client with an entirely new approach to an old problem. This change in the manner of thinking about the problem may result in meaningful changes in programs used to cope with it. To ensure a model is developed in an educational atmosphere, several guidelines should be followed:

- For the client to maximize the usefulness of any model, he must ensure that staff personnel who have the technical capability to understand and use the technique must work closely with the consultant.
- For his part, the consultant must ensure that he has a deep personal interest in the problem being researched and is concerned with ensuring the client receives the maximum benefit from his work. The combination of these two attributes will help to ensure the maximum transfer of knowledge during the consulting period.

- The consultant should instruct the client in the strengths and weaknesses of the model and analyze the sensitivity of its results to the assumptions and data inputs. This will not only demonstrate the reliability of the model's results but may also indicate what policies might be most affective in producing the change desired by the client.
- The consultant should indicate what other types of information would have been useful in addressing the problem and how this information, if available, could have been formulated into the theory of the model. He should also discuss meth ods in which this information could be collected on an ongoing basis. In addition, the consultant should also suggest further avenus of useful theoretical development of the model.
- The consultant should save considerable percentage of the total project effort for working with the client to ensure the methods developed can be incorporated into the regular process of the client agency. This involves gaining a knowledge of the client's method of operation and showing how the model can be useful and how its recommendations can become realities.

Remaining Questions

Only a small portion of the issues which affect model development and effectiveness have been addressed by this work. Considerable more study needs to be conducted into the use of models in other situations before any general series of guidelines concerning proper use of models can be accepted. There are several specific areas about which more information needs to be collected as the resolvement of these issues may have significant consequences on both the modeling process and client-consultant relationships. A few of these issues are noted below:

- Are there any realistic alternatives to the present consultant selection process? Currently the cost of preparing a proposal for many jobs equals from two to five percent of the cost of the total project. When one realizes that only a fraction of the proposals of any given consultant are accepted, it becomes obvious that much of the resources of any project are used to pay for consultant's proposal expenses on both the project in question and on other projects for which the consultant was not selected. This process causes a substantial waste of valuable resources and as has been suggested does not necessarily result in the selection of the consulting firm best qualified to conduct the analysis.
- What is the potential for technology transfer? While many communities face similar types of problems, there is a possibility that the proper solutions to the problems are so community specific that the development of methodologies at a regional or national level would be ineffective in that these technologies could not be transferred to the local community. If this is true, there would be little use to having models developed at a regional level and then implemented at the local level.

Models do represent the potential for a vast expansion of our knowledge about and our capacity to correct many types of urban problems. However, for them to provide planners with the maximum benefit, they must be well used and understood by both technicians and decision-makers. The development of new and better models must never be allowed to become an end in itself but must instead serve the needs of our quest for increased understanding and better methods of improving the urban world.

NOTES

[1]Ernst, Martin, L., "Public Systems Analysis: A Consultant's View," in Drake, Alvin, W., Keeney, Ralph, L., and Morse, Philip, M., eds., *Analysis of Public Systems*, The M.I.T. Press, Cambridge, 1972, p. 33

[2]*Ibid.*, p. 34

APPENDIX I

A NOTE ON THE ESTIMATION OF TOURIST DAYS

One task of the study was the development of tourist profiles, a system of accounts, and the collection of primary research data. Because the results of this task are used throughout the thesis, this discussion has been included to provide a detailed explanation of the tourist types used in the analysis and the types of primary data collection efforts undertaken.

Several factors influenced the selection of tourist types. First, each type had to exist in sufficient numbers so that its impact could be measured and so sufficient numbers could be interviewed to obtain the necessary information. This criterion eliminated many types of tourists--hunters, for example, who are numerous in other locations. Secondly, we sought to include those tourists who are promotable in the sense that the City can enact specific programs and policies designed to attract more of them. Promotable tourists can be best defined by activity, although origin also plays a large role in the ability of the City to promote. A third factor was the ability of the City to influence both the rate of visitation and impact characteristics of the tourists. All of these factors can be influenced by City policies and are, therefore, useful in an analysis utilized to make policy. The selection of tourist type characteristics used to define the different tourist types were made to comply with the guidelines outlined above.

In previous tourism studies we had considered motivation to be the most important variable for the disaggregation of tourist types. In this application, motivation signifies the activities the traveler pursues in San Diego. The words will, therefore, be used interchangably in this discussion. Motivation was chosen for two reasons. First, it has the greatest impact upon a tourist's actions. For instance, a tourist who comes for the purpose of beaching will go to the beach, while one who visits for golf will spend most of his time at golf courses. Marketing programs are also based around motivation. Most marketing campaigns are geared towards promoting the types of available activities, rather than accommodations. While accommodations are important, a tourist will not visit an area just for its accommodations. There are three basic activities the visitor to San Diego can pursue: business, convention and vacation. While the impact of vacationers is traditionally the largest of the three groups, both businessmen and conventioners have higher levels of expenditure, making them highly coveted by all destination areas. In addition, they are less affected by the seasonality that plagues the vacation industry. The conventioner can also be promoted. While business travel is not promotable, it may be possible to entice the traveler to stay for a few extra days either before or after business.

There are six primary activities available to the vacationer in San Diego: bathing, boating, fishing, attending spectator sports, sightseeing and participating in outdoor activities such as golf and tennis. Many vacationers are likely to participate in a number of these activities during their stay. Nevertheless, we felt many visitors had a primary activity they hoped to pursue in San Diego and which had been a significant part of their reason for visiting. If they spent more of their time in that activity, differences among people engaged in different activities might emerge. Because much of the promotion of the City is carried out in terms of activities, knowledge of the impacts could be useful for future promotional planning. Therefore, all six activities were included in the disaggregation, making a total of eight possible activities of the different impacts of people pursuing different activities could be useful for future promotional planning. Therefore, it was decided that the vacation activity would be disaggregated by the primary activity of those persons on vacation. This resulted in eight effective activities in the analysis.

While the activity is the reason for which the tourist comes, the accommodation used during the visit plays an important role in determining the economic impact of different tourist types. Tourists staying in hotels and motels often spend fifty percent more than those people who are on day-trips or are staying with either friends or relatives. As a result, their per capita economic impact is much higher. Different types of accommodations also have different effects on both local government and the environment. Commercial accommodations are among the biggest users of land of all sectors of the tourism industry. Persons staying in a twenty-story hotel require very different services from the fire department than those staying in a campground. For all of these reasons, it was felt that disaggregations by accommodation was useful.

Selection of the type of accommodations which were to be used was accomplished simply by determining what the predominant types of accommodations were. Five categories of accommodation were selected for the study: day-trip, hotel/motel, seasonal home/rental cottage, friend/relative, and campground.

Seasonality has long been seen as one of the biggest problems of the tourism industry, although recent study has begun to realize that seasonality may have some beneficial effects. Nevertheless, the seasonal impact of tourism is often large. Differences among impacts in each season are most often related to the weather in both the area of the attraction and in the area of the origin of the tourist. Many tourist areas that cater to families are also affected by the nine-month school year. While there are usually fewer of them, non-peak season tourists spend greater amounts per day. A review of attendance figures at major San Diego attractions revealed that San Diego is not a four-season area. Rather, there are only three basic seasons, the peak season beginning in June and ending in Spptember, and two non-peak seasons, one beginning in

October and ending in January and the other beginning in February and ending in May. These three seasons were selected as the seasons to be used in the analysis.

Origin has a substantial effect upon the actions and impact of a particular tourist. A tourist from an origin within a day's drive of the attraction is less likely to remain in the area overnight and, therefore, will not make the sizable expenditure for an overnight accommodation. A tourist originating from a much greater distance is more likely to stay in a commercial accommodation. Tourists from a nearby area also are less likely to consider their trip to the attractor as a special vacation and are, therefore, less likely to spend large amounts. Tourists from more distant origins, however, are more likely to be on a major vacation and may, therefore, make greater per capita expenditures.

The origin of the tourist has a great deal to do with the distribution of visits across the days of the week. Tourists from local origins are less likely to be on vacation while they are pursuing recreational activities in San Diego. As a result, they are more likely to visit during the weekends. A tourist from a more distant origin is more likely to be in San Diego during weekdays in addition to the weekend. Therefore, one would expect a greater percentage of the tourist days of tourists from local origins occur during the weekends, which already have the highest level of congestion of recreational facilities. Hence, the tourist from the local origin contributes relatively more to congestion than the tourist from a more distant origin.

The final importance of knowing the origin is for marketing strategies. While these efforts should not be dominated by knowledge of the origin of the existing tourist population, such knowledge does provide information about market penetration and the success of any marketing effort. Discussion with representatives of CONVIS indicated there appear to be five major origins for tourists visiting San Diego: the City of San Diego, the County of San Diego, Southern California, Northern California, and the Rest of the World.

Because the business and convention activities in which residents of the City and County engage cannot be in any sense related to travel, business and convention groups were included only if the people came from Southern California, Northern California, or the Rest of the World. In addition, only two accommodation types, Hotel/Motel and Day-trip, were recognized for use by either businessmen or conventioners.

These deliberations resulted in tourist types defined by four variables: activity, accommodation, season, and origin. We selected eight activities, five accommodations, three seasons, and five origins. Simple multiplication would indicate a potential of six hundred tourist types. However, limitations on the possible origins and accommodations of businessmen and conventioners limited the number to 510. In addition, many of the possible combinations did not exist.

The next task was to develop a data collection technique for the study. The proposal stated personal interviews would be conducted of both residents and non-residents. The information collected was needed for one or more of the models.

Two survey instruments were designed. One was used for personal interviews administered at accommodations and attractions. The accommodations chosen represented hotels, motels, and campgrounds. The attractors included the major attractors in each of the size categories of vacation activity and the major convention centers in the City. The instrument was designed to determine both the spending characteristics of the respondents and certain descriptive information about themselves and their trip. The second survey was a telephone survey administered to households in the City. It sought information concerning the recreational activities or residents and the activities and number of visiting groups. It was also used to ask residents about their reasons for moving to San Diego in order to obtain information about the impact of tourism on the permanent resident population.

The survey instruments were administered in three waves during a seven-month period from August through February in order to detect different characteristics by season.

APPENDIX II

BACKGROUND INFORMATION CONCERNING MODELS USED IN SAN DIEGO

This appendix provides information supplemental to the descriptions of the models given in Chapter V. A review of the assumptions and the data sources is included. The reader should complete Chapter V before beginning this appendix.

The Tourism Impact Model

The tourism impact model can be discussed in terms of four interrelated parts: the direct level, the indirect level, the induced level, and the computation of tax revenues at all three levels. The model first estimates total tourist spending in each of 25 Tourism Impact Analysis Categories (TIACs). These categories, shown in Table 1, represent those businesses that receive the vast majority of all tourist spending. There are five major areas of expenditure: lodging, food and beverage, transportation, entertainment, and miscellaneous and retail. Total tourist spending in each sector is computed by multiplying the average per diem expenditure for tourists in San Diego in that sector by the number of tourist days spent in San Diego.

After total tourist spending has been estimated, the wage and salary income generated at the direct level is calculated by multiplying total sales in each sector by the ratio of income to sales in that industry. Wage and salary income is then allocated to each of the three regions on the basis of the residence of the employees. Proprietary income generated by the direct sales is calculated by multiplying total sales by the percentage of sales that becomes proprietary income and allocated to each of the three regions on the basis of the residence of the people who own the businesses. Unlike direct sales, which occur only in the San Diego County region, both wage and salary income and proprietary income can accrue to regions outside of San Diego County. Because of the size of the San Diego region, however, it is unlikely that there is a substantial leakage of direct level wage and salary income.

TABLE 1

SAN DIEGO TOURISM IMPACT ANALYSIS CATEGORIES (TIAC'S)

LODGING

1. Hotels, motels, tourist courts, rooming and boarding houses, organizational hotels and lodging houses (on a membership basis) (SIC's 701, 702, and 704)

   included in-town hotels, generalized resorts, inn/tourist homes, motels, rented cottages, commercial dormitories and boarding houses.

2. Camps and Trailer Parks (SIC 703)

   included generalized overnight campsites for transients and more specialized sporting and recreational camps, such as dude ranches, cabin camps, boys' camps, girls' camps, fishing and hunting camps, and nudist colonies.

FOOD AND BEVERAGES

3. Eating and Drinking Places (SIC 58)

   includes purchases of meals, snacks, and alcoholic beverages.

4. Food Stores (SIC 54)

   includes grocery stores and supermarkets.

5. Liquor Stores (SIC 592)

   All liquor purchases should be ascribed to liquor stores.

TRANSPORTATION

6. Gasoline Service Stations (SIC 554)

   includes the purchases of gas, oil, and small repair.

7. Local and Suburban Passenger Transportation, in the form of buses/taxis (SIC's 411 and 412)

8. Tolls (SIC 931)

9. Automobile Rental and Leasing (SIC 751)

10. Automobile Parking Fees (SIC 752)

11. Air Transportation (SIC 45)

    includes charter airline service, sightseeing, airplane rental, and related hangar and service expenses.

ENTERTAINMENT

12. Movie and Theater Admissions (SIC 783 and 792)

13. Hunting/Fishing Licenses (SIC 93)

14. Bowling Alleys and Billiard and Pool Establishments (SIC 793)

15. Public Golf Courses and Private Golf Clubs and Country Clubs (SIC 7942)

16. Professional and Semi-Professional Sporting Events (SIC 7941)

17. Amusement Parks (SIC 7946)

18. Horse or Automobile Race Tracks (SIC 7948)

19. Museums, Art Galleries, Botanical Gardens, Zoos and Planetaria (SIC 84)

20. Miscellaneous Amusement and Recreation Services (SIC 7943, 7945, 7949)

    includes athletic clubs, beach clubs, boat rental, bookies, circus companies, houseboat rental, karate instruction, go-cart rental, parachute training, bicycle rental, swimming pool admission, etc.

MISCELLANEOUS

21. Miscellaneous Retail Stores (SIC's 594-599)

    includes souvenirs, gifts, antiques, luggage, sporting goods, ice, photographic supplies, flowers, tents, etc.

22. Apparel and Accessory Stores (SIC 56)

23. Personal Services (SIC 72 and 80)

    includes laundries, dry cleaners, barbers, beauty salons and health services.

24. Miscellaneous Repair Services and Business Services (SIC's 733 and 76)

    includes plumbing, electrical repairs, home repair, recreational equipment repair, secretarial services, etc.

25. Telephone Communication (SIC 481)

Both wage and salary income and proprietary income are estimated by the use of constant ratios applied to sales. This is a questionable assumption as most types of businesses exhibit some economies or diseconomies of scale in their operations. Therefore, the assumption that the average payroll-sales ratio is also equal to the marginal payroll-sales ratio means that income is either being overestimated or underestimated dependent upon whether the production function enjoys economies or diseconomies of scale. However, there are very few industries for which the exact form of the production function is known. In addition, the form of the function varies among individual enterprises. As a result, an average payroll-sales ratio is often the only type of information available. It should be remembered, however, that the actual percentage of sales going into wage and salary income is probably not what is indicated by the ratio. The same argument can be made for the proprietary income ratio.

After wage and salary income has been estimated, the number of man-months of employment supported by that income is computed by multiplying the total amount of wage and salary income in each TIAC by the inverse of the average monthly wage in that TIAC. This assumes that the new jobs created by tourist spending follow the exact mix of occupations of the jobs already existing in that sector. Employment is then distributed to the three regions in the same pattern used to distribute wage and salary income.

The indirect level of the analysis begins by estimating total indirect production by multiplying total sales at the direct level times a Leontief inverse matrix with the rows equal to the fourteen San Diego Input-Output Categories (SICO) and the columns equal to the twenty-five TIACs. The SIOCs are listed in Table 2. They are the categories used in the development of an input-output table for San Diego. The Leontief inverse matrix has been

TABLE 2

SAN DIEGO INPUT-OUTPUT CATEGORIES (SIOC'S)

SIOC

1. Natural Resources (Agriculture, Mining and Forestry) (SIC 01, 02, 07, 08, 10-14)
2. Fisheries (SIC 09)
3. Contract Construction (SIC 15, 16, 17)
4. Aircraft, Ordnance and Miscellaneous (SIC 19, 37)
5. Other Durable Manufacturers (SIC 24, 25, 32-39, except 37)
6. Non-Durable Manufacturers (SIC 20-23, 26-31)
7. Transportation, Communications, Public Utilities (SIC 40-49)
8. Wholesale Firms (SIC 50)
9. Retail Trade (excluding eating and drinking places) (SIC 52-57, 59)
10. Business and Consumer Services (SIC 73, 75, 76, 81, pt. 82, 89)
11. Hotels, Motels, Amusements, Eating and Drinking Places (SIC 79, pt. 84, 58, 70, 78)
12. Higher Education (SIC pt. 84, pt. 92, 93)
13. Finance, Insurance, Real Estate (SIC 60-67)
14. Personnel Services (Health Medical, Household Employment and Non-Profit Organizations) (SIC 72, 80, 86, 88)
15. Government (Federal, State, and Local, Civilian wages only, excluding higher education) (SIC 91, pt. 92, 93)

modified in that it only estimates the indirect production, instead of both direct and indirect production. This change was made because the direct level production has already been estimated at the direct level of analysis.

All of the assumptions inherent in input-output analysis are present in this computation. First, the assumption is made that all of the TIACs and SIOCs exhibit constant returns to scale. As discussed before, this is questionable. However, in most cases, the information required to estimate the amount of indirect production required at the margin is limited.

As was the case with the ratios used to estimate wage and salary income at the direct level, this assumption results in a value of production that will be too high if the businesses experience decreasing returns to scale and too low if they enjoy increasing returns. The amount by which the estimate is incorrect depends upon the magnitude of the increasing or decreasing returns.

The second major assumption of the equation is that not only are the production functions linear, they also do not change over time. The information used for the construction of the Leontief inverse matrix is based upon the 1963 input-output table of the United States.[1] As such, the information is currently ten years old. However, at the time of the initiation of the study, it provided the latest input-output data available. The danger of using 1963 data is that it assumes that not only is the production function linear but that no substitution of inputs has been made in the past decade. Even if all the inputs are still used in the same proportion today as they were ten years ago, differing increases in prices of all the inputs would result in a different production function. The result of this assumption is to estimate levels of activity in the indirect sectors that differ from the actual level by the proportion that the coefficients used in the table are different from the coefficients that should be used. Again, however, the assumptions of the model seem necessitated by the lack of alternative inputs.

The final important assumption made by the equation is that the relationships that exist among industrial sectors in the United States are also those that exist in San Diego. In order to know the nature of the relationships among the sectors in San Diego, one would have to have available an input-output study of the San Diego economy. If such a study were available, it would probably show that a different amount of indirect activity would be generated in each of the SIOCs as a result of tourist spending. An input-output study for San Diego was conducted in 1965 and updated in 1970.[2] However, the study only deals with sales and not with pruchases and is, therefore, of limited value in this application.

Once sales at the indirect level are calculated, they are allocated to the three regions on the basis of the proportion of activity generated in each region. The model assumes the amount of activity generated in each region is a constant proportion of the total amount of indirect economic activity, it is possible that the indirect industries in the local region would not have the capacity to handle the sudden increase in demand. As a result, the direct sectors would be forced to import an even greater percentage of their total indirect requirements from other regions than they did before the increase. Conversely, for small increases in indirect level activity, it is possible that the local suppliers can provide all of the required commodities and the amount leaking to other regions would be small. Hence, the assumption probably does not hold in the real world. However, it is difficult to estimate even the average proportion of inputs that come from each of the three regions; estimation of the proportion based upon the size of the demand would prove to be an almost impossible task. The sensitivity of the results to different leakage assumptions are shown in Chapter VII.

Indirect level wage and salary and proprietary income are then calculated in the same manner as was done at the direct level, namely total production is multiplied by a payroll-sales ratio and a proprietary income-sales ratio. The same assumptions that were made concerning the use of these ratios at the direct level also apply to their use here. There is one additional assumption. At the direct level, all the sales took place in only one region - San Diego County. At the indirect level, the production takes place in all three regions of the analysis. Therefore, the computation assumes the payroll-sales ratio is constant throughout all three regions. While this may be true in some sectors, it is not in others.[3] The ratios that were used were averages for the entire United States, and therefore are an accurate representation of relationships in the Rest of World region but are probably not accurate for either of the two regions in California. However, the differences among the rates in the three regions would have to be quite large to cause serious alterations in the results. The same assumption was also made for the computation of proprietary income.

Wage and salary and proprietary income are allocated to each of the three regions on the basis of the location of the residence of the employees and owners of the industry. The same assumptions that were used to allocate income generated at the direct level are also applicable to this calculation. The only difference is that in this instance, there will probably be substantial amounts of income that do not stay in the San Diego County region, since some of the indirect production occurs elsewhere. Simply stated, this means the income leakages are larger at the indirect level than at the direct level. Similarly, a larger leakage can also be epxected for proprietary income.

The number of man-months of employment generated by the indirect activity is calculated by multiplying total wage and salary income by the inverse of the monthly wage rate in each SIOC. The estimate once again assumes the mix of occupations in the new jobs supported in the tourist sector is the same as it is in the sector as a whole. In the case of the indirect analysis, this assumption is even less tenable than it was in the direct analysis, since only a few specific subsectors in each indirect sector will be affected.

The employment calculation also assumes the wage level in each region is the same. This may cause greater errors than the assumptions made at the direct level because there is a greater leakage of economic activity at the indirect level than at the direct level. It is probably untrue that wage levels in different regions will be the same. Almost all studies of wage levels show different wages for the same job in different parts of the country. The result of this assumption is that employment will be either overestimated or underestimated in each region, depending upon whether the actual wage level is lower or higher, repsectively, than the wage level used in the equation. The magnitude of the error is determined by the actual difference between the assumed and actual wage levels in each region. Once total employment has been estimated it is allocated to the three regions using the same proportion to allocate income to each region.

This calculation completes the estimate of the direct and indirect economic impacts of tourist expenditure. These impacts can be calculated using the basic theory of the inverted input-output matrix. . The induced level of analysis which follows, however, is only rarely incorporated into economic impact studies even though its impact is significant.

The induced level of analysis addresses the economic activity generated by the expenditure of the wage and salary income created at the direct and indirect levels. This expenditure results not only in additional sales but will also generate additional wages and employment.

Once total indirect and direct wage and salary income has been computed, total wage and salary income at all three levels of analysis is estimated by multiplying wage and salary income at the direct and indirect levels by a multiplier which is made up of the propensity to consume wage and salary income in each region; the distribution of consumption expenditures by employees among the three regions; the amount of direct and indirect production generated by the production of consumer goods in each region; the distribution of this production to each region; the wage and salary income generated in each region as a result of this induced level production; and the distribution of this additional wage and salary income to the three regions. Most of these assumptions have already appeared in other sections of the model. Again, one of the major assumptions of the calculation is that everything involved is related to the other part of the equation in a linear manner. In this case, this assumption is made not only for the percentage of production that is generated in each region, but also for the distribution of the consumption dollar of the employee across the three regions. It is this distribution of the consumption dollar that has an important impact upon the level of induced activity generated in each region. Because of the comparative size of the three regions, we would expect a greater percentage of wage and salary income leaks out of the San Diego region and into the other two regions than leaks from them to San Diego. Therefore, the production generated at the induced level probably displays a greater leakage than production at either the direct or indirect levels.

Once total wage and salary income at all levels has been calculated, it is possible to estimate total production at the induced level. This production is a function of several of the variables used to calculate induced level wage and salary income: total wage and salary income in each region; the propensity-to-consume wage and salary income in each region; the distribution of consumption purchases across the three regions; and the multiplier indicating total production generated as a result of a purchase of consumption goods. The multiplier is the consumption goods column of the Leontief inverse matrix discussed in the indirect portion of the analysis. As was true in that application, use of the matrix assumes the same linear production function for all regions.

Measures of the propensity to consume are often based upon the income of the consumer. However, no such relationships exist in this equation. Instead, the figure used represents the average propensity to consume. Because it is not known whether the distribution of individual incomes for the jobs created by tourism is exactly the same as the population used to compute the average propensity to consume, we cannot know the ability of the average propensity to consume to reflect the actual consumption patterns of the people employed as a result of tourist activity.

After induced level production has been calculated, it is allocated to the three regions on the basis of the percentage of induced level production that occurs in each region. As was the case with the distribution of indirect production, this distribution is based upon linear estimates of the amount of production occurring in each region. This is consistent with the formulation of input-output models, but as explained earlier, it appears that the distribution could be somewhat dependent upon the volume of the induced production.

Employment at the induced level is computed by multiplying wage and salary income in each region by the inverse of that region's average monthly salary. Both this and the equation computing wage and salary income at the induced level differ from the similar equations at the indirect level in that they consider separate payroll-sales ratios and different monthly incomes for each of the three regions. As a result, these equations should be better estimators of the actual impact than the equations at the indirect level.

Proprietary income generated at the induced level is also calculated. Like the computation of wage and salary income at the induced level, a separate proprietary income-sales ratio exists for each of the three regions in the analysis. While the assumption that proprietary income is a constant proportion of sales is still questionable, this estimation should be better than the estimation of proprietary income at the indirect level, where different ratios did not exist for each region. Once proprietary income in each region has been estimated, it is allocated to regions on the basis of the ownership patterns of the businesses. The equation assumes that the percentage of one region's income that accrues to all regions is constant over time. Because one can trade stocks and other forms of ownership, this assumption is probably not true. However, the ability to model changes in ownership patterns is extremely difficult.

That calculation concludes the analysis of production, income, and employment. A review of the techniques employed in the computations reveals several major assumptions were used frequently. The most important was that all types of income--both wage and salary and proprietary--can be calculated as being a fixed percentage of total sales and that at the indirect level, this proportion is constant for all three regions. This assumption is certainly challengable on several grounds. First, because businesses do not usually have production functions with constant returns to scale, we would expect the percentage of sales that becomes proprietary income will depend upon where that business is located on its supply curve. Even if all businesses in a particular sector enjoyed the same supply curve, it is reasonable to expect they would be at different places on it. Therefore, in order to determine the marginal impacts of additional sales to tourists, one would have to know the establishments that received the additional business and their location on their supply curves. However, one telling argument for the use of average percentages is that they are the best available information. For this application we will only be concerned about the values of the coefficients and the assumptions of the model if it is expected that substitution of the actual values would lead one to draw significantly different conclusions.

After all the economic impacts of tourist expenditure have been calculated, the state and local tax revenues accruing as a result of this activity are estimated. Taxes returning to the State, the County of San Diego, and the City of San Diego are included in the computations. The first computation estimates corporate income tax accruing to the State, using assumptions concerning the proportion of all activity at the direct, indirect, and induced levels that occurs in California, the amount of this activity attributable to corporations, the proportion of corporate production that represents taxable earnings and the applicable tax rates. These assumptions of linearity are similar to those encountered in other parts of the model. The total amount of corporate production occuring in California is taken from the previous calculations that estimated production in the State. Taxable income as a percentage of sales is obtained from historical information for industries in California. The tax rates represent the average State tax rates applicable to corporate profits.

The second computation estimates State income tax receipts on wage and salary and proprietary income. The computations are made in a manner similar to those used to estimate corporate income taxes. The wage and salary and proprietary income accruing to California is multiplied by coefficients to obtain estimates of taxable income which is in turn multiplied by the appropriate income tax rates. The calculation is made for income generated at all three levels of activity.

The sales and use taxes collected by the State from the direct level are estimated by multiplying total sales in each TIAC by coefficients indicating the degree of tax incidence and the tax rate applicable to sales in that TIAC. The calculations at the indirect and induced levels are made in the same manner, although the values of the coefficients are altered to correspond to those levels.

Several equations are used to estimate the tax revenues received by the City and County. The first calculation estimates property tax and water and sewerage fees collected as a result of tourist spending. Direct level property tax receipts are estimated by multiplying total sales at the direct level by the assessed value-to-sales ratio relevant for that year, and the property tax rate. This calculation assumes the property tax can be viewed as a sales tax with a fluctuating yearly level, since the assessed value of all parcels fitting a particular TIAC code, the total sales of all such establishments, and the property tax rate is not constant from year to year. The calculation is not meant to assume the property taxes collected by the County are necessarily a function of the amount of sales as, in fact, they are not since both assessed values and property tax rates are not set in accordance with the level of sales in particular establishments. Rather, the equation argues that since establishments pay their property tax with money collected from sales, the amount of property tax they pay in any given year represents a fixed percentage ot total sales. On an average basis, this fraction can be multiplied by any particular segment of total sales to estimate the amount that accrues to local government in the form of property tax.

Because relatively few tourists own property in the City, they do not pay property taxes directly. Therefore, the only way in which a tourist can be said to pay property tax is when some of the money he spends is in turn used by the establishment at which he spends it to pay their property tax. As such, the tourist views the property tax as a sales tax, since its price is included in the cost of the item or service he is purchasing, just as the State sales tax is added to the total cost of the purchase. The equation reflects this viewpoint since the assessed value-to-sales ratio times the tax rate transforms the property tax into a sales tax rate which is in turn multiplied by total sales generated by tourists. Property tax receipts at the indirect and induced levels are calculated in similar fashion using those sales accruing to the City and County of San Diego.

The property tax rates used in the equation include the general millages levied by the City and County and special millages levied by the City for the employee pension tax fund, the zoological exhibits fund, the bond interest and redemption fund and the public transportation fund. The millages used were for the 1974 fiscal year, which was the same year for which the other information was collected.

Property taxes collected from wage and salary income are also estimated. Property taxes generated by wage and salary income are those paid on the residences of the employees and their families. Again, property taxes are assumed to account for a particular percentage of total income. Because the percentage changes from year to year, the calculation cannot be used to estimate the amount of property tax that would be generated in some future year by an increase in tourist activity. The percentage of income accruing to the property tax is calculated by taking average payments for rent and ownership and determining the percentage of that amount used to pay for property tax. Separate calculations are made for renters and owners.

Water and sewerage fees are also calculated by assuming they account for a certain fixed percentage of either sales or wages and salaries. While such an assumption is questionable, the amount received by the City from this source is so small that significant fluctuations in the rates would have only minor affects upon total collections. Both these revenues are estimated for both the City and County.

As was the case with property taxes paid by business establishments, there is substantial reason to believe that the property tax collected from residences is a fixed amount and while a change in a family's income level might cause a change in property tax receipts over a period of time, the correlation is not direct. Therefore, the model is not measuring the marginal amount of property tax the City collects as a result of tourism activity. Many of the people who are currently employed in the tourism industry would probably be employed elsewhere if tourism did not exist and would still pay property taxes. However, the fact that they are employed in the tourism industry and are paying property taxes does mean that the wages they receive from tourist spending does generate property tax revenues. Since an extension of the public expenditure model considers the services consumed by employees and their dependents, it was necessary to also include the taxes they paid so that comparisons between the total amount of costs and taxes could be made.

In addition to property taxes, the City also receives money from the transient occupancy tax, which is collected on expenditures in TIAC 1, Hotels and Motels. The amount of tax collected is determined by multiplying the tax rate by the amount of expenditures in TIAC 1 that pays for accommodations. Since the transient occupancy tax is a sales tax, this technique represents a reliable method of estimating total tax collections.

The City also receives several forms of non-tax revenues. Among these are revenues from the various recreational facilities operated by the City, money from the Planetarium and Sports Stadium, and rents from certain exhibits at Balboa Park. The City revenues tourists generate through their participation in these activities is estimated by multiplying their total spending in each TIAC by the proportion of total receipts collected in that TIAC that revert to the City in the form of non-tax revenue.

Several of the sales and use taxes collected by the State are shared with local governments. Of the five percent sales tax, one percent is returned to the City. Cigarette and gas taxes are also shared. The amount of these taxes is estimated by application of the appropriate sharing formulas to sales at the direct, indirect, and induced levels.[4] Given that all these taxes are applied as sales taxes, the technique utilizes the same formulas applied by the State and provides accurate estimate reflections of the amount collected by the City.

After the individual tax computations are made, the final equations of the model sum each type of impact to provide information regarding total impact in the State, County and City.

City taxes can be separated into those that are generated at the direct level and those generated at the indirect and induced levels. The City collects the following taxes at the direct level:

- Transient occupancy tax;
- Property taxes paid by TIAC establishments;
- City non-tax revenues;
- State shared taxes collected from tourist purchases in TIAC establishments; and
- Water and sewerage fees paid by TIAC establishments.

All other taxes collected by the City are assumed to be received at either the indirect or induced levels. The taxes are split among the levels because the public expenditure model estimates both direct and indirect and induced expenditures separately. Therefore, a disaggregation of revenues by level of activity will make possible the revenue-expenditure comparisons at both the direct and total levels needed to determine the overall fiscal impact of tourism on San Diego.

Many different types of inputs are required by the model. They can, however, be separated into broad categories: (1) payroll-sales ratios; (2) monthly wage rates; (3) proprietary income-to-sales ratios; (4) the indirect and induced level multipliers; (5) leakage assumptions about sales, proprietary and wage and salary income; (6) number of tourist days and expenditure patterns; (7) the propensity-to-consume wage and salary income in different regions; (8) percentage of total sales that represents taxable income and the appropriate tax rates; (9) tax rates on wage and salary income; (10) sales and use tax rates; (11) City and County tax levies expressed as a percentage of total sales; (12) City non-tax revenue expressed as a percentage of total sales; and (13) computations to compute the amount of shared State taxes that return to the City. The source, reliability and importance of each of these inputs will be discussed briefly below.

Perhaps the most important single set of inputs are the number of tourist days and total tourist spending. Expenditure patterns were estimated through approximately 1,500 interviews with tourist parties. Respondents were classified along the four dimensional description of tourists being employed for the study and a certain number of interviews were held with respondents representing each tourist type so that a sufficient number of responses in each category could be obtained to insure the reliability of the results.

The number of tourist days was calculated with the help of the primary data surveys. The total number of people staying in Campgrounds and Hotels during each season was determined with the use of occupancy rates provided by the Convention and Visitors Bureau and also with the distribution of transient occupancy tax receipts across the months of the year. The number of tourist days spent in each activity by people staying at Hotels and Motels was determined by multiplying the total number of days spent in Hotels and Motels by the percentage of total days respondents spent engaged in that activity.

The distribution of respondents across origins was accomplished by multiplying the percentage of tourists who fit a particular activity/accommodation/season group and came from each particular origin. Because no efforts were made to interview tourists from particular origins, it was assumed that the percentage of tourists who were interviewed from each origin provided an accurate representation of the percentage that actually came from that origin.

The number of days spent visiting friends and relatives was calculated from the telephone surveys. Interviews were conducted with over 1,100 households. The total number of days spent during each season by tourists staying with friends and relatives was extrapolated from the number of days spent with the households interviewed during each season. The days were disaggregated into activity and origin based upon the activities and origins of the groups sampled.

The recreational activities of permanent residents were also determined from the telephone surveys. Each household interviewed was asked about the number of days members of the household had spent in the six vacation activities during the month prior to the interview. The total number of days spent by all residents during each season was extrapolated from this information.

The number of days spent by day-trippers who were not permanent residents was calculated from the primary data surveys. A large number of interviews were conducted randomly for the purpose of ascertaining the activity, accommodation, season and origin of tourists. It can be expected that day-trippers were interviewed in proportion to their total numbers. Therefore, it was possible to determine the number of day-trippers by noting their frequency of appearance in the surveys. Disaggregation of the day-trippers into specific activity/season/origin groups was also accomplished with the results of the primary data research.

As was initially expected, not all of the possible activity/accommodation/season/origin cells were filled. In fact, only 171 of the possible 486 cells actually had any days. Table 3 shows various breakdowns of total tourist days. The most predominant origin for visitors is Rest of World, followed by Southern California. Given the relative proximity, there are relatively few tourists from Northern California. Almost fifteen million days were spent with Friends and Relatives compared to the 6,600,000 days spent in Hotels and Motels. Because there are only two campgrounds in San Diego, the number of days spent in that form of accommodation is very small. As expected, the summer is shown to be the predominant season with seventy percent of a total of 31,274,000 days. Four of every ten non-resident days is spent in Sightseeing.

Whereas the previous two inputs are the components of final demand, all of the other important inputs affect the multipliers associated with the economic activity. At the direct level most of these inputs were calculated for each of the twenty-five TIAC's; at the indirect level they were calculated for the fourteen SIOC's and also for induced level activity.

The payroll-sales ratios allocate a fixed percentage of production at the direct and indirect level to wage and salary income. Coefficients are estimated for each TIAC and SIOC. The payroll-sales ratios are taken from national data for each industry and are, therefore, more likely to be correct for the Rest of World region as compared to the San Diego and Rest of California regions.[5] Proprietary income ratios are similar to payroll-sales ratios. Again, a payroll-sales ratio exists for each TIAC and SIOC and at the induced level.[6]

Man-months of employment are calculated by dividing income by the monthly wage rate. These rates represent the current national rates in each TIAC and SIOC category. Where possible, the San Diego County wage rates were used in place of national rates.[7]

Two of the major inputs affecting the size of the multipliers is the Leontief inverse matrix used to estimate indirect production and the consumer goods

TABLE 3

DISAGGREGATIONS OF VISITOR DAYS BY ORIGIN, ACCOMMODATION, SEASON AND ACTIVITY

By Origin:	
San Diego City	61,656,500
San Diego County	8,406,000
Southern California	13,582,000
Northern California	4,068,000
Rest of World	13,624,000
TOTAL	101,336,500
Non-Residents by Accommodation:	
Day-trip	8,616,000
Hotel/Motel	6,579,000
Campground	799,000
Friend/Relative	14,926,000
Rental Cottage	354,000
TOTAL	31,274,000
Non-Residents by Season:	
Summer	21,782,500
Fall	4,934,400
Spring	4,557,100
TOTAL	31,274,000
Non-Residents by Activity:	
Business	2,000,000
Convention	2,000,000
Salt-Water Bathing	3,042,000
Salt-Water Boating	4,668,000
Salt-Water Fishing	2,528,000
Other Outdoor Activities	3,208,000
Spectator Sports	570,000
Sightseeing	13,528,000
TOTAL	31,274,000

Source: Based on Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

portion of the matrix used to estimate induced level production. Both are based upon the 1963 national input-output table constructed by the Department of Commerce.

The leakage rates are among the most critical and least satisfactory of all the model's coefficients. In most cases, these coefficients indicate the percentage of either production, wage and salary income and employment, proprietary income and taxes accruing to each of the three regions. At the induced level, the coefficients also indicate the distribution of wage and salary income consumption expenditures in each region. They were calculated with the aid of several sources. The Economic Research Bureau conducted interviews of commercial establishments representing both TIAC and SIOC sectors to determine the percentage of their inputs purchased from each of the three regions. Officials in the Comprehensive Planning Organization were interviewed to obtain their estimates of the amount of leakage in each sector. Finally, members of the consulting team made estimates of the leakage values based upon the information they had obtained about the City and their previous experience. Unfortunately, an absolute set of leakage values did not exist and there is no way the estimates can be checked without a thorough field survey. The importance of the leakage estimates is demonstrated in Chapter VII.

The propensity-to-consume wage and salary income is the driving force of the induced level of analysis. Propensity-to-consume coefficients are estimated for each region based upon information collected for that region.[8] While they were accurate for the year in which they were collected, it is possible that the propensity has changed since that time, particularly in lieu of the dramatic rise in prices during the past few years. The coefficients also represent the average propensity to consume over a broad range of income levels. Since propensity does appear to be correlated with income, if the distribution of income levels of the jobs generated by tourist activity is not the same as that used to calculate the coefficients, the coefficients will be incorrect. Because tourism jobs are generally low paying, the distribution of income rates generated by tourism is probably somewhat lower than for the economy as a whole. Based upon several studies of the relationship between propensity to consume and income, this would indicate the coefficients are underestimated.

The coefficients representing the percentage of total sales subject to corporate and proprietary income tax are based upon information applicable to firms in California. Rates are calculated for each TIAC at the direct level, for each SIOC at the indirect level, and for all industries at the induced level. The information represents the average percentage of taxable sales for all establishments in a particular sector.

Perhaps the major assumption of the tax equations is that the property tax can be treated as a sales tax for the purpose of estimating the amount of property tax the City receives as a result of tourist activity. To actuate this assumption, it is necessary to determine the percentage that property tax payments are of total sales. This is calculated by dividing the total tax payments of each sector by their total sales. Total sales estimates were obtained from a variety of sources. In cases where the sales of a sector are subject to the State sales tax, total sales estimates were calculated by multiplying total sales tax receipts generated by all businesses in that sector and located in San Diego by the inverse of the sales tax rate. For sectors where only a portion of sales were taxed, interviews were conducted with individual establishments to determine the percentage of sales that were used. Tax receipts were then multiplied by the inverse of the tax rate and the inverse of the portion of total sales that are taxed. For sectors where no sales tax information was available, the Economic Research Bureau and other similar organizations provided estimates of total sales. Sales estimates of some sectors were also reviewed with local industry spokesmen. Both assessed value information for each sector and the applicable tax rates were obtained from City agencies.

As discussed previously, the City also receives large amounts of money in the form of non-tax revenues. Examples of this type of revenue includes greens fees, rent receipts from the Sports Stadium, swimming pool fees, etc. The rates used to estimate these revenues were calculated by determining the proportion of total sales in each TIAC that was returned to the City. In some instances, such as San Diego Stadium, the City receives a percentage of the total amount collected for parking fees and for concessions. Other rates were determined by noting the amount the City made from a particular source and finding what proportion that amount was of total sales in the relevant TIAC. Transient occupancy tax revenues were calculated simply by multiplying purchases in Hotels and Motels by the tax rate.

The information used to estimate the amount of property tax paid from wage and salary income is derived from a number of sources. The proportion of employees believed to be owners and renters was taken from Census statistics. It was assumed that for both owners and renters, there was a direct correlation between either assessed value or rent and income. Therefore, the ratio between assessed value or rent and income was calculated. For owners this value was then multiplied by the property tax rate to obtain an estimate of the percentage of the income dollar used to pay for property tax. For renters the amount was multiplied by the percentage of rent money used to pay property tax to estimate property tax receipts as a percentage of wage and salary income. All the necessary information was found in Census reports. The ratios were then added and multiplied by total wage and salary income accruing to the San Diego region.

Tables 4 through 8 outline the production, salary, employment, and tax multipliers for each TIAC constructed by the model. The most striking feature

TABLE 4

MULTIPLIERS USED FOR PRODUCTION GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC

TIAC	Production Accruing To: San Diego County	Rest of California	Rest of United States	Total Production Multiplier
1. Hotels, Motels and Tourist Courts	$1.708	$.583	$.200	2.491
2. Camps and Trailer Parks	1.595	.524	.155	2.274
3. Eating and Drinking Places	1.564	.414	.157	2.135
4. Food Stores	1.392	.328	.095	1.815
5. Liquor Stores	1.373	.318	.088	1.779
6. Gasoline Service Stations	1.410	.334	.093	1.837
7. Buses, Taxis	1.562	.515	.145	2.222
8. Tolls	2.420	.969	.355	3.744
9. Automotive Rental and Leasing	1.564	.603	.178	2.345
10. Automobile Parking Fees	1.629	.634	.197	2.460
11. Air Transportation				
12. Movie and Theater Admission	1.991	.490	.166	2.647
13. Hunting/Fishing Licenses	2.474	.994	.369	3.837
14. Bowling Alleys, Billiard and Pool Establishments	2.030	.510	.179	1.719
15. Public and Private Golf Courses	2.095	.545	.209	2.848
16. Professional and Semi-Professional Sports	2.120	.554	.209	2.883
17. Amusement Parks	2.038	.517	.191	2.746
18. Horse and Automobile Race Tracks	2.117	.554	.212	2.883
19. Museums, Art Galleries and Zoos	1.652	.469	.153	2.274
20. Amusement and Recreation Services	2.023	.509	.183	2.715

TABLE 4
(Continued)

TIAC	Production Accruing To: San Diego County	Rest of California	Rest of United States	Total Production Multiplier
21. Miscellaneous Retail Stores	$1.475	$.364	$.109	1.948
22. Apparel and Accessory Stores	1.468	.360	.106	1.934
23. Personal Services	1.604	.492	.150	2.246
24. Miscellaneous Repair and Business Services	1.836	.805	.246	2.887
25. Telephone Communication	1.382	.264	.094	1.740

Source: ADL Tourism Impact Model.

TABLE 5

MULTIPLIERS USED FOR WAGE AND SALARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
1. Hotels, Motels and Tourist Courts	$ .441	$.107	$.063	.611
2. Camps and Trailer Parks	.315	.098	.036	.449
3. Eating and Drinking Places	.353	.072	.063	.488
4. Food Stores	.160	.059	.030	.249
5. Liquor Stores	.138	.058	.027	.223
6. Gasoline Service Stations	.182	.060	.023	.265
7. Buses, Taxis	.311	.096	.034	.441
8. Tolls	1.208	.171	.088	1.467
9. Automotive Rental and Leasing	.255	.120	.044	.419
10. Automobile Parking Fees	.329	.125	.052	.505
11. Air Transportation				
12. Movie and Theater Admission	.485	.083	.043	.612
13. Hunting/Fishing Licenses	1.269	.175	.091	1.535
14. Bowling Alleys, Billiard and Pool Establishments	.530	.086	.050	.666
15. Public and Private Golf Courses	.600	.091	.070	.761
16. Professional and Semi-Professional Sports	.632	.093	.063	.788
17. Amusement Parks	.536	.087	.063	.686
18. Horse and Automobile Race Tracks	.627	.093	.068	.788
19. Museums, Art Galleries and Zoos	.436	.080	.037	.553
20. Amusement and Recreation Services	.519	.086	.057	.662

TABLE 5
(Continued)

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
21. Miscellaneous Retail Stores	$.256	$.065	$.227	.348
22. Apparel and Accessory Stores	.249	.064	.025	.338
23. Personal Services	.352	.089	.035	.476
24. Miscellaneous Repair and Business Services	.506	.142	.056	.704
25. Telephone Communication	.277	.047	.027	.351

Source: ADL Tourism Impact Model.

TABLE 6

MULTIPLIERS USED FOR WAGE AND SALARY EMPLOYMENT GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
1. Hotels, Motels and Tourist Courts	.00107	.00014	.00011	.00133
2. Camps and Trailer Parks	.00075	.00013	.00008	.00096
3. Eating and Drinking Places	.00087	.00010	.00009	.00106
4. Food Stores	.00037	.00008	.00005	.00050
5. Liquor Stores	.00031	.00008	.00004	.00043
6. Gasoline Service Stations	.00040	.00008	.00005	.00053
7. Buses, Taxis	.00077	.00013	.00008	.00098
8. Tolls	.00277	.00023	.00025	.00325
9. Automotive Rental and Leasing	.00063	.00015	.00008	.00086
10. Automobile Parking Fees	.00079	.00016	.00010	.00105
11. Air Transportation				
12. Movie and Theater Admission	.00113	.00011	.00011	.00135
13. Hunting/Fishing Licenses	.00292	.00024	.00026	.00342
14. Bowling Alleys, Billiard and Pool Establishments	.00122	.00012	.00011	.00145
15. Public and Private Golf Courses	.00141	.00013	.00013	.00167
16. Professional and Semi-Professional Sports	.00148	.00013	.00014	.00175
17. Amusement Parks	.00125	.00012	.00012	.00149
18. Horse and Automobile Race Tracks	.00148	.00013	.00014	.00174
19. Museums, Art Galleries and Zoos	.00107	.00011	.00010	.00128
20. Amusement and Recreation Services	.00121	.00012	.00011	.00144

TABLE 6
(Continued)

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
21. Miscellaneous Retail Stores	.00061	.00009	.00006	.00076
22. Apparel and Accessory Stores	.00060	.00009	.00006	.00075
23. Personal Services	.00093	.00012	.00010	.00115
24. Miscellaneous Repair and Business Services	.00121	.00019	.00013	.00154
25. Telephone Communication	.00115	.00006	.00012	.00133

Source: ADL Tourism Impact Model.

TABLE 7

MULTIPLIERS USED FOR PROPRIETARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC

TIAC	Proprietary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
1. Hotels, Motels and Tourist Courts	$.061	$.038	$.025	.124
2. Camps and Trailer Parks	.063	.033	.016	.112
3. Eating and Drinking Places	.050	.028	.017	.095
4. Food Stores	.021	.032	.010	.063
5. Liquor Stores	.032	.021	.010	.063
6. Gasoline Service Stations	.026	.022	.012	.060
7. Buses, Taxis	.067	.033	.022	.122
8. Tolls	.042	.066	.034	.142
9. Automotive Rental and Leasing	.029	.034	.045	.108
10. Automobile Parking Fees	.051	.044	.019	.114
11. Air Transportation				
12. Movie and Theater Admission	.066	.054	.024	.144
13. Hunting/Fishing Licenses	.043	.068	.035	.146
14. Bowling Alleys, Billiard and Pool Establishments	.088	.037	.022	.147
15. Public and Private Golf Courses	.082	.048	.025	.154
16. Professional and Semi-Professional Sports	.080	.048	.028	.156
17. Amusement Parks	.088	.037	.023	.149
18. Horse and Automobile Race Tracks	.077	.054	.025	.156
19. Museums, Art Galleries and Zoos	.076	.032	.017	.125
20. Amusement and Recreation Services	.085	.039	.023	.147

TABLE 7
(Continued)

TIAC	San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
	Proprietary Income Accruing To:			
21. Miscellaneous Retail Stores	$.039	$.029	$.013	.081
22. Apparel and Accessory Stores	.048	.030	.012	.090
23. Personal Services	.116	.032	.016	.164
24. Miscellaneous Repair and Business Services	.086	.054	.023	.163
25. Telephone Communication	.012	.217	.010	.239

Source: ADL Tourism Impact Model.

TABLE 8

MULTIPLIERS USED FOR TAX REVENUES GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC

TIAC	Tax Revenues Accruing To: San Diego City	San Diego County	State of California	Total Tax Multiplier
1. Hotels, Motels and Tourist Courts	$.154	$.166	$.292	$.458
2. Camps and Trailer Parks	.152	.161	.269	.430
3. Eating and Drinking Places	.087	.113	.385	.498
4. Food Stores	.076	.085	.319	.405
5. Liquor Stores	.075	.084	.366	.450
6. Gasoline Service Stations	.091	.108	.468	.576
7. Buses, Taxis	.131	.152	.590	.742
8. Tolls	.172	.209	.655	.864
9. Automotive Rental and Leasing	.068	.092	.341	.433
10. Automobile Parking Fees	.582	.614	.330	.944
11. Air Transportation	.129	.155	.660	.815
12. Movie and Theater Admission	.131	.148	.331	.479
13. Hunting/Fishing Licenses	.173	.211	1.657	1.868
14. Bowling Alleys, Billiard and Pool Establishments	.132	.149	.333	.482
15. Public and Private Golf Courses	.328	.351	.339	.690
16. Professional and Semi-Professional Sports	.246	.267	.345	.612
17. Amusement Parks	.125	.143	.346	.489
18. Horse and Automobile Race Tracks	.122	.147	.349	.496
19. Museums, Art Galleries and Zoos	.585	.607	.363	.970
20. Amusement and Recreation Services	.125	.142	.342	.484

TABLE 8
(Continued)

TIAC	Tax Revenues Accruing To: San Diego City	San Diego County	State of California	Total Tax Multiplier
21. Miscellaneous Retail Stores	$.079	$.101	$ .356	$ .457
22. Apparel and Accessory Stores	.083	.105	.355	.460
23. Personal Services	.085	.097	.306	.403
24. Miscellaneous Repair and Business Services	.166	.186	.629	.815
25. Telephone Communication	.043	.063	.224	.287

about them is their similarity. With the exception of the government-related sectors, there are no large differences in the multiplier values among different TIAC's. For instance, the private sector TIAC with the highest production multiplier in San Diego--2.1, Professional Sports--had a multiplier that was only thirty percent greater than the multiplier held by the private sector TIAC with the lowest multiplier--1.4, Liquor Stores.

While there is some fluctuation in the leakage to the two other regions, in most cases, approximately thirty percent of total production leaks to the other two regions. For example, of a total production multiplier of 2.5 for TIAC 1, Hotels, 0.8 of that multiplier leaks to the other two regions. Similar sized leakages are found in Table 5. In this case, TIAC 1 has a wage and salary income multiplier of 0.6, of which 0.16 occurs in the other two regions. In general, the wage and salary multipliers represent approximately twenty percent of the total production multipliers.

Proprietary income multipliers represent only a small proportion of the total production multiplier for each TIAC. For instance, proprietary income represents only five percent of total production in TIAC 1, Hotels and Motels. A very high proportion of proprietary income leaks to the other two regions. Approximately fifty percent of all proprietary income generated by sales in TIAC 1 leaks to the other two regions.

A review of Table 8 shows the State to have the largest tax multiplier of any of the three regions considered in the Table. Comparatively, the City's tax multiplier is small, although it does represent about four percent of total production and six percent of the total production that occurs in San Diego. Those sectors from which the City receives non-tax revenue have the highest tax multipliers. TIAC 1 also has a high multiplier because of the incidence of the transient occupancy tax. City tax receipts from Hotels represent approximately nine percent of the total production they generate in San Diego.

Because of the similarities for different TIACs and the similarities in the distirubtion of the tourist dollar among TIACs, it becomes apparent that the major factor accounting for the differences in the economic impact of different tourist types will be their rate of expenditure. This forecast is proven true by the results of the models shown in Chapter VI.

The Public Expenditure Model

The most important inputs are the probability-of-use and relative-cost coefficients. The probability-of-use coefficient measures the likelihood that a person who is in the city will use the services of a given department at some time during the average one-day period. The coefficient makes no attempt to measure the length of time during which the service is consumed nor the intensity with which it is consumed during the period of use. Rather, the coefficient simply predicts whether or not the services will be used at all. For instance, if there are two tourists groups and fifty percent of all tourists in the first group visit the Zoo every day for four hours and fifty percent of the second group visit the Zoo every day but only stay for twenty minutes, the probability that a tourist from either group visits the Zoo during the average day is fifty, even though the amount of time spent at the Zoo is significantly different.

In terms of the probability of use coefficient, there are basically two types of services offered by local government: public goods and selective consumption services. Public goods are those services, such as police and fire, which a person consumes even though he may not come into direct contact with the service. Public goods are also services the tourist or resident can be forced to consume without his consent. While a person may request police services at particular times, he is also consuming them even when he is not in direct contact with the police. These services include patrol services and the cost of keeping the police available should they be needed. Police services are also an excellent example of a service sometimes involuntarily consumed, since people who are arrested consume police services but probably on an involuntary basis. The most important aspect of police services as related to the probability-of-use coefficient is that since they are being consumed constantly and involuntarily, they have a probability-of-use coefficient of 100 for both residents and tourists, i.e., everyone in the city consumes the service everyday.

The second type of service, an example of which is the Zoo, is one where the consumer does have the option of whether or not to consume and therefore will probably have a probability-of-use coefficient of less than 100. Every person decides whether or not to visit the Zoo on a given day. In addition, one consumes the services of the Zoo only when there. Therefore, the probability-of-use coefficient can be determined by measuring the number of visitors who come to the Zoo as a percentage of the total number of person days spent in the city. Several other types of selective consumption services are offered by the city including parks, the Planetarium and the Convention Center.

In each case the decision to use each of these services can be made by each tourist independently. Because the tourist has the opportunity to select different types of services from this second set of services, there is a strong possibility that different tourist types will be attracted to different services. These different patterns of consumption are a major cause of the different costs of the several tourist types.

The relative-cost coefficient considers two aspects of the consumption of services: the rate at which services are consumed and the length of the period of consumption. The net effect of the coefficient is that it measures the relative amounts of service consumed by different consumers during the periods of the average day in which they consume the service.

The services of the Convention and Visitors Bureau provide a good example of differing relative-cost coefficients among tourist types. The Bureau estimates approximately forty percent of its efforts provide services to conventions held in San Diego, while the remaining funds are used for promotional campaigns directed at other tourist types. Since Conventioners do not account for forty percent of the tourist days spent in the City, they must consume a great amount of services per diem during their stay and, therefore, have a higher relative cost.

Some services have equal relative-cost coefficients for all users. While the possibility of people from different tourist groups spending widely different amounts of time at the Zoo has been discussed, Zoo officials indicate that to their knowledge there is no difference in the amount of services consumed by different types of visitors. Therefore, while the probability-of use of Zoo services varies among tourist types, the relative-cost coefficient is the same for all users.

The other two inputs required by the model are comparatively straightforward. The source of the number of tourist days for each tourist type was discussed in the previous section. However, for the cost model, total tourist days are disaggregated only by the three primary trip purposes and the accommodations. The rationale for this disaggregation will be discussed later.

The departments in the model are those departments and agencies of City government that provide services directly consumed by tourists. An obvious example of such a bureau is the Department of Parks and Recreation, which provides lifeguards at the beach and was responsible for the development of both Mission Bay and Balboa Parks. The budgets of the departments are those funds spent by the agency that are financed with revenues considered by the tourism impact model. Only these revenues are considered because inclusion of additional services would mean a comparison of tax revenues and costs generated by tourists would not be made on an equal footing. The relative-cost and probability-of-use coefficients must be determined for each tourist type by department. Therefore, if there are eight tourist types and eight departments, it is necessary to obtain sixty-four coefficients of each type. A more detailed discussion of the departments and their budgets appears later in this section.

Once all the required inputs are available, the calculations made by the model are quite simple. The first step is to determine the relative budget of the agency. The relative budget is equal to the number of relative-cost units of service annually provided by the department. In equation form it equals:

$$RELBUD_i = \sum_{j=1}^{n} DAYS_j(PROB_{ij} * RELCOST_{ij})$$

where, $RELBUD_i$ is the number of relative-cost units of service provided annually by department i;

$DAYS_j$ is the number of days spent in the City annually by consumer group j, where the consumer groups include both residents and tourists;

$PROB_{ij}$ is the probability-of-use coefficient for consumer group j with respect to the services of agency i; and

$RELCOST_{ij}$ is the relative-cost coefficient for consumer group j with respect to the services provided by agency i.

Once the number of relative-cost units has been estimated, the average cost of providing the service for each relative unit is computed in the following equation:

$$\text{PER UNIT COST}_i = \frac{\text{RELBUD}_i}{\text{BUD}_i}$$

where BUD_i is the adjusted Fiscal Year 1974 budget for department i; and

PER UNIT COST_i is the user fee associated with each relative service unit.

The cost per actual day for each consumer group can now be estimated by multiplying PER UNIT COST_i by the relative-cost and probability-of-use coefficients for consumer group j for service i.

$$\text{COST}_{ij} = \text{PER UNIT COST}_i * (\text{PROB}_{ij} * \text{RELCOST}_{ij})$$

where, COST_{ij} is the user fee associated with the expected amount of services of department i that are consumed daily by a person from consumer group j.

The above equations make several assumptions about the nature of urban services. Perhaps most important is that there is a direct relationship between the amount of service consumed and the cost of that service. For instance, the model assumes that if two people have the same probability-of-use coefficients and have relative-cost coefficients that differ by a factor of two, the cost of providing services to one of the persons is twice the cost of providing the services required by the second. However, the coefficients only indicate that one person is consuming twice the services of the other. To assume the cost is twice as much, it must be assumed the City faces constant returns to scale in terms of its production function. This assumption of constant production is further seen with the addition of a third person who has a probability-of-use coefficient of twice the value of the similar coefficients of the previous two people but has a relative-cost coefficient that is equal to the smaller of the coefficient of the two people. His cost per day, however, would be equal to that of the more expensive persons, because his higher probability of use equals the effect of the other person's higher relative cost. Hence, the model assumes that production of services is influenced equally by changes in relative cost and probability of use. This means the change in cost that occurs following a percentage change in the probability-of-use coefficient is equal to the change that results if the relative cost coefficient is altered by the same percentage.

Unfortunately, little research has been done on the nature of the supply of urban services that treats consumption in the manner done here. In the case of services such as sanitary landfill, it appears the approach is reasonable. Assuming the rate of cover is independent of the actions of one person, it appears the same amount of time would be required to deal with one bushel of trash brought by one person every day or with two bushels of trash brought by another person once every two days. Trash collection provides another example. Even if the collection truck passes by each house every day, there would appear to be a difference in cost if the truck had to stop at all houses each day to collect one bushel of trash as opposed to having to stop every other day to collect two bushels. In this case, it would probably be more expensive to collect one bushel every day since there are probably economies of scale realized by collecting more trash at each stop. If the necessary information were available, the relative-cost coefficients assigned to each situation could be constructed to reflect these judgments. Similarly, if the needed information were available, most of the other problems that arise could be dealt with within the definition of the two types of coefficients.

It is important to recognize that the model does not attempt to measure the costs involved with providing a particular amount of service but only with the user fee that can be attached to the service. Therefore, the usefulness of the model in policy applications is somewhat dulled, as the nature of the relationship between the user fee and marginal costs is not apparent. Because the model measures user fees, it is not concerned about excess capacity in the system as all excess is automatically levied upon those who do use the service. Hence, if the number of relative cost units of service suddently halved with no corresponding decrease in the cost of the service, the cost of a relative service unit would double, thereby doubling the cost per user day, even though the users might not be receiving any additional services. Similarly, if there is excess capacity in the system, the number of relative-cost service units could be increased with no change in the total budget for the service. This would lower the user fee of each relative unit. The model assumes all costs should be distributed among the users of the service with no regard paid to the cost of the service they actually consume. Therefore, the model does not measure the actual cost of the service provided the consumer unless all of the units of service that can be produced with the given gudget are being consumed. The likelihood of this event is discussed in Chapter V.

The inputs to the public expenditure model are derived from a number of sources. The number of tourist days is the same as that used for the tourism impact model. However, a different level of aggregation is used for the public expenditure model. Because much of the data originates from interviews with city officials and because the type of information required to make accurate estimated of the values of the relative cost and probability of use coefficients does not exist, attempts to estimate separate coefficients for all of the tourist types described in Appendix I would be a very tedious task. Therefore, coefficients were developed along the axis thought to have the most impact upon the level of services consumed by a particular tourist. Interviews were conducted with city personnel to determine which of the four axes would be the most important in terms of the services they provide.

The two most important directions of disaggregation are by accommodation and activity. As discussed previously, activity is the prime motivation for the tourist to come to San Diego, while accommodation has a major effect upon his economic impact once he arrives. Because many visitors to San Diego participate in a variety of activities, disaggregation by the eight primary activities might be somewhat misleading. Respondents did feel that disaggregation by the three primary trip purposes -- business, convention, and vacation -- would be useful.

City officials felt accommodation had a significant impact on the amount of services consumed. An example is the fire department, which must provide different types of equipment for fires in different types of structures and in different spatial patterns. Because many departments provided services that related to accommodation, we recommended that vacation tourists be disaggregated by accommodation. This resulted in eight different types of consumers: businessmen; conventioner; vacation, hotel/motel, vacation, campground; vacation, friend/relative; vacation, seasonal home and rental cottage; vacation, day-trip, non-resident; and permanent resident. Permanent residents are included in the list because they do consume services provided by the city and because the amount of services consumed by a tourist can be referenced against the amount consumed by a resident. In instances where the vacationers in a particular accommodation participated most heavily in only a few activities, those departments most oriented to providing service according to activity were given indications of the types of activities in which people from different accommodations were engaged.

The other set of information required are the budgets of those agencies that provide services directly consumed by tourists. Only those departments providing such services are included in the model. This was done because it was assumed these departments would be most affected by changes in the total number of tourist days. It was decided during construction of the model that inclusion of those departments, such as the Mayor's office, that provide services to tourists indirectly, would make the results of the model less defensible as it would be more difficult to tie any amounts of service specifically to tourism.

The departments were chosen using descriptions of the type of services provided by the department and through interviews with persons in the department to determine if they did, indeed, provide services directly to tourists. In defining the concept of services provided directly to tourists, we included those services the tourist himself consumed and those consumed by the commercial establishments patronized by the tourist. For example, while a tourist is unlikely to come in direct contact with a person from the Planning Department, the design and concept of many of the public facilities he uses originated there.

Once the departments were chosen it was necessary to determine the budgets for the fiscal 1974 year. Because we wanted to be able to compare the tax revenues generated by tourism with the expenses incurred by the city, we chose to include only that portion of the service financed with revenues estimated in the tourism impact model. Some forms of local revenue, such as building permits and vehicle code violations were not considered by the model.

In instances where only a portion of an agency's budget is funded by a source not considered, that amount is subtracted from the budget. Table 9 lists the departments and their budgets included for use in the calculations. The budgets were taken from the city's fiscal 1974 budget document. The table shows that the largest amount, $52,000,000, is spent by the Department of Water and Sewer Utilities. However, some of this revenue is derived from the sale of water to other municipalities in the county. The other biggest departments that provide services to tourists are the police, fire, public works, and park and recreation department. These five departments account for over 85% of the amount spent by all departments.

The relative cost and probability of use coefficients originate from two basic sources, the primary data research conducted as part of the study and interviews with officials in the several departments. The primary data research was used for estimation of probability of use coefficients while the interviews were conducted to obtain infromation concerning relative cost coefficients. Respondents to the primary survey were asked about the frequency with which they participated in several of the activities provided by the departments. Interviews were also made at places where these departments were providing their services to determine the distribution of user groups present. As an example, surveys were conducted regularly at the Zoo to determine the characteristics of the visitors. Surveys were made at the sites where all of the six vacation activities would occur. The information collected was similar to the information collected at the Zoo. For those services viewed as public goods, it was unnecessary to conduct a survey, since it was assumed all people in the city were consumers. Table 10 shows the probability of cost coefficients for each tourist type across all the services consumed by tourists. Several services, such as police, fire, planning, water and sewer have probability of use coefficients of 100, indicating they are used

TABLE 9

DEPARTMENTS AND BUDGETS USED IN PUBLIC EXPENDITURE MODEL

Department	Total Expenditure	Expenditure of Revenues Estimated in Tourism Impact Model
Police	$18,739,207	$15,502,807
Fire	11,379,624	9,834,824
Building Inspection	1,947,913	-0-
Library	3,313,250	3,085,450
Community Concourse	1,105,172	1,105,172
Water and Sewer	51,923,796	51,923,796
Planning	1,644,566	1,464,566
Public Information	100,909	100,909
Space Theater	1,033,708	1,033,708
Cultural Groups	603,760	563,760
Stadium Operations	1,482,800	1,482,800
Airports	244,447	79,678
Public Transportation	3,143,846	3,143,846
Zoological Exhibits	460,772	460,772
CONVIS	800,000	800,000
Aquatics	1,181,853	1,055,153
Golf-Lakes	644,569	27,623
Parks	2,967,078	2,930,199
Community Services	269,113	234,913
Beach Maintenance	387,762	298,577
Street and Traffic Signal Maintenance	4,699,648	3,542,499
Trash Disposal	1,229,360	946,608
Traffic Engineering	443,057	341,154
Litter Control	1,404,013	1,081,090
Street Lights	1,068,163	822,485
Other Highway and Traffic Services	833,420	641,733
Sanitation	4,070,549	3,134,323

TABLE 9
(Continued)

	Total Expenditure	Expenditure of Revenues Estimated in Tourism Impact Model
Environmental Quality	$ 267,711	189,511
Other Promotion Funds	559,116	559,116
TOTAL	$117,949,182	$106,387,072

Source: ADL Public Expenditure Model, as taken from City of San Diego, San Diego Annual Budget: A Program of Municipal Service, Fiscal 1974.

TABLE 10

PROBABILITY OF USE OF CITY SERVICES BY VISITOR TYPE USED IN PUBLIC EXPENDITURE MODEL[1]
(Operating Budgets)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Police	100	100	100	100	100	100	100	100
Fire	100	100	100	100	100	100	100	100
Building Inspec.	100	100	100	100	100	100	100	100
Library	1	1	.5	.5	.1	.5	.1	80
Concourse	0	50	.1	.1	.1	.1	.1	.1
Water	100	100	100	100	100	100	100	100
Planning	100	100	100	100	100	100	100	100
Public Info.	100	100	100	100	100	100	100	100
Space Theater	.3	.3	1	1	1	.5	.5	.05
Cultural Groups	1	1	5	3	4	2	2	.2
Stadium	.1	.1	.1	.1	.1	.1	.1	.05
Airports	1	1	1	1	1	1	1	1
Public Trans.	2	2	6	6	6	6	6	10
Zoo	2	2	8	5	7	3	4	.4
CONVIS	100	100	100	100	100	100	100	0
Aquatics	1	1	4	10	17	17	5	5
Golf-Lakes	.1	.1	.2	.2	.2	.2	.2	.1
Parks	1	1	10	25	14	14	13	10
Comm. Services	1	1	1.0	2.5	1.4	1.3	1.3	1.0
Beach Maintenance	1	1	4	10	17	17	5	5
Street and Traffic Signal Maintenance	100	100	100	100	100	100	100	100
Trash Disposal	100	100	100	100	100	100	100	100
Traffic Eng. and St. Sup	100	100	100	100	100	100	100	100

[1]Values represent probability in percentages that tourist or resident will use service during average day.

TABLE 10
(Continued)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Litter Control	100	100	100	100	100	100	100	100
Street Lights	100	100	100	100	100	100	100	100
Sanitation	100	100	100	100	100	100	100	100
Other Highway and Traffic Services	100	100	100	100	100	100	100	100
Environmental Quality	100	100	100	100	100	100	100	100
Other Promotion	100	100	100	100	100	100	100	100

Source: ADL Public Expenditure Model.

by everyone in the city every day. Several other services, such as the Zoo and the Planetarium, have coefficients less than one for some consumer groups, indicating that these services are used less than once every 100 person days.

As discussed above, there are some services consumed in approximately equal quantity by all consumers. Therefore, all tourist types would have the same relative cost coefficient for that service. For the other services, however, it was necessary to compute relative cost coefficients for each tourist type. Because the coefficient measures an arbitrary amount of service, the coefficient of the permanent resident was set equal to ten units. In some cases where permanent residents consume very little of the service, their rate of consumption was set to a lower value than ten. In either case the meaning of the ten units differs from department to department. In the case of the library, it may equal the cost involved in providing one book to every person in the city each day, while in the Police Department it may indicate a certain number of miles of patrol and a given number of calls answered. During the interviews it was not specified what the ten units included, but instead the interviewees were told to think about the amount of services consumed by the permanent resident during the average day and allow that amount to equal ten units.

The coefficients for visitors were estimated by asking the interviewees how much service tourists of each type would consume during an average day during which they consumed the service, assuming the average consumption of a resident was ten units. Once the respondent had indicated a value, the interviewer would probe to determine what factors caused him to make that estimate. In this manner, the interviewer was able to construct a reasonable idea of the types of service provided by the agency and the types of people who consumed the service. The relative cost coefficients used in the model are shown in Table 11. Except for a few cases, such as the Community Concourse, tourists generally consume fewer amounts of service than permanent residents. Many services having

TABLE 11

RELATIVE COSTS OF PROVIDING SERVICES BY VISITOR TYPE USED IN PUBLIC EXPENDITURE MODEL[1]
(Operating Costs)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Police	6	6	6	4	1	5	4	10
Fire	5	5	5	5	8	10	3	10
Building Inspec.								
Library	4	4	0	0	8	2	0	10
Concourse	10	27	10	10	10	10	10	10
Water	5.5	5.5	5.5	3	5.5	8	5	10
Planning	1.26	1.34	1.29	.56	2.03	.90	1.38	10
Public Info.	1	1	.5	.5	.5	.5	.5	10
Space Theater	10	10	10	10	10	10	10	10
Cultural Groups	10	10	10	10	10	10	10	10
Stadium	10	10	10	10	10	10	10	10
Airports	15	15	15	15	15	15	15	10
Public Trans.	10	10	10	10	10	10	10	10
Zoo	10	10	10	10	10	10	10	10
CONVIS	9	155	31	3	4	10	1	0
Aquatics	10	10	10	10	10	10	10	10
Golf-Lakes	10	10	10	10	10	10	10	10
Parks	10	10	10	10	10	10	10	10
Comm. Services	10	10	10	10	10	10	10	10
Beach Maintenance	10	10	10	10	10	10	10	10
Street and Traffic Signal Maintenance	8	6	11	13	8	12	11	10
Trash Disposal	5	5	5	5	5	10	3	10
Traffic Eng. and St. Support	8	6	11	13	8	12	11	10

[1]Values indicate relative amount of services consumed during average day by tourist types and residents.

TABLE 11
(Continued)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Litter Control	1	2	2	2	2	2	2	10
Street Lights	12	12	12	12	10	10	7	10
Sanitation	3	3	3	3	5	10	3	10
Other Highway and Traffic Services	8	6	11	13	8	12	11	10
Environmental Quality	3.7	3.4	6.4	6.7	6.6	10.8	4.6	10
Other Promotion	2	2	10	10	10	10	10	2

Source: ADL Public Expenditure Model.

lower relative cost coefficients for tourists are public goods. There are also a large number of services, such as the Zoo, that have equal relative cost coefficients for both residents and tourists. These are usually selective consumption goods.

The second portion of the model deals with capital projects used by tourists. To estimate the amount currently being spent for capital projects used by tourists, a list of all bond issues still being repayed was acquired. The costs of all projects used by tourists and funded by these bond issues were estimated. Current year payments for the bond issues were calculated with the aid of the relevant bond service schedules. The amount of this payment attributable to the selected projects was calculated by dividing the cost of the projects by the total amount of the bond issue and multiplying that percentage by the amount spent to retire the bonds during the current year.

Table 12 lists the total amount of capital expenditure funds spent by the city during fiscal 1974 which financed capital improvements used by tourists.

Once the total budgets are determined, probability of use and relative cost coefficients are estimated for the projects in each major area. Unlike operating costs, which are disaggregated by department, capital costs are broken out by major functional area. In many instances, however, the project is for the use of a specific department. The coefficients for the capital projects were estimated in the same process used to calculate the coefficients for the operating cost model -- namely, personal interviews with city officials, use of available records, and the results of the primary surveys. The probability of use and relative cost coefficients are shown in Tables 13 and 14 respectively.

All the assumptions inherent in the operating cost model are also applicable here. However, the assumption that the amount of service being consumed is equal to the amount of service that can be provided is even weaker. While there are some times when a capital improvements such as Mission Bay is filled to

TABLE 12

DEPARTMENTS AND BUDGETS USED IN CAPITAL EXPENDITURE MODEL

Department	Expenditure of Revenues Estimated in Tourism Impact Model
Parks	$1,782,663
Storm Drains	118,732
Flood Control	100,000
Other Buildings	446,841
Community Concourse	3,413,000
San Diego Stadium	1,125,000
Street and Traffic Control	6,934,000
Water and Sewer	7,019,981
Total	$20,840,217

Source: Based on Arthur D. Little D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring 1974.

and can therefore be viewed as providing the maximum possible amount of service, there are many other times when the number of people in the Park do not tax its capacity and the amount of service being consumed is not equal to the amount being produced. However, all users bear the cost of this unused capacity.

Because most of the capital facilities considered by the model can produce more service than they currently do, the estimates of user fees are greater than the average cost of providing the service.

TABLE 13

PROBABILITY OF USE OF CITY SERVICES BY VISITOR TYPE USED IN PUBLIC EXPENDITURE MODEL[1]
(Capital Budgets)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Parks (Balboa, Mission Bay, and Others)	1	1	10	25	14	14	13	10
Storm Drains	100	100	100	100	100	100	100	100
Flood Control	1	1	10	25	14	14	13	10
Other Buildings (Airport, Police, Fire)	100	100	100	100	100	100	100	100
Community Concourse	0	50	.1	.1	.1	.1	.1	.1
San Diego Stadium	.1	.1	.1	.1	.1	.1	.1	.05
Street and Traffic Control	100	100	100	100	100	100	100	100
Water and Sewer								

[1]Values represent probability of percentages that a tourist or resident will use the service during the average day.

Source: ADL Public Expenditure Model.

TABLE 14

RELATIVE COSTS OF PROVIDING SERVICES BY VISITOR TYPE USED IN PUBLIC EXPENDITURE MODEL[1]
(Capital Budgets)

	Business	Convention	Vacation: Hotel/ Motel	Vacation: Camping	Vacation: Friend/ Relative	Vacation: Seasonal Home	Vacation: Day Trip	Resident
Parks (Balboa, Mission Bay, and Others)	10	10	10	10	10	10	10	10
Storm Drains	8	6	11	13	8	12	11	10
Flood Control	10	10	10	10	10	10	10	10
Other Buildings (Airport, Police, Fire)	13	13	13	12	13	13	11	10
Community Concourse	10	27	10	10	10	10	10	10
San Diego Stadium	10	10	10	10	10	10	10	10
Street and Traffic Control	8	6	11	13	8	12	11	10
Water and Sewer								

[1]Values indicate relative amount of services consumed during average day by tourist types and residents.

Source: ADL Public Expenditure Model.

NOTES

[1]U.S. Department of Commerce, Input-Output Structure of the U.S. Economy: 1963, Vols. 1, 2, and 3, U.S. Government Printing Office, Washington, D.C., 1969

[2]Economic Research Bureau of San Diego, San Diego Economic Development Research Program, San Diego, 1966

[3]For instance, a review of the 1963 Census of Manufactures shows the payroll to sales ratio for the production of natural and processed cheese to be .134 in California but only .061 in Wisconsin.

[4]The State sharing schemes depend upon the particular goods or services involved. Usually, 20% is retained locally; however, in some cases a complex scheme based on population is used, The relevent schemes were estimated through information from the California Taxpayers' Association and through interviews with the City Auditor Department and other related City departments.

[5]U.S. Bureau of the Census, Census of Manufactures, 1963, Volume III, Area Statistics, U.S. Government Printing Office, Washington, D.C., 1966

[6]These ratios were taken from information provided in the Census of Manufactures, the Census of Transportation, the Census of Business and the Census of Selected Services, and through Internal Revenue Service information.

[7]Monthly salary estimates were based upon County Business Patterns information supplemented with Area Manpower Reviews put out by the California Department of Human Resources.

[8]Information available through the Internal Revenue Services provided the basis for the estimates of propensity to consume.

APPENDIX III

SUPPLEMENTAL TABLES OF MODEL RESULTS

APPENDIX III-1

ECONOMIC IMPACT OF NON-RESIDENT TOURISTS BASED ON ACTIVITY

	Business	Convention	Salt-Water Bathing	Salt-Water Boating	Salt-Water Fishing	Other Outdoor Activities	Spectator Sports	Sightseeing
Tourist Days	2,000	2,000	3,042	4,668	2,528	3,208	570	13,258
Direct Expenditure	$3,872	$40,220	$18,160	$20,259	$26,114	$34,710	$5,637	$149,550
Production	87,022	89,988	38,724	43,546	57,802	77,687	13,671	327,404
San Diego	61,949	64,079	28,377	31,991	42,670	56,078	9,948	237,847
Proprietary Income	4,370	4,430	1,763	1,963	2,627	3,646	689	15,378
San Diego	1,976	2,046	832	994	1,325	1,801	342	7,564
Wage and Salary Income	19,260	19,993	7,951	9,465	12,323	16,796	3,247	70,333
San Diego	13,602	14,017	5,670	6,863	9,096	12,138	2,443	50,502
Employment (man-months)	43	44	17	20	27	36	7	153
San Diego	34	35	14	17	22	29	6	124

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX III-2

ECONOMIC IMPACT OF NON-RESIDENT TOURISTS BASED ON ORIGIN

	Southern California	Northern California	Rest of World
Tourist Days	13,582	4,068	13,624
Direct Expenditure	$96,161	$52,518	$184,741
Production	211,477	111,613	412,754
San Diego	154,636	82,033	296,270
Proprietary Income	10,031	4,969	19,866
San Diego	4,948	2,359	9,573
Wage and Salary Income	45,893	23,307	90,169
San Diego	33,500	16,746	64,085
Employment (man-months)	100	50	197
San Diego	82	41	159

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX III-3

FISCAL IMPACT OF NON-RESIDENT TOURISTS BASED ON ACCOMMODATION (000's)

	Day-trip	Hotel/ Motel	Campground	Friend/ Relative	Rental Cottage
Tourist Days	8,616	6,579	799	14,926	354
Total Revenue	$18,975	$76,183	$3,648	$62,435	$2,720
State Revenue	14,510	56,527	2,749	47,485	2,036
County Revenue	681	2,656	101	2,232	77
Direct City Revenue	775	5,197	216	3,433	166
Direct City Expenditure	3,446	3,421	224	5,672	106
Direct City Revenue-Expenditure Ratio	0.22	1.52	0.96	0.61	1.57
Total City Revenues	3,785	17,001	798	12,717	607
Total City Expenditures	3,963	5,724	304	7,314	184
Total City Revenue-Expenditure Ratio	0.96	2.97	2.63	1.74	3.30

Source: Based upon Arthur D. Little, Inc., Tourism Imapct Study for the City of San Diego, Spring, 1974.

APPENDIX III-4

FISCAL IMPACT OF NON-RESIDENT TOURISTS BASED ON ACTIVITY
(000's)

	Business	Convention	Salt-Water Bathing	Salt-Water Boating	Salt-Water Fishing	Other Outdoor Activities	Spectator Sports	Sightseeing
Tourist Days	2,000	2,000	3,042	4,668	2,528	3,208	570	13,258
Total Revenue	$18,437	$19,630	$8,752	$9,791	$13,235	$16,752	$2,918	$74,447
State Revenue	13,786	14,871	6,663	7,735	10,364	12,480	2,080	55,329
County Revenue	654	742	289	393	395	553	93	2,628
Direct City Revenue	1,140	1,000	456	187	404	1,059	257	5,303
Direct City Expenditures	500	2,960	1,156	1,820	961	1,187	217	5,038
Direct City Revenue-Expenditure Ratio	2.28	0.34	0.39	0.10	0.42	0.89	1.18	1.05
Total City Revenues	3,997	4,017	1,801	1,663	2,476	3,719	746	16,490
Total City Expenditures	1,080	3,540	1,369	2,101	1,314	1,668	314	7,027
Total City Revenue-Expenditure Ratio	3.70	1.13	1.32	0.79	1.88	2.23	2.38	2.35

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX III-5

FISCAL IMPACT OF NON-RESIDENT TOURISTS BASED ON ORIGIN (000's)

	Northern California	Southern California	Rest of World
Tourist Days	13,582	4,068	13,624
Total Revenue	$46,078	$26,591	$91,294
State Revenue	34,634	20,567	68,106
County Revenue	1,585	928	3,234
Direct City Revenue	2,716	1,220	5,858
Direct City Expenditure	5,569	1,627	5,586
Direct City Revenue-Expenditure Ratio	0.49	0.75	1.05
Total City Revenues	9,859	5,096	19,953
Total City Expenditures	6,927	2,319	8,174
Total City Revenue-Expenditure Ratio	1.42	2.20	2.44

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX III-6

UTILITY GENERATED PER 1,000 DAYS OF NON-RESIDENT TOURIST ACTIVITY--MAXIMUM VALUE CURVE

Activity	Accommodation	Origin	Utility
Convention	Hotel/Motel	All	202.6
Business	Hotel/Motel	All	198.1
Salt-Water Fishing	Hotel/Motel	All	173.7
All	Hotel/Motel	Rest of World	161.3
All	Hotel/Motel	All	152.7
All	Hotel/Motel	Northern Cali.	152.2
Spectator Sports	Hotel/Motel	All	141.3
Other Outdoor Activities	Hotel/Motel	All	138.1
All	Hotel/Motel	Southern Cali.	130.3
Sightseeing	Hotel/Motel	All	128.6
Salt-Water Fishing	Day-trip	All	126.8
Salt-Water Bathing	Hotel/Motel	All	125.1
Business	All	All	124.4
Other Outdoor Activities	Rental Cottage	All	119.3
Convention	All	All	108.8
Salt-Water Boating	Hotel/Motel	All	107.7
Salt-Water Fishing	Rental Cottage	All	100.3
All	Rental Cottage	All	99.8
Salt-Water Bathing	Rental Cottage	All	93.2
All	All	Rest of World	88.4
Sightseeing	Rental Cottage	All	86.9
All	All	Northern Cali.	86.7
All	Campground	Rest of World	76.3
All	Friend/Relative	Northern Cali.	75.2
Spectator Sports	All	All	74.7
Sightseeing	All	All	74.3
Salt-Water Boating	Campground	All	73.0
Salt-Water Boating	Rental Cottage	All	70.1
Sightseeing	Friend/Relative	All	68.7
Salt-Water Boating	Friend/Relative	All	68.6
All	All	All	68.6

APPENDIX III-6
(Continued)

Activity	Accommodation	Origin	Utility
Salt-Water Fishing	All	All	68.4
Other Outdoor Activities	All	All	68.3
Spectator Sports	Rental Cottage	All	67.8
Salt-Water Bathing	Campground	All	61.3
Spectator Sports	Friend/Relative	All	61.3
All	Rental Cottage	Southern Cali.	60.6
Other Outdoor Activities	Campground	All	60.2
All	Rental Cottage	Rest of World	60.2
Salt-Water Fishing	Campground	All	60.0
All	Campground	All	59.9
Sightseeing	Campground	All	59.7
Spectator Sports	Day-trip	All	58.6
All	Campground	Northern Cali.	55.4
All	Friend/Relative	All	54.0
All	Friend/Relative	Rest of World	51.6
Business	Day-trip	All	50.8
All	Campground	Southern Cali.	45.3
Salt-Water Fishing	Friend/Relative	All	43.9
All	All	Southern Cali.	41.7
All	Friend/Relative	Southern Cali.	39.8
All	Day-trip	Rest of World	36.7
Salt-Water Bathing	All	All	33.7
Salt-Water Bathing	Day-trip	All	30.9
Spectator Sports	Campground	All	27.9
Sightseeing	Day-trip	All	27.4
Other Outdoor Activities	Friend/Relative	All	26.7
All	Day-trip	All	25.2
All	Day-trip	Southern Cali.	24.3
All	Day-trip	Northern Cali.	24.2
Salt-Water Boating	All	All	22.2

APPENDIX III-6
(Continued)

Activity	Accommodation	Origin	Utility
Salt-Water Bathing	Friend/Relative	All	20.1
Convention	Day-trip	All	15.0
Other Outdoor Activities	Day-trip	All	6.8
Salt-Water Boating	Day-trip	All	0.7

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX III-7

UTILITY GENERATED PER 1,000 DAYS OF NON-RESIDENT TOURIST ACTIVITY--MINIMUM VALUE CURVE

Activity	Accommodation	Origin	Utility
Business	Hotel/Motel	All	59.4
Salt-Water Fishing	Hotel/Motel	All	44.9
All	Hotel/Motel	Rest of World	40.7
Other Outdoor Activities	Hotel/Motel	All	37.0
All	Hotel/Motel	All	36.9
Spectator Sports	Hotel/Motel	All	36.6
All	Hotel/Motel	Northern Cali.	36.2
Sightseeing	Hotel/Motel	All	33.6
Salt-Water Bathing	Hotel/Motel	All	32.9
Business	All	All	32.7
Other Outdoor Activities	Rental Cottage	All	32.5
All	Hotel/Motel	Southern Cali.	30.8
Salt-Water Boating	Hotel/Motel	All	26.7
Convention	Hotel/Motel	All	26.4
Salt-Water Fishing	Day-trip	All	25.8
Salt-Water Fishing	Rental Cottage	All	25.6
All	Rental Cottage	All	25.6
Salt-Water Bathing	Rental Cottage	All	23.2
Sightseeing	Rental Cottage	All	21.5
All	All	Rest of World	17.6
Salt-Water Boating	Rental Cottage	All	15.6
All	All	Northern Cali.	15.6
Spectator Sports	Rental Cottage	All	15.5
All	Rental Cottage	Southern Cali.	14.9
All	Rental Cottage	Rest of World	13.9
Sightseeing	All	All	13.7
Spectator Sports	All	All	13.4
All	Campground	Rest of World	12.7
All	Friend/Relative	Northern Cali.	12.6
All	All	All	12.2
Other Outdoor Activities	All	All	12.1

Activity	Accommodation	Origin	Utility
Sightseeing	Friend/Relative	All	11.8
Salt-Water Boating	Friend/Relative	All	11.3
Salt-Water Boating	Campground	All	10.7
Salt-Water Fishing	All	All	9.5
Other Outdoor Activities	Campground	All	9.1
Spectator Sports	Friend/Relative	All	9.0
Salt-Water Bathing	Campground	All	8.3
Sightseeing	Campground	All	8.1
All	Campground	All	8.0
Business	Day-trip	All	6.4
All	Friend/Relative	Rest of World	6.4
Spectator Sports	Day-trip	All	6.3
Salt-Water Fishing	Campground	All	5.6
All	Friend/Relative	All	5.4
All	Campground	Northern Cali.	4.9
All	Day-trip	Rest of World	4.4
All	Campground	Southern Cali.	3.6
Salt-Water Fishing	Friend/Relative	All	2.8
All	Friend/Relative	Southern Cali.	2.1
All	All	Southern Cali.	1.8
Salt-Water Bathing	All	All	0
All	Day-trip	Northern Cali.	-0.2
Salt-Water Bathing	Day-trip	All	-1.4
Sightseeing	Day-trip	All	-1.9
Spectator Sports	Campground	All	-2.3
Other Outdoor Activities	Friend/Relative	All	-2.8
All	Day-trip	All	-4.1
Salt-Water Boating	All	All	-4.2
All	Day-trip	Southern Cali.	-4.6
Salt-Water Bathing	Friend/Relative	All	-4.7
Convention	All	All	-5.4

APPENDIX III-7
(Continued)

Activity	Accommodation	Origin	Utility
Other Outdoor Activities	Day-trip	All	-9.1
Salt-Water Boating	Day-trip	All	-10.9
Convention	Day-trip	All	-36.8

APPENDIX IV

SUPPLEMENTAL TABLES OF RESULTS OF SENSITIVITY ANALYSIS

APPENDIX IV-1

CHANGES IN PROBABILITY AND RELATIVE COST COEFFICIENTS USED IN SENSITIVITY ANALYSIS

	Business	Convention	Vacation Hotel/Motel	Vacation Camping	Vacation Friend/ Relative	Vacation Seasonal Home	Vacation Day-Trip	Resident
Probability of Use								
Community Concourse (operating)	.2	50	.2	.2	.2	.2	.2	.2
Water and Sewage	100	100	100	100	100	100	100	100
CONVIS	100	100	100	100	100	100	100	100
Parks	2	2	15	30	20	20	20	20
Community Concourse (capital)	.2	50	.2	.2	.2	.2	.2	.2
Relative Cost								
Community Concourse (operating)	10	27	10	10	10	10	10	10
Water and Sewage	7	7	7	5	7	10	7	10
CONVIS	5	20	10	5	5	5	5	0
Parks	10	10	10	10	10	10	10	10
Community Concourse (capital)	10	27	10	10	10	10	10	10

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX IV-2

MULTIPLIERS USED FOR PRODUCTION GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (HIGH LEAKAGE ASSUMPTIONS)

TIAC	Production Accruing To: San Diego County	Rest of California	Rest of United States	Total Production Multiplier
1. Hotel, Motel and Tourist Courts	$1.545	$.678	$.277	2.500
2. Camps and Trailer Parks	1.463	.603	.219	2.285
3. Eating and Drinking Places	1.444	.488	.212	2.144
4. Food Stores	1.319	.376	.131	1.827
5. Liquor Stores	1.305	.364	.122	1.791
6. Gasoline Service Stations	1.331	.384	.133	1.848
7. Buses, Taxis	1.465	.585	.208	2.258
8. Tolls	2.129	1.175	.489	3.793
9. Automotive Rental and Leasing	1.430	.688	.247	2.365
10. Automobile Parking Fees	1.477	.728	.274	2.479
11. Air Transportation	1.369	.628	.254	2.251
12. Movie and Theater Admission	1.799	.592	.239	9.629
13. Hunting/Fishing Licenses	2.171	1.208	.507	3.886
14. Bowling Alleys, Billiard and Pool Establishments	1.829	.617	.255	2.701
15. Public and Private Golf Courses	1.886	.663	.279	2.828
16. Professional and Semi-Professional Sports	1.901	.675	.287	2.863
17. Amusement Parks	1.839	.626	.262	2.727

APPENDIX IV-2
(Continued)

TIAC	Production Accruing To; San Diego County	Rest of California	Rest of United States	Total Production Multiplier
18. Horse and Automobile Race Tracks	1.904	.675	.284	2.863
19. Museums, Art Galleries and Zoos	1.525	.566	.231	2.322
20. Amusement and Recreation Services	1.827	.615	.254	2.696
21. Miscellaneous Retail Stores	1.382	.424	.152	1.958
22. Apparel and Accessory Stores	1.377	.419	.148	1.945
23. Personal Services	1.477	.572	.211	2.259
24. Miscellaneous Repair and Business Services	1.676	.905	.340	2.921
25. Telephone Communication	1.297	.317	.131	1.745

Source: ADL Tourism Impact Model.

APPENDIX IV-3

MULTIPLIERS USED FOR WAGE AND SALARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (LOW LEAKAGE ASSUMPTIONS)

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
1. Hotels, Motels and Tourist Courts	$ .504	$.073	$.039	.616
2. Camps and Trailer Parks	.359	.066	.029	.453
3. Eating and Drinking Places	.398	.053	.041	.492
4. Food Stores	.189	.042	.022	.253
5. Liquor Stores	.165	.040	.020	.225
6. Gasoline Service Stations	.208	.042	.017	.267
7. Buses, Taxis	.349	.069	.027	.445
8. Tolls	1.282	.128	.067	1.477
9. Automotive Rental and Leasing	.311	.081	.032	.424
10. Automobile Parking Fees	.391	.085	.035	.511
11. Air Transportation	.281	.111	.050	.442
12. Movie and Theater Admission	.525	.061	.032	.617
13. Hunting/Fishing Licenses	1.346	.131	.070	1.547
14. Bowling Alleys, Billiard and Pool Establishments	.574	.063	.034	.671
15. Public and Private Golf Courses	.654	.068	.046	.768
16. Profesional and Semi-Professional Sports	.687	.069	.039	.795
17. Amusement Parks	.585	.064	.042	.691

APPENDIX IV-3
(Continued)

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
18. Horse and Automobile Race Tracks	.682	.069	.043	.791
19. Museums, Art Galleries and Zoos	.469	.059	.029	.557
20. Amusement and Recreation Services	.567	.063	.037	.667
21. Miscellaneous Retail Stores	.285	.046	.021	.352
22. Apparel and Accessory Stores	.275	.046	.020	.341
23. Personal Services	.390	.062	.028	.480
24. Miscellaneous Repair and Business Services	.561	.102	.047	.710
25. Telephone Communication	.303	.034	.017	.354

Source: ADL Tourism Impact Model.

APPENDIX IV-4

MULTIPLIERS USED FOR WAGE AND SALARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (HIGH LEAKAGE ASSUMPTIONS)

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
1. Hotels, Motels and Tourist Courts	$ .382	$.124	$.093	.599
2. Camps and Trailer Parks	.269	.110	.060	.439
3. Eating and Drinking Places	.304	.085	.086	.475
4. Food Stores	.131	.065	.043	.239
5. Liquor Stores	.112	.063	.038	.213
6. Gasoline Service Stations	.148	.067	.040	.255
7. Buses, Taxis	.270	.108	.051	.429
8. Tolls	1.119	.217	.120	1.456
9. Automotive Rental and Leasing	.205	.133	.073	.411
10. Automobile Parking Fees	.271	.140	.085	.496
11. Air Transportation	.121	.198	.104	.427
12. Movie and Theater Admission	.416	.099	.083	.597
13. Hunting/Fishing Licenses	1.177	.223	.125	1.525
14. Bowling Alleys, Billiard and Pool Establishments	.457	.103	.090	.650
15. Public and Private Golf Courses	.539	.111	.095	.745
16. Professional and Semi-Professional Sports	.559	.113	.098	.771
17. Amusement Parks	4.72	.105	.093	.670

APPENDIX IV-4
(Continued)

TIAC	Wage and Salary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Wage and Salary Income Multiplier
18. Horse and Automobile Race Tracks	.564	.114	.094	.776
19. Museums, Art Galleries and Zoos	.393	.097	.075	.566
20. Amusement and Recreation Services	.454	.103	.090	.647
21. Miscellaneous Retail Stores	.221	.074	.042	.337
22. Apparel and Accessory	.214	.073	.039	.327
23. Personal Services	.306	.102	.057	.465
24. Miscellaneous Repair and Business Services	.441	.161	.087	.689
25. Telephone Communication	.244	.058	.042	.344

Source: ADL Tourism Impact Model

APPENDIX IV-5

MULTIPLIERS USED FOR PROPRIETARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (LOW LEAKAGE ASSUMPTIONS)

TIAC	Proprietary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
1. Hotel, Motel and Tourist Courts	$.081	$.028	$.016	.125
2. Camps and Trailer Parks	.079	.024	.010	.113
3. Eating and Drinking Places	.65	.020	.011	.096
4. Food Stores	.034	.016	.007	.057
5. Liquor Stores	.043	.014	.006	.063
6. Gasoline Service Stations	.038	.019	.015	.072
7. Buses, Taxis	.083	.024	.016	.123
8. Tolls	.067	.048	.027	.143
9. Automotive Rental and Leasing	.050	.025	.034	.109
10. Automobile Parking Fees	.070	.032	.012	.144
11. Air Transportation	.068	.039	.020	.127
12. Movie and Theater Admission	.098	.033	.014	.145
13. Hunting/Fishing Licenses	.070	.050	.028	.148
14. Bowling Alleys, Billiard and Pool Establishments	.110	.025	.013	.148
15. Public and Private Golf Courses	.110	.029	.015	.154
16. Professional and Semi-Professional Sports	.108	.031	.017	.156
17. Amusement Parks	.110	.025	.014	.149

APPENDIX IV-5
(Continued)

TIAC	Proprietary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
18. Horse and Automobile Race Tracks	.108	.032	.016	.156
19. Museums, Art Galleries and Zoos	.092	.023	.011	.126
20. Amusement and Recreation Services	.110	.025	.014	.149
21. Miscellaneous Retail Stores	.054	.019	.009	.082
22. Apparel and Accessory Stores	.064	.019	.008	.091
23. Personal Services	.131	.023	.010	.164
24. Miscellaneous Repair and Business Services	.110	.038	.016	.165
25. Telephone Communication	.030	.202	.007	.239

Source: ADL Tourism Impact Model.

APPENDIX IV-6

MULTIPLIERS USED FOR PROPRIETARY INCOME GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (HIGH LEAKAGE ASSUMPTIONS)

	TIAC	Proprietary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
1.	Hotels, Motels and Tourist Courts	$.049	$.044	$.030	.123
2.	Camps and Trailer Parks	.058	.035	.019	.112
3.	Eating and Drinking Places	.042	.032	.022	.096
4.	Food Stores	.016	.034	.012	.063
5.	Liquor Stores	.028	.021	.012	.061
6.	Gasoline Service Stations	.021	.024	.015	.060
7.	Buses, Taxis	.058	.034	.030	.122
8.	Tolls	.027	.072	.043	.142
9.	Automotive Rental and Leasing	.022	.034	.051	.107
10.	Automobile Parking Fees	.041	.045	.023	.109
11.	Air Transportation	.031	.058	.038	.127
12.	Movie and Theater Admission	.053	.059	.032	.144
13.	Hunting/Fishing Licenses	.028	.074	.045	.148
14.	Bowling Alleys, Billiard and Pool Establishments	.080	.040	.028	.147
15.	Public and Private Golf Courses	.068	.056	.030	.154
16.	Professional and Semi-Professional Sports	.060	.058	.037	.156
17.	Amusement Parks	.080	.040	.029	.149

APPENDIX IV-6
(Continued)

TIAC	Proprietary Income Accruing To: San Diego County	Rest of California	Rest of United States	Total Proprietary Income Multiplier
18. Horse and Automobile Race Tracks	.063	.062	.031	.156
19. Museums, Art Galleries and Zoos	.065	.040	.022	.127
20. Amusement and Recreation Services	.072	.047	.028	.147
21. Miscellaneous Retail Stores	.032	.032	.017	.081
22. Apparel and Accessory Stores	.042	.033	.014	.089
23. Personal Services	.106	.039	.019	.164
24. Miscellaneous Repair and Business Services	.079	.057	.028	.164
25. Telephone Communication	.009	.218	.012	.239

Source: ADL Tourism Impact Model

APPENDIX IV-7

MULTIPLIERS USED FOR WAGE AND SALARY EMPLOYMENT GENERATED PER $1.00 OF EXPENDITURE IN EACH TIAC (LOW LEAKAGE ASSUMPTIONS)

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
1. Hotels, Motels and Tourist Courts	.00119	.00010	.00006	.00136
2. Camps and Trailer Parks	.00083	.00009	.00005	.00097
3. Eating and Drinking Places	.00096	.00007	.00005	.00108
4. Food Stores	.00040	.00006	.00003	.00049
5. Liquor Stores	.00036	.00006	.00003	.00044
6. Gasoline Service Stations	.00048	.00006	.00003	.00057
7. Buses, Taxis	.00084	.00009	.00005	.00098
8. Tolls	.00298	.00017	.00012	.00327
9. Automotive Rental and Leasing	.00072	.00010	.00005	.00087
10. Automobile Parking Fees	.00089	.00011	.00006	.00106
11. Air Transportation	.00083	.00010	.00005	.00098
12. Movie and Theater Admission	.00121	.00008	.00006	.00136
13. Hunting/Fishing Licenses	.00313	.00018	.00012	.00343
14. Bowling Alleys, Billiard and Pool Establishments	.00132	.00009	.00006	.00147
15. Public and Private Golf Courses	.00153	.00009	.00007	.00170
16. Professional and Semi-Professional Sports	.00160	.00010	.00007	.00177
17. Amusement Parks	.00136	.00009	.00006	.00151

APPENDIX IV-7
(Continued)

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
18. Horse and Automobile Race Tracks	.00160	.00010	.00007	.00177
19. Museums, Art Galleries and Zoos	.00115	.00008	.00005	.00129
20. Amusement and Recreation Services	.00131	.00009	.00006	.00146
21. Miscellaneous Retail Stores	.00066	.00006	.00004	.00076
22. Apparel and Accessory Stores	.00066	.00006	.00004	.00076
23. Personal Services	.00101	.00008	.00005	.00114
24. Miscellaneous Repair and Business Services	.00133	.00014	.00008	.00155
25. Telephone Communication	.00123	.00005	.00006	.00133

Source: ADL Tourism Impact Model

APPENDIX IV-8

MULTIPLIERS USED FOR WAGE AND SALARY EMPLOYMENT GENERATED PER $1.00 OF EXPENDIUTRE IN EACH TIAC (HIGH LEAKAGE ASSUMPTIONS)

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
1. Hotels, Motels and Tourist Courts	.00095	.00017	.00018	.00130
2. Camps and Trailer Parks	.00065	.00015	.00013	.00093
3. Eating and Drinking Places	.00077	.00012	.00014	.00103
4. Food Stores	.00032	.00009	.00007	.00048
5. Liquor Stores	.00026	.00009	.00006	.00041
6. Gasoline Service Stations	.00034	.00009	.00007	.00050
7. Buses, Taxis	.00068	.00015	.00013	.00096
8. Tolls	.00254	.00031	.00039	.00324
9. Automotive Rental and Leasing	.00054	.00017	.00012	.00084
10. Automobile Parking Fees	.00067	.00018	.00015	.00100
11. Air Transportation	.00065	.00016	.00013	.00093
12. Movie and Theater Admission	.00100	.00014	.00016	.00130
13. Hunting/Fishing Licenses	.00268	.00031	.00041	.00340
14. Bowling Alleys, Billiard and Pool Establishments	.00107	.00015	.00017	.00140
15. Public and Private Golf Courses	.00128	.00016	.00020	.00164
16. Professional and Semi-Professional Sports	.00133	.00016	.00021	.00170
17. Amusement Parks	.00111	.00015	.00018	.00144

APPENDIX IV-8
(Continued)

TIAC	Man-Months of Employment Accruing To: San Diego County	Rest of California	Rest of United States	Total Employment Multiplier
18. Horse and Automobile Race Tracks	.00134	.00016	.00021	.00171
19. Museums, Art Galleries and Zoos	.00099	.00014	.00017	.00130
20. Amusement and Recreation Services	.00108	.00015	.00017	.00140
21. Miscellaneous Retail Stores	.00054	.00010	.00010	.00074
22. Apparel and Accessory Stores	.00053	.00010	.00010	.00073
23. Personal Services	.00083	.00014	.00015	.00112
24. Miscellaneous Repair and Business Services	.00107	.00022	.00020	.00149
25. Telephone Communication	.00105	.00009	.00017	.00131

Source: ADL Tourism Impact Model

APPENDIX IV-9

ECONOMIC IMPACTS OF NON-RESIDENT TOURISTS DISAGGREGATED BY ACCOMMODATION (LOW EXPENDITURE - HIGH LEAKAGE ASSUMPTIONS) (000s)

	Day-Trip	Hotel/ Motel	Campground	Friend/ Relative	Rental Cottage
Tourist Days	8,616	6,579	799	14,926	354
Direct Expenditure	$ 16,973	$ 106,381	$ 6,168	$ 72,667	$ 5,629
Production	38,323	246,850	12,999	152,535	12,504
San Diego	24,880	159,141	8,810	104,289	8,183
Proprietary Income	2,057	11,820	575	6,740	572
San Diego	980	4,728	246	2,821	210
Wage & Salary Income	7,295	55,477	2,392	30,561	2,562
San Diego	4,600	35,310	1,488	19,448	1,551
Employment (00s Man-Months)	16	120	5	66	6
San Diego	12	89	4	49	4

Source: ADL Tourism Impact Model.

APPENDIX IV-10

FISCAL IMPACTS OF NON-RESIDENT TOURISTS
DISAGGREGATED BY ACCOMMODATION
(LOW EXPENDITURE - HIGH LEAKAGE ASSUMPTIONS)
(000s)

	Day-Trip	Hotel/ Motel	Camp- ground	Friend/ Relative	Rental Cottage	Total
Tourist Days	8,616	6,579	799	14,926	354	31,274
Total Revenue	$ 12,292	$ 50,656	$ 2,869	$ 37,407	$ 2,662	$ 105,886
State Revenue	9,930	37,369	2,168	28,527	2,009	8,003
County Revenue	325	1,610	72	1,289	68	3,364
Direct City Revenue	517	3,947	176	2,392	163	7,195
Direct City Expenditures	3,619	3,290	264	6,269	120	13,562
Direct City Revenue Expenditure Ratio	.14	1.20	0.67	0.38	1.36	0.53
Total City Revenue	2,037	11,676	628	7,591	585	22,517
Total City Expenditures	3,791	4,737	320	7,164	184	16,196
Total City Revenues Expenditure Ratio	.54	2.46	1.96	1.06	3.18	1.39

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

APPENDIX IV-11

ECONOMIC IMPACT OF NON-RESIDENT TOURISTS BASED ON ACCOMMODATION (HIGH EXPENDITURE - LOW LEAKAGE ASSUMPTIONS) (000s)

	Day-Trip	Hotel/ Motel	Camp- Ground	Friend/ Relative	Rental Cottage	Total
Tourist Days	8,616	6,579	799	14,926	354	31,274
Direct Expenditure	$ 68,239	213,225	9,876	176,873	6,099	474,312
Total Production	$145,375	482,403	21,139	378,886	13,460	1,041,263
San Diego	116,990	37,683	16,796	303,316	10,564	824,447
Proprietary Income	7,237	24,027	969	17,575	624	50,432
San Diego	4,540	14,930	639	11,622	393	32,126
Wage & Salary Income	30,633	108,576	4,229	80,126	2,897	226,461
San Diego	24,958	86,762	3,382	69,864	2,300	182,266
Employment (000s of man-months)	69	240	9	176	6	500
San Diego	61	210	8	154	5	438

Source: Based upon Arthur D. Little, Inc., Tourism Impact Study for the City of San Diego, Spring, 1974.

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