ESTIMATION OF EXCURSIONIST TOURISTS IN THE CITY OF VENICE

AN INTERACTIVE QUALIFYING PROJECT
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Abstract

Venice is one of the most visited cities in the world. About 11 million tourists go there every year. Because Venice has a limited amount of space and hotel prices are also relatively expensive, many tourists spend only the day and leave at night. The number of this kind of tourist, excursionists, is not known. In an attempt to estimate the yearly number of excursionists in Venice, this project was completed at WPI's Venice Project Center for the Azienda di Promozione Turistica (APT), which is responsible for the management of tourist flow in the entire Venetian Lagoon.

Such an estimation, and the process behind it, is of extreme relevance and importance for the APT and the city of Venice. The estimate of yearly excursionist presences can not only be used by the tourism industry now as a planning aid, but also the procedures for distinguishing excursionists and the primary counting locations delineated in this project can be used as proven methods to determine the number of excursionists that enter Venice at a future date. Using all of this information together and actively addressing the tourist phenomenon as soon as possible can only benefit Venice in the future.

It was decided that excursionists counts were to be conducted at the principal sites of access to Venice, including a train station, two bus terminals, and many boat stops. Once the selection of these primary access points was established, the group developed and tested a methodology for visually identifying excursionists. For each of these locations, continuous counts were conducted on both a weekday and a weekend day.

After data collection had been completed, the counts from the two days at each location were extrapolated to a weekly basis using the daily proportions of excursionist

influx from the weeklong count at the Santa Lucia train station. The numbers were then extrapolated to a monthly basis using information on hotel occupancy acquired from the APT. The yearly estimate was obtained by adding the monthly extrapolations; the result was an estimation of over 6 million excursionist entrances/presences yearly in the city of Venice, including the Lido.

Due to the limited time and resources available to the group, the main sources of error in this yearly estimate were in the very nature of the extrapolations because they are, by nature, inexact. An additional source of error was the inevitable omission of counting during important festival events that occur throughout the entire year. However, more important than the estimation itself is the reliable methodology developed and provided to the APT for future, more accurate estimates using greater human resources and more time.

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1 Introduction

Tourism is a powerful force that is often not given enough consideration during the evaluation of an area for future urban planning. For the most part, tourism is perceived as a boon to the economy, though it can also be considered a bane when it degrades the quality of life for those who live in the area. For the former to occur, appropriate investments have to be made in such areas as infrastructure, accommodations, transportation, attractions, and, of course, promotion. While many tourist sites struggle to promote themselves in order to fill their capacity and compete with their peers, Venice has over 7 million tourists coming in every year, to the point of overcrowding.

According to Jurowski, Uysal and Williams, individuals who gain from tourism should view its impacts more positively and should lend it more support. Individuals who utilize the same resources as tourists may or may not view tourism positively depending how an influx of tourists affects their usage of those resources. In the case of Venice, one can say that even the tourists do not like the overbearing presence of tourists, let alone the residents' view of them. Furthermore, a joint study by the UNESCO Regional Office for Science and Technology for Europe (ROSTE) and the International Center of Studies on the Tourist Economy (CISET) of the University of Venice revealed that Venice's volume of tourist flow (in 1991) might damage the city's cultural and historic heritage. There is also the fear that tourism might "crowd out" other urban functions in Venice.

This study by UNESCO ROSTE and CISET of the University of Venice tells us that overnight visitors spend much more on a daily basis than excursionists (shoppers excluded). Thus, excursionists cost more to the host and spend less.

Given the possible negative effects of tourism mentioned above, it is obvious that strategic planning by the local tourism organization (the Tourist Board of Venice) is needed because every tourist locality has a life cycle, and what makes the city undesirable to tourists after time are the accumulated effects of years of tourism. Excursionists play a major role in reducing the popularity of a tourist locality.

For the APT (Azienda di Promozione Turistica) to make any plans regarding the future of tourism in Venice, it needs to know how many excursionist tourists visit Venice every year. While it is easy to acquire sufficiently accurate estimates of residential tourists, it is extremely hard to estimate the number of excursionists. This is where this project, Estimation of Excursionist Tourists In the City of Venice, derives its motivation. By producing an accurate estimation of excursionists, this project will aid the APT in its strategic planning process and help alleviate the problems Venice is experiencing with tourist flow in the near future. Following this ideal, this type of study could be used toward a variety of ends, the most probable being a range of impact studies intended to assess environmental costs such as noise, congestion, pollution, destruction of aquatic life, and degradation of landscape and of historic sites and monuments. Similarly, there are also social and cultural impacts of tourism on safety levels, moral conduct, value systems, traditional ceremonies, and community organizations that should be taken into consideration.

There are no easy solutions to these problems; however, a solid estimate of how many tourists visit Venice and what they do while they are there will provide an idea as to whether Venice is approaching a steady state of decay or is getting better. We are confident that the APT and the city of Venice will benefit from the successful completion

of our project. One could even argue that the world would benefit from our project as well because it would allow preventative measures to be taken against the destruction of the city's historical and cultural heritage. Venice, after all, is one of the treasures of humanity.

The rationale behind a tourist's decision to plan a day trip rather than a full stay falls under one of two major categories: the tourist does not have enough money to spend the night in an expensive, prime-location hotel, or the tourist considers the site of marginal importance and has fallen victim to the mentality of efficiency, which dictates that faster is better and raises quantity over quality. The latter category is of broad importance, as the first is purely logistical and can't be helped. A natural inclination when planning a trip is to maximize the enjoyment of the trip; however, society dictates the necessity of doing and experiencing as much as possible in the shortest time so that leisure time can be spent relaxing. Interestingly, vacation plans are often the most hectic of all and often lead to disappointment on the part of the vacationers because they could not do and see everything they wanted to in the given time. The travelers are, in essence, setting themselves up for psychological failure before they even embark on the journey. Furthermore, many of those who have what they deem "insufficient funds" have merely done a calculation and realized that efficiency has lost out to leisure. A significant portion of the day-trippers to Venice fall easily under this category, and they are most certainly the ones attempting to maximize efficiency at the cost of all else and unknowingly contributing to the overall degradation and mounting superficiality of what is left of the Most Serene Republic.

Bearing all of these arguments in mind, all of the main goals will best be served by completing the project as thoroughly, accurately, and unobtrusively as possible; this way, Venice will get the most benefit from the project with minimal social side effects.

2 Executive Summary

Tourism is a powerful force that is often not given enough consideration during the evaluation of an area for future urban planning. For the most part, tourism is perceived as a boon to the economy, though it can also be considered a bane when it degrades the quality of life for those who live in the area. The Azienda di Promozione Turistica di Venezia (APT) is the agency responsible for the promotion of tourism in Venice, Italy. The APT sponsored the Worcester Polytechnic Institute (WPI) project group to conduct estimates regarding excursionist tourists – the subset of tourists who do not spend the night during their stay in the city.

Venice is a popular tourist site. Prior estimates indicated that it is visited by 11 million tourists every year; however, it is uncertain how many of these tourists are excursionists. The goal of the project was to develop a solid methodology to provide the most accurate estimate of excursionist tourists in the city of Venice given the available resources.

The APT will be able to put this data to many uses. For example, a few extremely popular areas of Venice, such as Saint Mark's Square and the Rialto bridge, experience overwhelming excursionist congestion daily. Venice, unlike many other European cities, is a city completely interesting to the tourist; the city has remained intact since it was built over a period of more than one thousand years. Therefore, the APT is working on

solutions to the problem of tourist congestion by attempting to understand the current dynamics of excursionist flows and perhaps rerouting them through various itineraries that would help to divert tourists from the most popular city areas.

Conducting a census for an entire year of all who enter the city of Venice to identify excursionists would be the best solution; however, there are realistic limitations, such as limited resources, that disallow this ideal technique. The project group proposed to count excursionists at selected points of access to Venice during the timeframe of the project and to extrapolate the estimate of the number of excursionists for the year using information on tourist arrivals and overnight stays provided by the APT.

The project team consulted with the APT to determine all of the significant excursionists access points to the city of Venice. The development of the methodology continued with the project group identifying the primary sites of excursionist access by observation and test counts. The project team decided to count at all of the major access points and to test the minor entry points to ascertain their significance. The primary points decided upon were the Tronchetto tour bus lot, the Piazzale Roma bus stop and car park, the Santa Lucia train station, the Bacino di San Marco docks, the Punta Sabbioni boat stop, and the Zattere/Fusina boat line.

The project continued with the definition and development of guidelines to differentiate excursionists from residential tourists and locals. The group developed a system of visual differentiation of tourists from locals and excursionists from tourists which was continuously confirmed and updated by short interviews. Several characteristics of locals, tourists, and excursionists were proposed and separated into

three major categories: dress, accessories and demeanor. This method yielded a correct identification 95% of the time.

Although each counting site had its own unique requirements, the counts were all conducted in a similar manner. One weekday and weekend day were dedicated to each location, and the counts spanned continuously from the hour of 8.00 to the hour of 16.00, with partial results recorded every 15 minutes.

The project group chose the counting time window of 8.00 to 16.00 for several reasons. First, the excursionists flow before and after this window was negligible. Second, counting after 16.00 introduced unacceptable levels of uncertainty as to whether the excursionist counted was arriving for the first time or was returning from an excursion somewhere else outside of Venice.

A weekday and weekend day were devoted to each counting location to assure that excursionist flow during the week and weekend were both accounted for. Excursionist flow was suspected and confirmed to increase on weekends. These two counting days were used as the basis for extrapolation to the week, month, and, combined with hotel reservation data, the year.

The raw data was then assembled and analyzed to facilitate extrapolation. The proportions (of the whole) of excursionist arrivals at the six primary locations are as follows: Tronchetto: 34%, Bacino di San Marco: 21%, Santa Lucia: 16%, Piazzale Roma: 15%, Punta Sabbioni: 9%, Zattere: 5%. The overall weight of the minor transit points to Venice, which are San Giuliano and transit line 11 from Chioggia, were deemed to be insignificant by testing as they constituted less than 0.6% together of the daily average

from the six primary counting locations. They were therefore eliminated from the extrapolation.

To extrapolate the number of excursionists from the weekend day and weekday to a full week, information on weekly excursionist flow was needed. This information was acquired by making three-hour counts on every single day for a week at the Santa Lucia train station. It was assumed that the excursionist flow at the peak hours of 10 AM to 1PM at the train station would represent the flow of all other counting locations.

The weekly estimate was then multiplied by 8.71 (the number of weeks in June and July together) to approximate the number of excursionists for June and July. From the residential tourist information provided by the APT, the group extrapolated the ratio of tourist inflow in June and July to the whole year. Multiplying this ratio with the two-month estimate gave a yearly estimate of 6.17 million excursionists per year, or about 17 thousand per day, close to the expectations of the APT. The estimated yearly tourist load for 1999, with an additional 3.96 million residential tourist presences added to the 6.17 million excursionist presences, is around 10.13 million tourist presences. Thus, the total daily load of tourists in Venice is, on average, 28,000 tourist presences. This is a considerable number of tourists given that Venice's current population is only around 60,000 people.

While this estimate was the primary focus of this project, it soon became apparent that how it was arrived at would be more useful in the long run and therefore more important. The worth of the project was evident in the methods used to visually distinguish and physically count excursionists. Therefore, the project group recommended an estimation procedure to guide future studies throughout the year be

conducted with more time and resources than the project team had for the two months during which the project was completed. This procedure must satisfy several requirements. The monthly variation of excursionist flow must be established so that yearly estimates will no longer have to rely upon hotel occupancy data to extrapolate the number of excursionists for each month. Also, the excursionist flow during festivals will have to be established by counting at each major festival of the year. Several conditions that could also effect excursionist flow, such as international incidents and the significance of weather, should be assessed and their significance established. The project group also recommends that this project's visual identification methods be modified to include seasonal variation.

In order for the project methodology to be effective in the future, the counters must be trained and tested in a manner similar to the project group. The project group concludes by proposing a sample yearlong estimation procedure, which can be found in Section 8.7.

3 Background

Venice has long been a popular tourist destination. The population of Venice is about 67,000[1] with an average age of 46 years[2]. It is estimated that around eleven million tourists, both residential and excursionist, visit Venice each year[3], stimulating the economy by spending the night at various hotels located throughout Venice proper. On the other hand, there are those tourists who come to Venice for a day visit. It is said that most of these excursionists undertake such day trips for economic reasons since Venice is known to be a very expensive city to stay in. The number of excursionists who visit Venice in a year is unknown although rough estimates say it is around seven million. Therefore, the Tourism Board of Venice (APT) has sponsored a project to estimate the number of excursionists who visit Venice in a year.

3.1 Tourism in General

During the past ten years, tourism has been increasing throughout Europe. It has been observed that today's tourism is going through the process of massification and standardization, making the practice of tourism easier and cheaper. The increase in tourism over the past years is a result of social and cultural factors such as the history of the locality and its traditions, culture, and inhabitants. Many cities in Europe are known for their rich history, culture, and art[4]. Venice, Rome, and Paris are examples of the ones most targeted by tourists, and as a result are the ones most visited.

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[1] Data published in a newspaper on 9/7/1999
[2] Venice Knopf Guide, 1996 pg 390
[3] Mara Manente, Laura Andreatta. CISET, Il Fatturato del Turismo nel Centro Storico di Venezia, 1998 pg 15
[4] J. van der Borg. Technical Report 23, Alternative Tourism Routes in Cities of Art, 1994

3.1.1 Types of Tourism

According to the United Nations Education, Science, and Culture Organization (UNESCO), there are three main types of tourism, which are described below.

3.1.1.1 Business Tourism

Business tourism depends on the social-economic status of the city; in other words, it is the tourism done in cities where there is a high level of business and business related activity.

3.1.1.2 Congress Tourism

This type of tourism reflects the prestige and reputation of a city. These are the cities that are chosen to host special events because they posses some quality that other cities do not.

3.1.1.3 Leisure-Motivated Urban Tourism

This is the tourism that depends on the quality of the tourism product. This type of tourism distinguishes one city from another on the basis of its typical characteristics.

According to the COSES (Consorzio per la Ricerca e la Formazione) report Stima della pressione turistica e recreativa in laguna di Venezia, this kind of tourism can be further subdivided into two categories.

Local Recreational Tourism: This is the tourism that is practiced by the local population and those from surrounding regions.

Cultural Tourism: This is the tourism practiced by people from other states and countries who intend to observe the city's history and culture.

3.1.2 Types of Tourists

Tourists, for the purposes of this project, are travelers who visit a city with no intent of conducting business. The general population of tourists has been divided into two categories: excursionists (day-trippers) and residential tourists.

Excursionists: Excursionists, or day-trippers, are the tourists who will spend some time during the day visiting the city and will then leave to sleep elsewhere.

Residential Tourists: Residential tourists are categorized as those who spend at least one night in the city being visited.

3.1.3 Economic Issues and Problems Created by Tourism

The tourism industry, with its yearly increasing numbers, raises several economic concerns and creates numerous problems in the cities being visited by tourists. Of all of the issues and problems that can be listed, there are three that will be discussed here: market saturation, the relationship between residents and non-residents, and change in the economic balance of a city due to tourism.

3.1.3.1 Market Saturation

As the tourism market increases, the resources of the city being visited are overused. This results in the saturation of the market, which leads to unavailability of hotel beds and overpopulation of the better-known historical sights, streets, restaurants, and transportation. Also, the law of supply and demand explains another important impact caused by the saturation of the market. The lesser the supply of tourist related goods, the

more expensive a city gets; for this reason, cities that have a high tourist influx are known to be expensive.

3.1.3.2 Relationship Between Residents and Non-residents

In cities where tourism plays an important role, it is known that tourists and residents often do not have a good relationship. Tourists overpopulate the streets, markets, and transportation and do not respect the residents and their way of living. Besides, once tourism becomes very important, the city focus turns to the tourists instead of the residents, which, in other words, means that more services are created for the tourists and fewer facilities are given to the residents. The presence of tourists also increases prices, so residing in heavily touristed cities is quite expensive. Because of these factors, the relationship between residents and non-residents is unhealthy, which attracts the concern of the local population and government.

3.1.3.3 Change in the Economic Settings of a City Due to Tourism

This is the most important consequence that results from tourism. Once tourism starts playing an important role in a city, it starts to influence the economic settings of that city, becoming a major part of the local economy. This results in a shift of the market towards tourism, which harms business for the local inhabitants. In some extreme cases, the whole economy becomes dependent on tourism, creating even more problems for the local inhabitants.

3.2 Venetian Tourism

Over the past years, the influx of tourists in Venice has been constantly increasing. The richness of what Venice has to offer can not be described in detail. Tourists are interested

in the city as a whole. With its constant restorations, and with international interventions to maintain the urban fabric, the historical center of Venice has been well conserved over time. Today, Venice possesses the best of what European architecture has to offer from the past ten centuries and houses an infinite amount of monuments and art which are located throughout the entire city. Though Venice has large numbers of sights to be seen, tourists concentrate themselves in two places: the Piazza di San Marco and the Rialto Bridge.

However, Venice is not only known for its art and architecture. Today, Venice hosts many exhibits, such as the Biennale, and many festivities, such as Carnevale and the Redentore, which only add to the number of tourists visiting the island.

3.2.1 Means of Arrival into Venice

One might think that since Venice is an island, there are limited ways to arrive there. This statement is wrong since Venice can be reached by almost any means of transportation. Of all of the imaginable ways of arriving into Venice, the ones described below are the most common:

Public Transportation Line (ACTV)- These are the public boats that go all around the Venetian lagoon.

Public Transportation (not part of ACTV)- These are the private boats that have daily schedules to many points in the lagoon.

Private Transportation – These are the tourism boats and taxi boats that are rented to go anywhere in the lagoon.

Cars – Car parks are provided at Piazzale Roma and Tronchetto.

Bus – There are public buses that stop at Piazzale Roma and tourism buses that stop at Tronchetto.

Train – There is a train station in Venice, the Santa Lucia train station.

3.3 Points of Entry into Venice

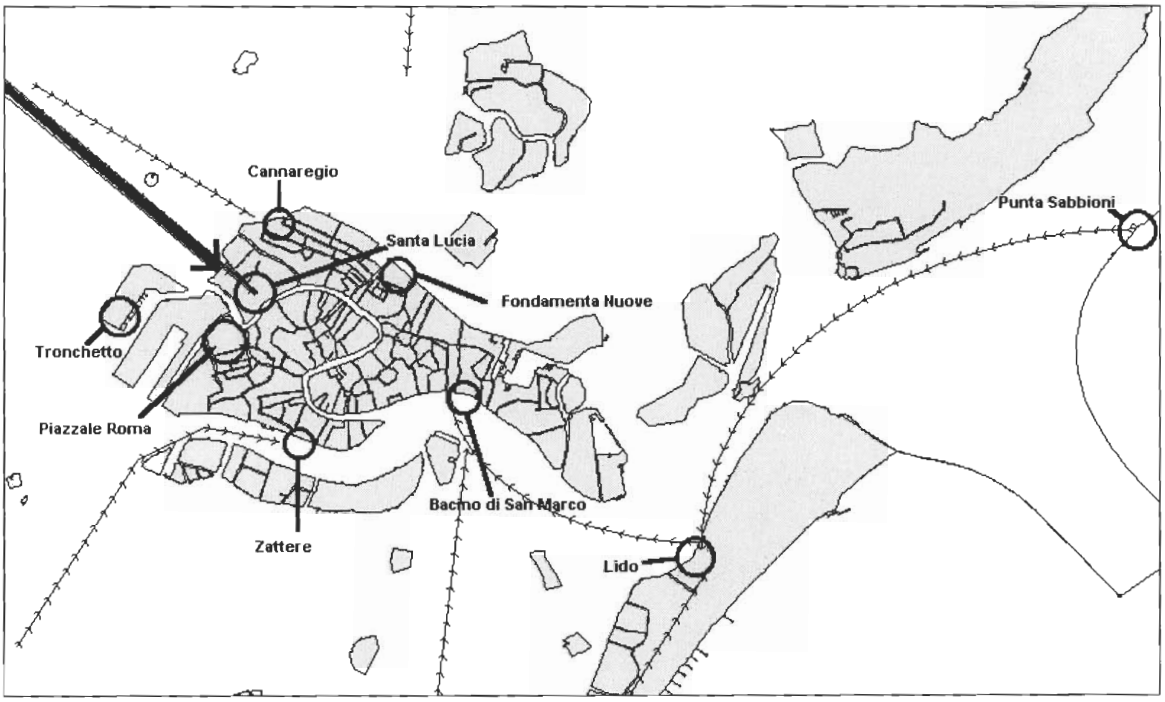


Figure 1: Point of Entry into Venice

Venice, being an island, has a limited number of entry points. The majority of visitors who enter Venice for the specific purpose of tourism arrive by bus at the Piazzale Roma or Tronchetto or by train at Santa Lucia, and all are connected from the mainland to Venice by the Ponte della Liberta. Another important entry point is the Bacino di San Marco, where boats drop off tourists coming from many points on the Litorale Sud, including Chioggia, and the Litorale Nord, including Punta Sabbioni. The Marco Polo Airport is another important location since many resident tourists arrive by plane. Although it is an entry point to the Venetian lagoon, it is not considered an entry point to

Venice since once tourists arrive at the airport, they must employ another method of transportation in order to get to Venice. There are some minor entry points that should be considered as well. Chioggia is served by bus line 11 through the Lido and a boat line that stops near San Marco once a day. There is also the Fondamente Nuove boat stop, the Fusina boat that stops at the Zattere, and also the illegal boats from San Giuliano that stop around the Canereggio Canale. All of these entry points into Venice will be discussed individually and in further detail in the Methodology section.

3.3.1 Azienda di Promozione Turistica di Venezia

Any Azienda di Promozione Turistica has as its main goal to promote and further the tourism movement. Such a goal is achieved by giving assistance to tourists, distributing informational material, valuating the tourist resources, and presenting data on the tourist movement to the community. All of the rules and laws that need to be followed by an Azienda di Promozione Turistica are in the Appendix F. Not being different from any Azienda di Promozione Turistica, Azienda di Promozione Turistica di Venezia practices the same activities.

3.3.2 Cultural Tourism

The cultural tourists focus on visiting the ancient city to witness its monuments, art, and architecture. These types of tourists usually come to Venice via public and tourist specific transportation, which were discussed in the section 3.2.1.

During the past few years, there has been an increase of excursionists, as well as residential tourists, in Venice, and some studies say that the ratio of excursionists to

residential tourists is about 60 to 40 or 65 to 35. But there are no assured data or detailed studies on this matter.

Today, there are much talk about the Jubilee Year, but the Venetians themselves do not know what to expect from the tourists in terms of numbers of arrival.

What is known for sure is that Venice, having a rich history, is constantly visited by excursionists and residential tourists and tourism has been increasing and will probably continue into the foreseeable future.

3.3.3 Recreational Tourism

Recreational tourism in the lagoon is provided for local Venetian inhabitants and involves water sports, hunting and fishing, walking, bicycle riding, and environmental tourism. In order to provide a good estimate of such tourists, a previous survey examined the numbers of tourists involved in activities occurring in the lagoon. Several major categories of activities were studied and their tourist population counted. This study was done by COSES on recreational tourism with the intent of quantifying the number of tourists present in Venice for this matter. (The following categories are not part of the official tourism industry since they are recreational.).

Navigation of "Pleasure Craft"- This form of tourism is a favorite of the locals. It involves jet skis, windsurfing, etc. In order to come up with a number, Millich used the data collected previously by another organization; around 10,000 people per day take to the water.

Hunting and Fishing - These are traditional Italian activities. It is not possible to come up with a good number; however, the estimated number of licenses given per season is 31,800.

Environmental Trips - A new incarnation of tourism that covers routes of environmental interest. No estimate was available for the number of tourists.

3.4 Past Studies on Venetian Tourism

Not many studies can be found either under the heading of Venetian tourism or excursionist tourism in the city of Venice. During the research phase of the project, some studies were found that is worth mentioning its contents.

This document, "The Visitors of Venice", is a study done by a partnership between CISET (Centro Internazionale di Studi sull'Economia Turistica) and Universita di Venezia during the years of 1989 to 1992. It is based in a survey of tourists in Piazza San Marco from August 1989 to July 1990. The full document will be in Appendix E. The methodology allowed the measurement of the flow of visitors to the Centro Storico per month and per year. The result that is relevant to this project is that the results of the survey pointed a ratio of excursionists to residential tourists, respectively, of 60% to 40%.

The second document found is a report from CISET on the tourist spending in Venice's historical center. Mara Manente and Laura Andreatta wrote the report. The importance of this report is that some relevant data, with information on excursionists and overall tourism, were given for the years of 1994-1996. The study will be in Appendix E. The latest numbers given were from 1996, when it was estimated that 7,397,905 excursionists entered Venice giving a ratio, when compared to excursionists, of 70% to 30%, respectively.

Another two important pieces of information were taken from reports 20, The impact of Tourism and Visitors Flow Management, and 23, Alternative Tourism routes in cities of art, from ROSTE (Regional Office for Science and Technology for Europe).

Information on excursionists and future estimations were given. Parts of these reports will be found in Appendix E. According to report 20, there were about 5,946,844 excursionists entering Venice in 1992. Report 23 made an estimation for the year 2000, which concluded that there would be about 6.2 million excursionists entering Venice during that year.

Besides these documents, other important information, given by APT, was the hotel data for 1997 and 1998, which will be in Appendix E. Such data is of importance for this project since the extrapolations are based on that data.

4 Literature Review

Millich, Federica. *Stima Della Presionne Turistica e Recreativa in Laguna di Venezia.* Coses-Comune di Venezia. Consorzio per la Ricerca e la Formazione. Feb. 1999.

This document translated from Italian, talks about the tourist movement in the Venetian Lagoon. There are no official studies related to this matter, and there is no way to produce exact numbers. Therefore, the best way to come up with such numbers is to estimate. In Venice, there are two kinds of tourists: the recreational tourists and the cultural tourists. The cultural tourists visit Venice to see the monuments. They usually come to Venice in two ways: by tourism transportation, or by the normal public transportation that goes to Venice all of the time. Recreational tourism is more of a local thing, and people practice water sports, hunting and fishing, walking, bicycle riding, or even environmental tourism. In order to have a good estimate of tourists in the Venetian Lagoon, Millich looked at the activities that took place there.

Fodness, Dale and Murray, Brian. "A Typology of Tourist Information Search Strategies." *Journal of Travel Research.* Nov. 1998.

A survey conducted in 1990 to find the sources that tourists use for vacation planning was. The survey was set up at a welcome center in Florida, where the travelers would fill out questionnaires which included their names and addresses. After these addresses were gathered, one thousand surveys were randomly sent to a sample of approximately 1800 visitors. The data were then collected with the results of the questionnaires that were returned. Three methods of analysis were used with the data

collected: univariate and interchange matrix results, multidimensional scaling results, and cluster analysis results. Although the respondents of the survey were "real-world" travelers, the assumption cannot be made that those involved in the survey represent the "real-world" due to the fact that only travelers who stopped at the one welcome center were questioned. Regardless of the limitations presented by the set up of the survey, some significant implications could be obtained from the biased survey; furthermore, this information was later supported by other surveys conducted in other areas.

Clements, Mike. "Planning to tourism capacity in a crisis." *Journal of Travel Research.* Aug. 1998.

During the 1970s, the Republic of Cyprus began to implement a plan to develop its tourism industry. The result was a very successful source of income to the island. The tourism industry maintained growth in the number of visitors albeit the low numbers of other tourist areas competing in the same region. During the mid-1990s, a decline in the numbers of tourists that visited Cyprus occurred. Due to the country's dependence on tourism, the local economy was directly affected by the weakened tourism industry. Many speculate that the decline was directly related to the over-dependence on UK tourists, who were visiting less on account of the UK's economy. Another cause is attributed to the higher prices used to reinforce the status of the tourist destination; however, the higher prices are no longer acceptable as bad service, uncontrolled growth, and decline in quality has plagued Cyprus's tourism industry. The goal for the Central Tourism Organization (CTO) for the future is to raise standards, tap into new sources of

tourists, and avoid meeting limits during high seasons by marketing for a uniform flow of tourists yearlong.

Crompton, John L. and Ap, John. "Developing and testing a tourism impact scale." *Journal of Travel Research.* Nov. 1998.

Ap and Crompton developed a 35-item tourism impact scale. It was derived from an initial pool of 147 impact items drawn from personal interviews and the literature, and was refined using classical scale-development procedures. The scale is comprised of seven domains: social and cultural; economic; crowding and congestion; environmental; services; taxes; and community attitudes. Tourism has been the target of varying sentiment over the years, with the latest being a neutral position from the residents of tourist areas. Testing was done on three independent communities. "It has been said that tourism is 'a goose that not only lays a golden egg, but also fouls it's own nest.'"

Fodness, Dale and Murray, Brian. "A model of tourist information search behavior." *Journal of Travel Research.* Feb. 1999.

"Tourist information search strategies were found to be the result of a dynamic process in which travelers used various types and amounts of information sources to respond to internal and external contingencies and vacation planning (1)." A model is developed that is composed of the following (1):

1. Tourist information search strategies
2. Search contingencies
3. Tourist characteristics

4. Search outcomes

Empirical support was provided for the idea that "leisure travelers could be classified into homogenous groups on the basis of their information search strategies, which were defined by the unique combination of sources used to plan their trips (3)."

Glock, Charles Y, ed. "Survey Design and Analysis in Sociology." *Survey Research in the Social Sciences*. New York: Russell Sage Foundation, 1967

. The chapter is an attempt to "codify the uses to which surveys may be put in sociological research within what are considered to be principal variations in survey designs (3)." It begins with the cross-sectional survey and moves through various types of surveys to finish with trend studies. The chapter is designed to be a thorough overview of the various methods used for surveys and their analysis; however, sampling problems and the advanced use of statistics have been omitted. There is heavy use of tables and inter-table relationships, such as time-ordered and time-bound association.

The Grand Canal. "In Microsoft Expedia 360° Tours [online]." Available: http://expedia.msn.com/daily/360/venice/ [1999, April 12].

A 360° tour from a gondola in the Grand Canal is given, with a short explanation for each item. The user then has the option to book this trip. The areas mentioned are:

1. Rialto Bridge

2. A gondola ride

3. The *traghetti*, which are small gondolas whose sole function is to ferry people from one side of the grand canal to the other.

4. To see the palaces that flank the Grand Canal, take a *vaporetto* (water bus) number 1 from the railway station to San Zaccaria, a church near the Piazza San Marco.

5. To eat, go to the Riva del Vin, on the western side of the Rialto bridge. This quay is lined with wine bars, sidewalk cafes, and restaurants.

6. From the western end of the Rialto Bridge, a short walk will land one in the Pescheria and the Erberia, Venice's main fish and fruit markets, respectively. Activity is over by noon.

Also mentioned are the Fenice district west of St. Mark's Square, the Rio di Palazzo Canal, the Naval Museum, Squero di San Trovaso (in the Dosudoro district), Cafe Florian (on Rio San Trovaso) , and the restaurants Al Gondolieri and the Taverna San Trovaso.

van der Borg, Jan; Gotti Giusseppe. *Tourism and Cities of Art.* Venice, Italy: UNESCO ROSTE , 1995.

One of the most important publications was the book *Tourism and Cities of Art* by van der Borg and Gotti. It is a joint effort of the UNESCO Regional Office for Science and Technology for Europe (ROSTE) and the University of Venice's International Center of Studies on the Tourist Economy. The book presents information gathered about the impact of tourism and visitor flow management in seven heritage cities in Europe and the conclusions drawn from that data.

Of particular use was the introductory chapter, the chapter about the city of Venice, and the last chapter, which was a synthesis of the information from all seven cities. The book indicates that 55% of the tourists in Venice in 1991 were day-trippers (excursionists).

While this information is outdated, it still gives us a fair idea of what to expect for today's numbers, since the book also predicts an increase in excursionists due to the limited and fixed supply of beds in Venice. The book also mentions that there is a possibility that the present volume of visitor flow to Venice might endanger the cultural and historic heritage the city possesses.

Mathieson, Alister; Wall, Geoffrey. *Tourism: economic, physical and social impacts*. New York, New York: Longman Group Limited, 1982.

This work addresses the impacts of tourism on destination areas. It also criticizes the approaches and methods frequently employed in tourist impact research. Most importantly, it states that "the continued expansion of tourism at its present rate and in its existing form is not a desirable phenomenon in most destination areas."

Formica, Sandro; Uysal, Muzaffer. "Market segmentation of an international cultural event in Italy." *Journal of Travel Research*. Spring 1998.

This article explores the existing markets of a unique annual event. Although the subject itself was not directly relevant, the article was useful to us in that it presented the

methodology used in conducting research for the article. The methodology presented reinforced our decision to use the on-site intercept procedure for surveying.

Smith, Stanley K. "How to tally temporary populations." *American Demographics*. July 1987.

"How to tally temporary populations" comments on the difficulties and benefits of measuring temporary populations (such as tourists). It made us aware of the case of Hawaii, which has been keeping records of its temporary residents since 1951 and therefore has an incredible quantity of data, and even more importantly, it has experience in collecting such data.

Chu, Fong-Lin. "Forecasting tourist arrivals: Nonlinear sine wave or ARIMA?." *Journal of Travel Research*. Winter 1998.

While ways of forecasting tourist arrivals is not our primary concern, the importance of forecasting itself is. This article addresses that issue and thus stresses the importance of estimating the number of day-trippers in Venice.

Jurowski, Claudia; Uysal, Muzaffer; Williams, Daniel R. "A theoretical analysis of host community reactions to tourism." *Journal of Travel Research*. Fall 1997.

This article discusses resident reactions to tourism in the context of a theoretical paradigm based on the principals of social exchange theory. While the article and the

research study pertain to a different case than ours, general conclusions about resident reactions and the discussion of survey methodology was helpful.

5 Methodology

The most accurate way to determine the number of excursionists in a year would be to monitor all entry points simultaneously; however, it is clearly impossible to measure the exact number of tourists that enter Venice and, especially, those tourists who will not spend the night. A complete census would require all points of ingress to be covered for the entire year as well as having all entering persons interviewed to determine their overnight plans. This method is obviously not realistically feasible. Therefore, reasonably accurate estimation by sampling is unavoidable, and the possible errors introduced by defining and measuring the sample must be identified and minimized to the greatest extent possible.

The proposed method for estimation was to count excursionists at all of the relevant entry points to the city of Venice during the project's timeframe. Statistics about overnight tourists from previous years would then be applied to the entry point counts to determine the current year's tourist influx. The counts would be based on visual identification to avoid interviewing each individual entering the city's boundaries.

Prior to undertaking any counting or collecting any data, the group identified the primary tourist transit sites in and around Venice and then defined and developed guidelines to differentiate excursionists from residential tourists. Tests to validate the project team's methods for the visual identification of tourists and the project team's counting procedures were conducted to develop a solid scientific methodology.

5.1 An Overview of the Tourist Transit In and Around Venice

The task of the project was to count the number of excursionist tourists entering Venice proper. All of the means of tourist transit were identified and carefully examined in order to include all of the relevant excursionist entry points in the count. Figure 2 illustrates the main means of arrival to Venice.

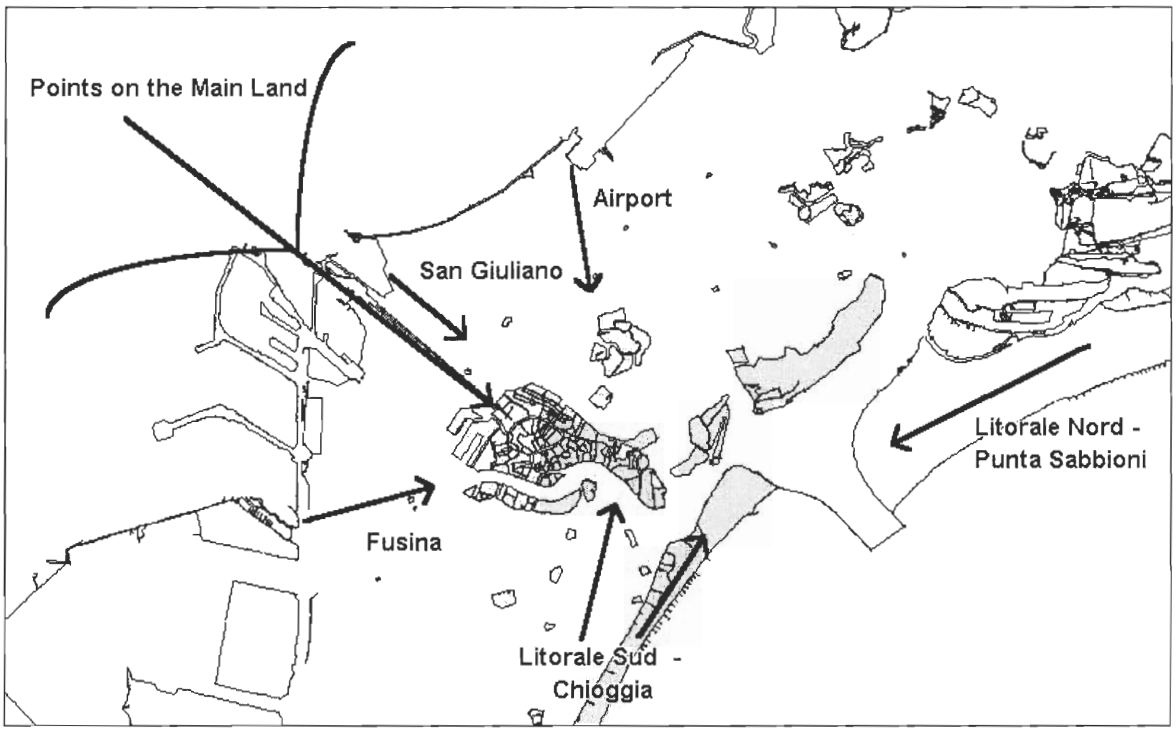


Figure 2 :Tourist Transit Sites for Venice

Tourists travelling to Venice have three main regions of origin around the lagoon: the mainland, the Litorale Nord, and the Litorale Sud. Each of these three regions has specific departure locations as well as its own means of transportation for Venice. Once arriving in Venice from these locations, tourists will find themselves in one of the ingress sites found in Figure 3.

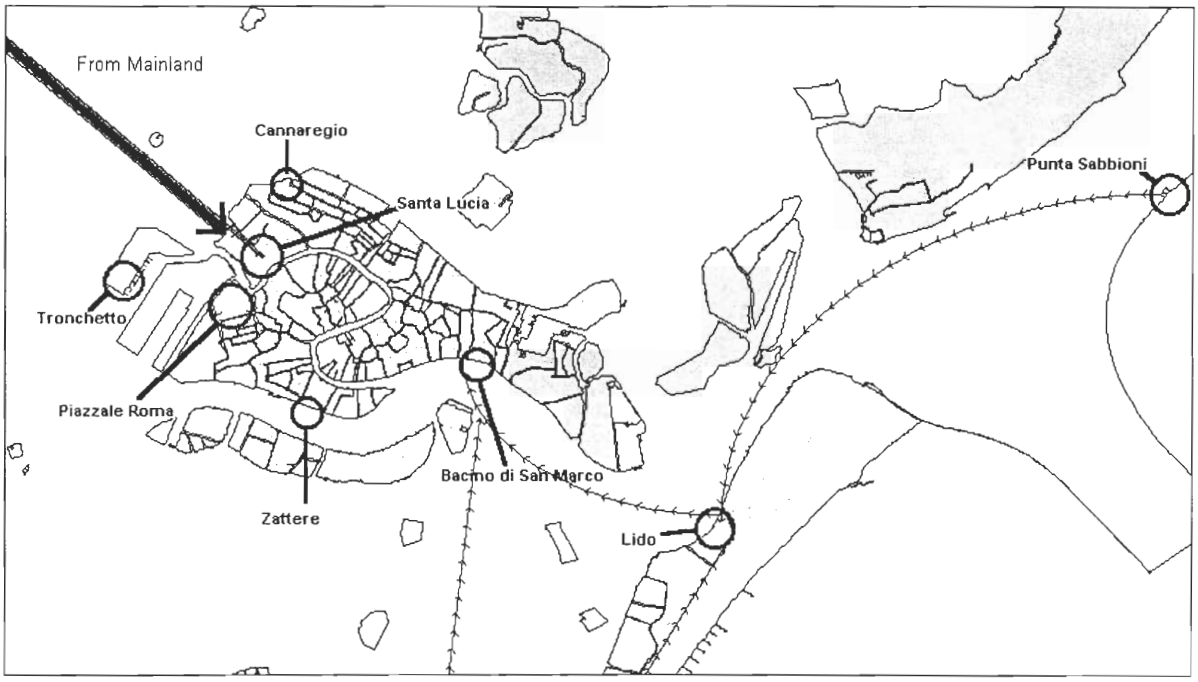


Figure 3: Sites of Ingress to Venice

5.1.1 Tourist Traffic Originating from the Mainland

From the mainland, tourists have two methods to arrive at Venice, either via the *Ponte della Liberta,* or by boat. The bridge offers automobiles, buses, and trains access to the city via the Tronchetto, Piazzale Roma, and the Santa Lucia train station. The boats departing for Venice will originate at Fusina, San Giuliano, or the Marco Polo Airport and will land in Venice at Zattere, Rio di Cannaregio, or Piazza di San Marco, respectively.

The Tronchetto bus stop provides an important entry point for Venice's excursionist tourists. It consists of an island which is accessed daily by a large number of automobiles and buses directly from the mainland. For the most part, customers of organized tour groups, consisting primarily only of excursionist tourists, arrive in Venice via the Tronchetto. Its main use is to provide temporary parking for buses and

automobiles. Counting at the Tronchetto was of great importance due to the location's contribution of significant numbers of excursionists entering Venice.

As mentioned earlier, the Piazzale Roma and the Tronchetto share the same physical connection to Mestre on the mainland, the *Ponte della Liberta.* However, the Piazzale Roma not only allows those traveling by tour buses into the city of Venice, but it also permits entry to those travelling by public bus lines and private automobiles. An ACTV bus terminal is located in the Piazzale Roma and is the only bus terminal in Venice. The population arriving in Venice at the Piazzale Roma consists of a generous mix of business commuters and tourists.

The Santa Lucia Train Station provides the only access for passengers travelling by rail to the city of Venice. The composition of those who make use of its services is similar to that of the Piazzale Roma's; however, there is a higher tourist proportion at the train station. If the Veneto region is not the location of residence for a tourist visiting the city, then the most likely method of transportation for an excursionist would be the train.

Fusina is located on the West Coast of the lagoon. The purpose of having a boat line between Fusina and Venice is to alleviate traffic on the only bridge to Venice by supplying parking on the mainland and transportation to Venice proper. Fusina's transportation line arrives at the Zattere boat terminal on the Canale della Giudecca.

San Giuliano is a site of departure which is not recognized by the authorities as a legal transportation route to Venice. Its number of excursionist tourists is not large enough to significantly effect the total count. During an examination of the site, the boat was seen transporting only four excursionists to Rio di Cannaregio in the northwest section of the city.

Those arriving in the Veneto region by air will most likely find themselves at the Marco Polo Airport. To arrive in Venice from the airport, there are the two main options of land and water mentioned earlier. Entry by bus or train would be included into the Piazzale Roma and Santa Lucia counts. The boat entry, on the other hand, would not be included; however, it is highly unlikely that someone arriving in Venice directly from the airport would visit for only one day because of the high expense and logistical issues involved.

Of the six examined sites receiving traffic from the mainland, the three ingress sites receiving traffic from the Ponte della Liberta were found to merit counting. Fusina's Zattere terminal in Venice proper was also noted for its importance to tourist influx; however, the tourist traffic originating at the airport and at San Giuliano was found to be either irrelevant or insignificant for the excursionist count.

5.1.2 Tourist Traffic Originating from the Litorale Nord

Tourist arriving in Venice from the Northern shore, or the Litorale Nord, must make their way via Punta Sabbioni. There are two methods of arriving in Venice from Punta Sabbioni: chartered boats, and the ACTV line. The private boats dock in Venice at the Bacino di San Marco. The large ACTV *motonave* boats head to the Lido and then to Venice proper afterwards.

The Bacino di San Marco docks are the sites of many boat stops, both public and private. Even though the Bacino is wide and heavily transited by boats letting people off, only a few docks between San Zaccaria and the Ca' di Dio are relevant for excursionist tourist counts because they are specifically designated for this purpose. These docks

provide an entry point to Venice for tourist boats originating from locations around the Venetian Lagoon, while the rest are designated for ACTV boats and taxis. Therefore, the two sets of tourist boat docks at the Bacino di San Marco are important for sample counts.

The Lido boat stop was not chosen as a counting site because it is not possible to determine where the tourists disembarking at the stop are coming from. It is undesirable to count excursionists travelling within the city on the transit lines when the intent is to count only those entering the city because of the danger of a double count. To avoid this possibility, it was decided to tally the excursionists who landed at these stops as they were leaving their point of origin, Punta Sabbioni.

From the Litorale Nord, traffic departing from Punta Sabbioni's ACTV line needed to be counted at its departure terminal. Also, counts at the Bacino di San Marco would allow for the remaining tourist traffic from Punta Sabbioni to be included in the data collection.

5.1.3 Tourist Traffic Originating from the Litorale Sud

The majority of the traffic arriving in Venice from the Litorale Sud arrives from Chioggia, which lies on the southernmost portion of the Venetian lagoon. There are two main methods of travelling to Venice from this neighboring city: the ACTV's line 11 to the Lido, that runs hourly 13 times a day, and the Clodia line directly from Chioggia, which runs only once daily (during the summer season). There was a small number of excursionists tourists embarking at Chioggia for Venice, under 100 total for the day. For this reason it was considered insignificant to the estimate for the year.

5.1.4 Final Counting Sites

The Tronchetto, the Piazzale Roma, the Santa Lucia train station, the Zattere boat stop (for excursionists originating in Fusina), and the Bacino di San Marco were chosen for one of two reasons:

i. They receive significant tourist traffic from outside of Venice

ii. They receive traffic which is relevant to the excursionist counts

In addition, the Punta Sabbioni boat terminal was included as a counting site, even though it was considered a site of egress for Venice, not one of entry. The six established sites are illustrated in Figure 4.

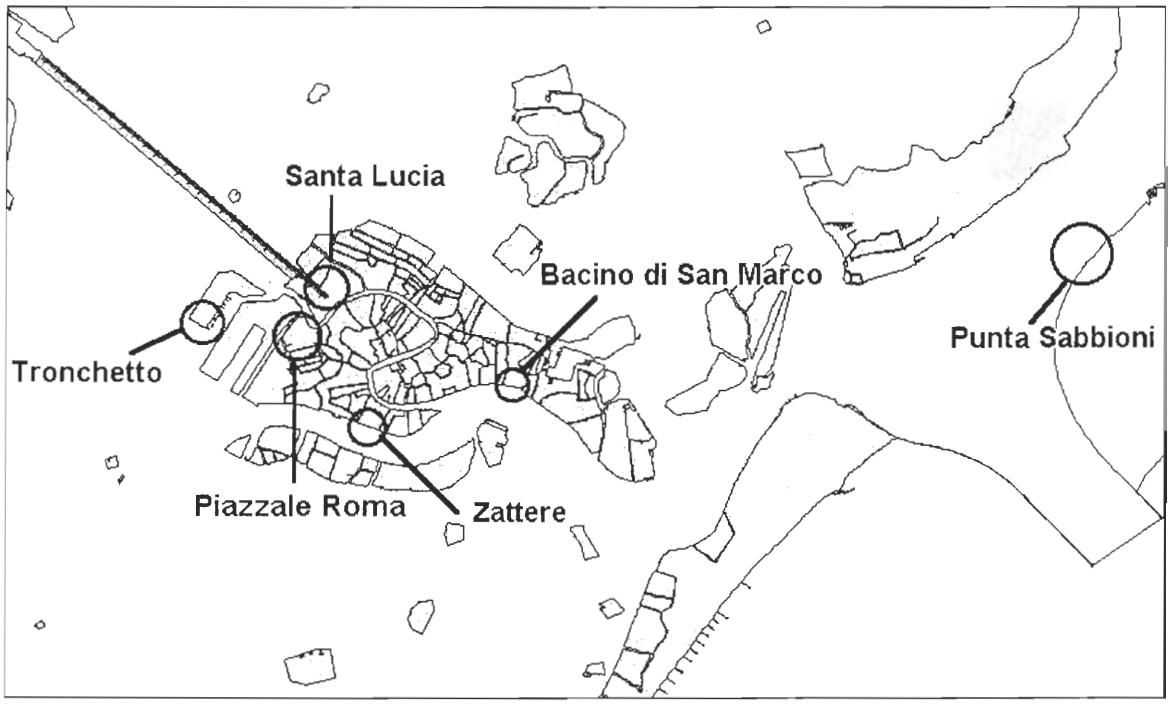


Figure 4: Six Established Counting Sites

It is worth mentioning that in addition to all the entry points mentioned, there exists illegal an unmonitored points, such as the San Giuliano boat line. These sites are docks

and canal edges that are used both by private boats that have licenses and those that do not. These areas are also used by licensed boats whose owners are unwilling to pay the fee for the city docks. In addition, licensed boats are sometimes forced to use alternative locations for dropping off excursionists due to already occupied docks elsewhere. Unfortunately, locating and tracking these illegal boat stops was beyond the scope of this project.

5.2 Visual Identification of Tourists

As it was previously mentioned in Section 3, people who visit the city of Venice with no intent of conducting business are considered tourists for the purposes of this project. Any person entering Venice who was visually identified as one who lives or conducts business on the island was considered a non-tourist and was not included in any of the counts.

The general population of tourists was divided into two categories: residential tourists and excursionists (or day-trippers). The main criterion that differentiates a residential from an excursionist tourist is whether the tourist in question will stay overnight in the location in question. Residential tourists are categorized as those who spend at least one night in Venice proper. The excursionist, alternately, will spend some time during the day in the city and sleep elsewhere. Before the project team could count excursionists, the issue of differentiating tourists from non-tourists had to be addressed. Three criteria were developed to make such differentiation possible: dress, accessories, and demeanor.

5.2.1 Tourist Dress

The dress of a tourist is often conspicuous; the tourist is vacationing and therefore will tend to wear clothes that are designed for function rather than for a formal outing. Since Venice is generally warm and humid in the summer, a tourist would be more likely to wear Bermuda shorts or khaki trousers than dress pants. Similarly, throughout the year, a loose, rather baggy shirt would be far more comfortable than a jacket and tie for an explorational excursion through the alleys of Venice. Footwear follows a similar pattern of the casual versus the formal. For example, American tourists are known far and wide for their desire to wear sneakers while traveling. While tourists not from the United States are less likely to wear sneakers, they are likely, nonetheless, to adopt more comfortable footwear, such as boat shoes, sandals or the like.

The female tourist will generally follow the same dress patterns as the male, adjusted for gender. A halter-top and shorts is a popular combination of clothing among American female tourists. Similarly, the "Capri" pants worn by female tourists are also popular. A sundress is sufficiently casual attire for a female tourist as well. In Europe, the female businesswoman will almost certainly be found wearing a dress. Female American or Canadian backpacking tourists are often found in sandals or running shoes. For formal attire, on the other hand, the female businesswoman would most certainly wear leather shoes.

The type of headwear may similarly classify the wearer; a sunhat or similar hat will certainly distinguish a tourist from the crowd. Male tourists would mostly be wearing baseball hats while women tend to either wear headwear other than caps or no headwear at all.

Table 1 illustrates the major characteristics that differentiate the dress of a tourist from that of a non-tourist.

Table 1: Tourist vs. Non-tourist Dress

Tourist	Non-Tourist
• American logos (universities, etc.) • Shorts • Sneakers (boat shoes for non-Americans) • Sandals • T-shirts or halter top • Sundress • Hat • Generally informal	• Full suit or jacket and tie • Uniform • Work clothing (dirty or painted pants) • Leather shoes • Generally formal

Figure 5 illustrates examples of the dress characteristics of tourists and non-tourists.

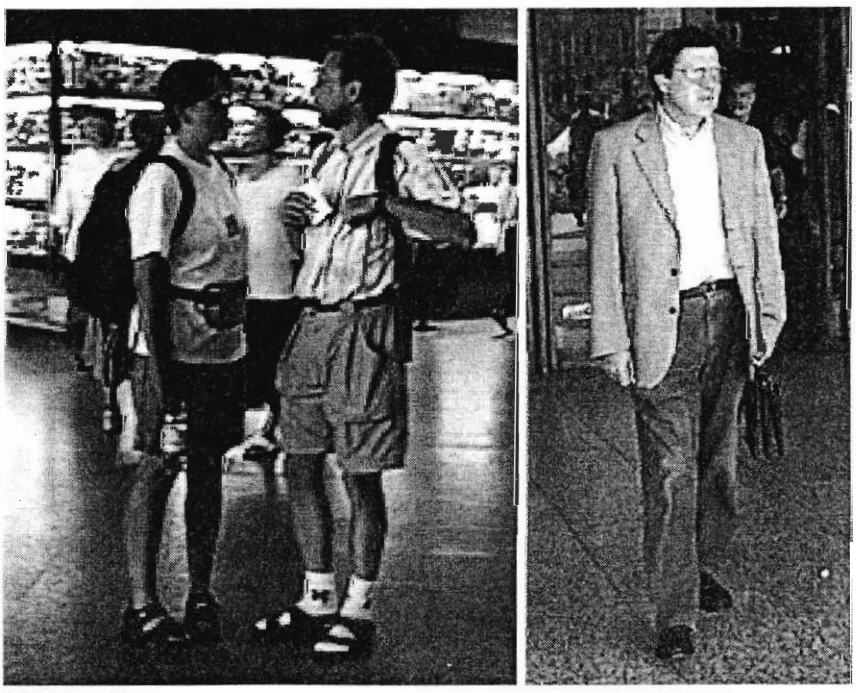


Figure 5 : Examples of Dress (tourist at the left, non-tourist at the right)

It is important to note that a wealthier tourist will dress according to his or her assumed station; that is, those who can afford to traipse about a wet city in Armani will tend to do so. Therefore, a special adjustment might be thought necessary to allow for these elite tourists. Nonetheless, the fact that they are the affluent elite makes them relatively small in number compared to the less fortunate. In addition, a wealthy traveler would be more able and willing to spend the money to stay overnight in Venice proper.

5.2.2 Tourist Accessories

The majority of tourist accessories are instantly recognizable to the casual observer, and some of the less obvious implements of travel are recognizable to the discerning eye. The ever-present camera is the single object that denotes the archetypal tourist, as seen at the left in Figure 6.

Figure 6: Examples of Accessories (tourists at the left, non-tourists at the right)

Venice contains an active university; commuting students carrying school supplies, who would otherwise be identified as excursionist tourists, must be recognized as students. At the left in Figure 6, two art school students are carrying their art portfolios. The university students will either have a school backpack, will be carrying textbooks, art supplies, or all three. Table 2 lists common tourist and non-tourist paraphernalia.

Table 2 : Accessories of Tourists vs. Non-tourists

Tourist	Non-Tourist
• Camera • Map, guidebook • Luggage, backpacks, etc. • Money belt, fanny pack	• Briefcase • Folder • Textbooks, art supplies, etc.

5.2.3 Tourist Demeanor

In general, a tourist will either have never visited Venice before or will have visited it only a small number of times previously. Thus, the observant eye will detect a general lack of bearing on the part of the tourist as opposed to the regular commuter and resident. Where she who knows her way will be in possession of a well-defined focus, the adventurous tourist, the excursionist especially, will have something more akin to a gaping mouth and vacant stare when taking in firsthand the Most Serene Republic in all of her watery glory for the first time. Thus, the behavior of the pedestrian can be taken into account as a confirmation of the aforementioned tourist and excursionist indicators of dress and paraphernalia. Figure 7 illustrates examples of demeanor; the tourist on the left is obviously confused while the businessman on the right was in a hurry and blurred the picture.

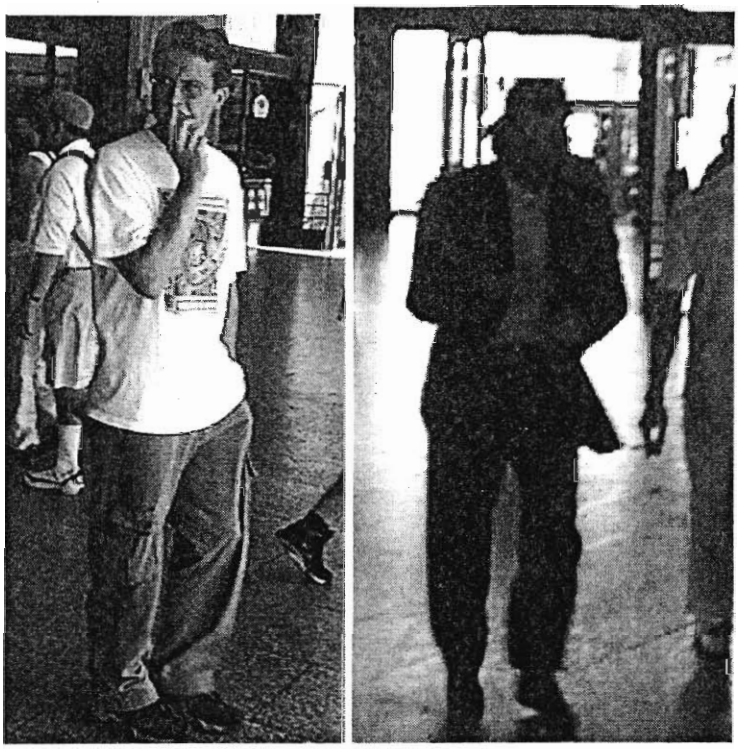


Figure 7 : Examples of Demeanor (tourist at the left, non-tourist at the right)

Furthermore, it was proposed and confirmed by observation that a business commuter, as well as a student commuter, will walk to his or her boat stop with the determination and confidence of having done so many times before. A tourist, on the other hand, will consult the map and spend time carefully considering which boat to take

Table 3 : Demeanor of Tourists vs. Non-tourist

Tourist	Non-Tourist
• Confused • Attentive to surroundings • Accompanied (family, couples, groups) • Speaking foreign tongues	• Focused • Inattentive to surroundings • Alone • Serious • Oriented

5.3 Visual Identification of Excursionist Tourists

Excursionist tourists, as a rule, will not be seen carrying large luggage in the city proper because they are defined as those who spend the night elsewhere. Conversely, a tourist who is spending the night in Venice would be less likely to enter the city carrying only a backpack, marsupial pack, or daypack as the excursionist would. Therefore, the type of luggage carried plays an integral role in differentiating the excursionist from the residential tourist. Someone spending the night in Venice who is without baggage would have already dropped it off at his or her hotel; furthermore, he or she would resemble the excursionist in carrying little to no baggage. Entry sites were chosen precisely to catch the residential tourists before they had a chance to drop off their heavy luggage.

Table 4 shows the visible differences between an excursionist and a residential tourist. Figure 8 illustrates examples of an excursionists and residential tourists.

Table 4: Characteristics of Excursionists vs. Residential tourists

Excursionists	Residential Tourists
▪ Backpack, daypack ▪ Disoriented	▪ Luggage ▪ Somewhat oriented

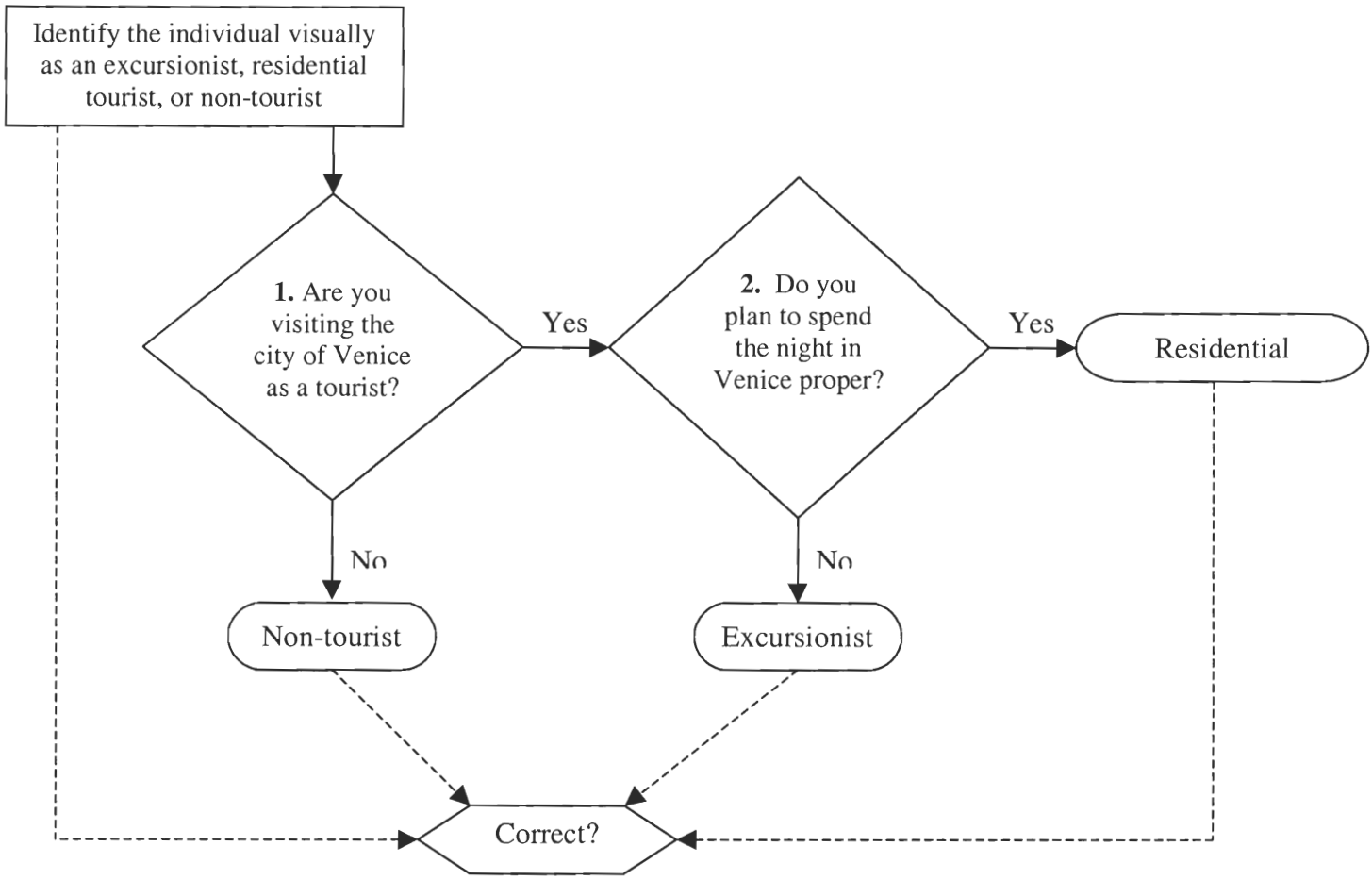
Figure 8 : Types of Tourists (excursionists at the left, residential at the right)

5.4 Verification of Visual Identification

The counts to be conducted at all six sites were based on our ability to detect excursionist characteristics. Due to the crucial role the accuracy of this identification plays in the project, it was necessary to validate the predefined criteria with specific field tests.

Tests for the validity of the characteristics took place in the Santa Lucia train station, the Piazzale Roma bus terminal and car park, and the Punta Sabbioni boat terminal. The first two sites were chosen to test the project team's ability to differentiate among the rich mixture of business commuters, residential tourists, and excursionists; the third site was chosen for its large number of excursionists mixed with local commuters. The test was conducted as a two-question survey. Using the list of characteristics, travelers were first identified visually as excursionists, residential tourists, or non-tourists as they were exiting the counting site. To confirm the project team's assumptions about

excursionist identification, it was important to survey members of all three categories. After being visually identified, the subject was approached and asked:



The surveyed information was recorded on a form with two columns, *Visual Identification* and *Verbal Verification*. Table 5 displays the results of the accuracy tests.

Table 5 : Accuracy of Visual Recognition of Excursionists

Date	Location	Counter	Total Surveyed	Overestimate	Underestimate	Actual Error	Accuracy
7/14/99	P.le Roma	Calvo/Hodos	57	0	0	0	100.0%
7/14/99	P.le Roma	Gozubuyuk	38	0	0	0	100.0%
7/15/99	P. Sabbioni	Calvo	65	0	3	-3	95.4%
7/15/99	P. Sabbioni	Braghin/Gozubuyuk	40	2	0	2	95.0%
7/15/99	Santa Lucia	Gozubuyuk	18	0	2	-2	88.9%
7/15/99	Santa Lucia	Calvo/Hodos	34	2	2	0	100.0%
		Total	252	4	7	-3	**98.8%**

The visual decision was compared to the verbal confirmation, and a 94.4% accuracy rate had been achieved through visual identification.

5.5 Verification of Identification Consistency Among Team Members

Complete consistency of counts could only be achieved if the same person counted at all locations at all times. As this is impossible, considering the logistics of the project, conducting the count required that each member of the group had to adopt the same mental image when separating residential and day tourists from the rest of the population.

Having inconsistent excursionist counts within the project group at the various entries to Venice could be one of the main sources of error. There was need for a clear, shared understanding of the definitions of the subjects being counted, as the inconsistency error is amplified when four individuals are required to apply the same criteria at different counting locations or at different times.

Tests for consistency among the group members were conducted at the Santa Lucia train station, the Piazzale Roma bus stop, and the Tronchetto boat stop during the first week of June and the second week of July, 1999. Fifteen-minute tests were conducted in which all members stood at the same location and independently identified

from the crowd and counted the same passing tourists. During the tests in June, three counts of general tourists, and three more for day-tripping tourists alone, were conducted using the characteristics of each group as defined in Section 5.2. The count results from the various group members indicated that, with practice and consultation after each session, consistency in data collection could be achieved. After several trials, both the count for general tourists and the count for excursionist tourists were consistent among all group members within ±4% percentage points.

When this homogeneity was achieved, team members could be stationed at different locations at different times and still produce an internally consistent count.

5.6 Problems with Tourist Classification

Sometimes it is difficult to decide if an individual is a residential tourist, an excursionist tourist, or even a tourist at all. For instance, brand name clothes are sold all over the world, so assumptions cannot be made when a person is seen with a pair of Levi's jeans or a Nike shirt. The same problem occurs with cellular telephones; since many services nowadays cover many regions, it is not safe to assume that someone carrying a cellular telephone is from the local area. Table 6 demonstrates some characteristics of subjects that could generate problems with identification.

Table 6: Ambiguous Characteristics of Tourists

	Ambiguous Characteristics
Dress	• Brand logo clothing • Team shirts • Sun glasses
Accessories	• Shopping bags • Cells phones
Demeanor	• Italian Speaking People

When a problem with identification occurred, the group decided to count these people with a separate counter. The results can be seen in Table 7.

Table 7: Total Count Results Using the "Unclassifiable" Category

Name	Classified	Unclassifiable	% Unclassifiable
Braghin	743	25	3,36%
Calvo	718	12	1,67%
Gozubuyuk	574	9	1,57%
Hodos	686	15	2,19%
		Average	2,20%

Later, after many trial runs at counting, the project team realized that this second counter was used for fewer than 2.5% of all counting cases. For this reason, the count of such people was abandoned, and the percentage was assumed to be included in the error of the visual identification.

5.7 Testing of Proposed Counting Procedures

Before any data was collected for the APT, the initially proposed methods required justification. Special tests were used to determine the validity of the data gathering methods used during the fieldwork.

The original methodology involved counting either all tourists or only excursionist tourists at all of the entry points of the city within a suitable time frame. The counts were to be conducted in either a continuous manner or in a series of discrete samples, both involving several shifts to avoid error due to fatigue. The discrete sampling was considered preferable due to the limited number of man-hours available.

The aspects of the proposed counting procedures that needed validation were the differentiation of residential from excursionist tourists, the homogeneity of tourist influx as a function of time, and the appropriate scheduling of the counting windows.

5.7.1 Differentiating General Tourists from Excursionist Tourists

During the planning stages of the project, it was uncertain if each individual of the group would be able to count excursionists at a consistency level that would provide sufficient precision. As noted Section 5.5, both general and excursionist tourist counts were homogeneous enough to justify proceeding with the counts.

The two possibilities available for arriving at the number of excursionist tourists in Venice were either a direct count or an extrapolation of the number from the total number of tourists. In order to extract the number of excursionist tourists from number of tourists as a whole, the percentage of the excursionist tourists would need to be found through surveys. The direct count of excursionists, conversely, involved no information other than the actual counts.

The direct count of excursionist tourists was preferred over the extrapolation method. Since one of the goals of this project was to acquire the best estimate of

excursionists. If excursionists were counted directly, the alternate survey percentage method then could be omitted to allow more time for further validation tests.

5.7.2 Temporal Homogeneity of Tourist Influx

There are two methods that were considered to be appropriate for the collection of data: continuous sampling, and discrete sampling. The continuous method would span the entire period between the designated beginning and ending times with no break in the count. The discrete method would involve counting for a few hours only or one 15 minute interval per hour, as long as the day followed a predictable pattern. For a continuous count, a large number of man-hours would be required due to the longer counting day and the many locations to be counted simultaneously. The discrete sampling method would require fewer man-hours, but also the flux of tourist traffic must be homogeneous in order to avoid large random errors.

During the week of June 7, tests undertaken at the Santa Lucia train station and at the Piazzale Roma bus stop consisted of 10 hours of counting split into subintervals of fifteen minutes. Although the counting was conducted in a continuous manner, the count values recorded for every fifteen-minute subinterval were used to determine whether discrete sampling would be possible. Figure 9 and Figure 10 display the results gathered during the test at Santa Lucia train station.

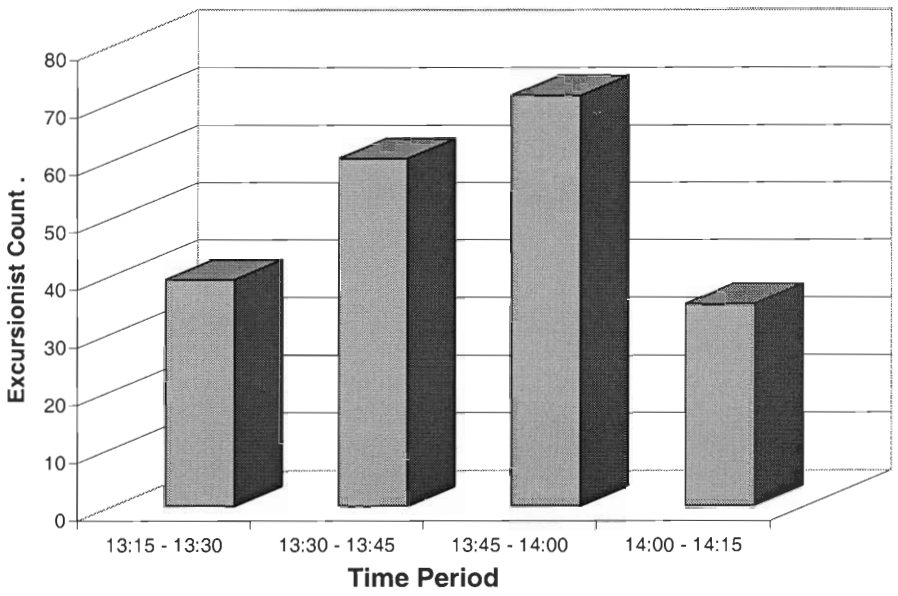


Figure 9: Combined Excursionist Flow per 15 Minute Interval at Santa Lucia

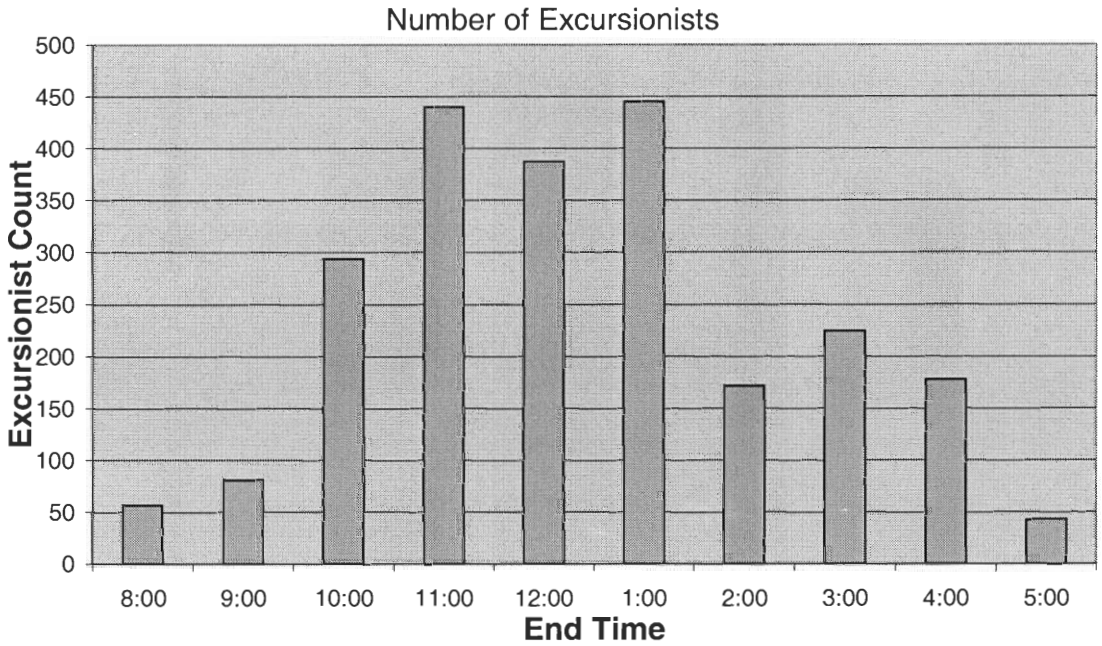


Figure 10 : Hourly Flow of Excursionists at Santa Lucia

Unfortunately, the data collected indicated that tourist flow is not constant during daylight hours due to varying train or bus arrival times. Thus, discrete sampling could

result in faulty estimation of the number of excursionist tourists. Due to the results of these tests, the continuous method was chosen for all of the counting conducted throughout the project.

Having determined that the counting would need to take place continuously, we proceeded to define the proper time frame in which to conduct the counts. The initial assumption was that no day-trippers would arrive in the city before 7:30 AM is based on the fact that the opening hour of most shops and attractions is 9:00 AM and that the journey from the various entry points to these locations takes time. In addition, the assumption was made that no tourist who does not plan to stay overnight would arrive after 5:00 PM.

5.7.3 Daily Counting Hours

Since it was necessary to validate these assumptions, tests were executed that spanned most of the daylight hours. These tests were designed to cover a larger time frame than would be necessary for the actual count. However, instead of conducting the time frame test on a different day than that of the count, the first day of counting at each location was used both for testing and counting purposes. The first day's fieldwork at a new location would supply both the day's count and the information to justify the time frame chosen for the next visit to the same site.

For example, the Santa Lucia Train station's first day of counting was Friday, June 11. As seen in Figure 11, the counting on the first day started at 7:00 AM, earlier than the project team assumed necessary, and continued uninterrupted until 5PM. The result of this first extended count indicated that a timeframe from 8 AM to 4 PM would

allow us to intercept 95.7% of the excursionists, so we adopted the 8:00 to 4:00 interval for our subsequent counts.

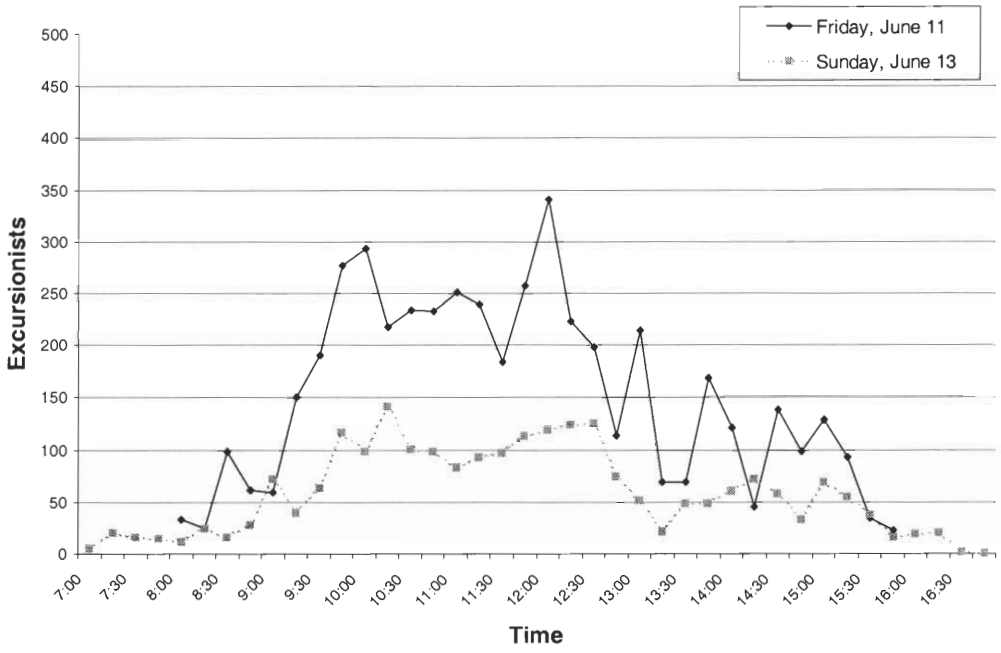


Figure 11 : Counting Timeframe and Excursionist Flow at Santa Lucia

By shortening the day's counting span, the project team included the most important hours while saving man-hours.

After the excursionists had been counted at all the sites, it was decided that the relevant counting period would be 8:00 AM to 4:00 PM. Having determined the desired time frame, the data that did not fall within the specified window was omitted from our final analysis.

5.7.4 Daily Fluctuation of Excursionist Tourists

The most accurate method of counting excursionist tourists entering the city of Venice is to count every day of the week. Unfortunately, the period allotted for the

completion of the project was not long enough for the project team to conduct weeklong counts at the six counting locations. For this reason, a method that is a compromise between a full census and a series of sample counts was developed to determine the relative proportion of excursionist influx of each day of the week.

It was decide that excursionist traffic at each location should be counted twice: one weekday and one weekend day. It was unknown initially if weekdays and weekend days were interchangeable for data collection. Thus, it was necessary to know how any one day compared to the rest. To determine the weight factor for each day, a week of counting was completed at the Santa Lucia train station. This test consisted of sampling high transit hours, 10:00 AM to 1:00 PM, for each day of the week. The results showed that the flow is not homogenous throughout the week as it illustrated in Figure 12.

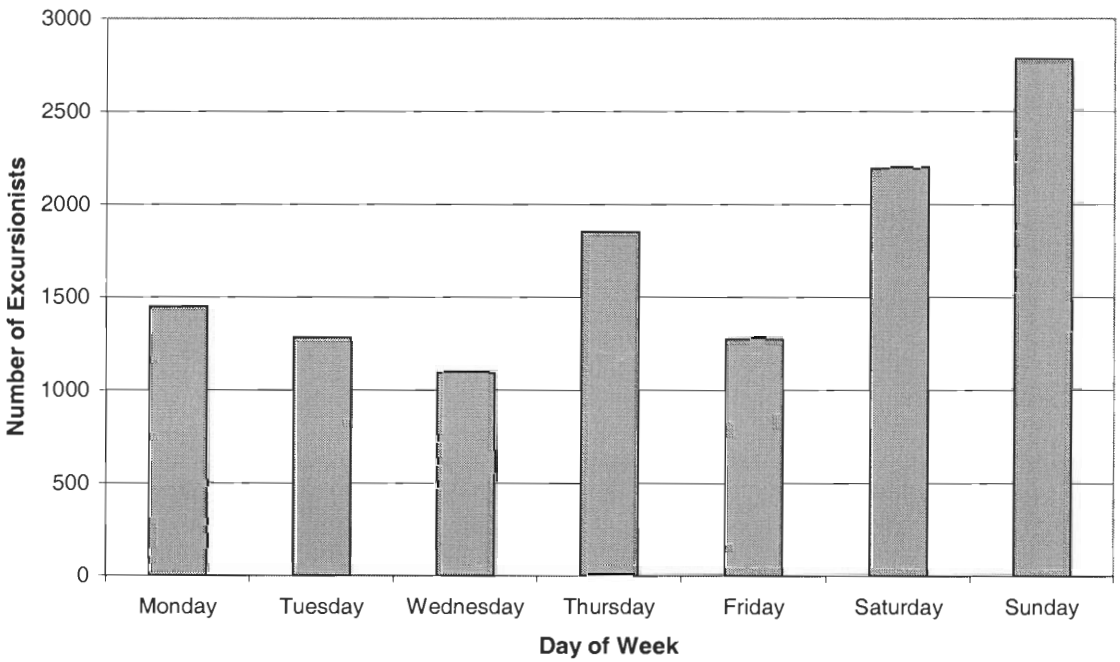


Figure 12: Daily Influx of Excursionists

Although it would have been beneficial to complete the same weeklong test at all the sites, time restraints concerning project duration limited the counts to just one. Thus, it was assumed that the daily excursionist influx gathered at the train station would be the representative of the other five locations. The weeklong excursionist counts for the remaining five counting sites were then calculated with the implementation of the daily proportions of excursionist traffic.

5.8 Final Methodology

As has been repeatedly noted throughout this document, providing the APT with an estimate of the annual number of excursionist tourists entering the city of Venice is of utmost importance for this project; however, more important than the actual count is the methodology developed and tested by the project team.

The count of excursionist tourists was conducted at the most relevant sites of entry. Each of the counting sites had unique requirements; however, the counts themselves were conducted in a similar manner at all the sites, according to these four criteria:

i. The counts were directed towards excursionist tourists
ii. The counts spanned continuously from the 8:00 AM to 4:00 PM
iii. Two days of counting were dedicated to each location
iv. The running tally was recorded every 15 minutes

Criterion 4 was included to allow for a more detailed examination of the tourist, flow if necessary. The specific procedures for each counting site are described in detail in the Section 5.9.

5.9 Final Counting Locations

5.9.1 Tronchetto

As can be seen in Figure 13, the Tronchetto has only two methods of access to Venice: (1) a bridge and (2) a group of boat docks.

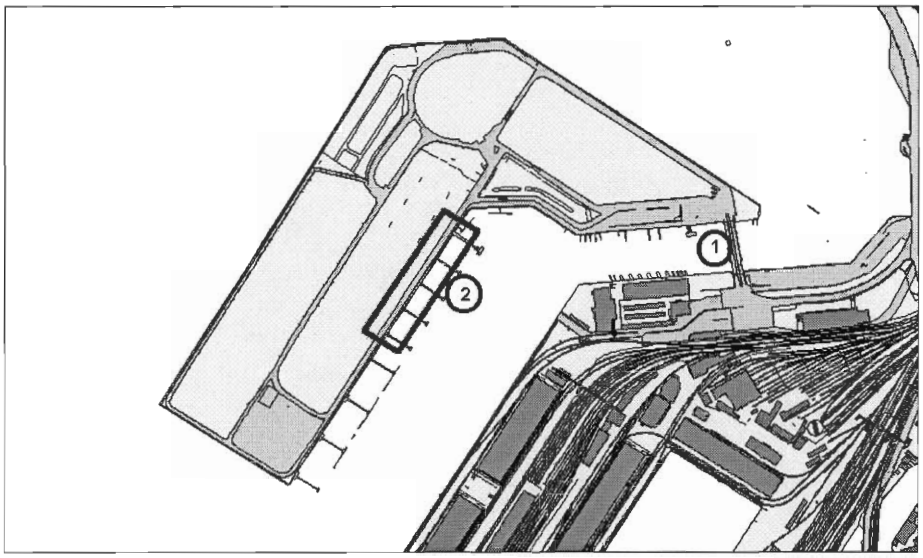


Figure 13: The Tronchetto Counting Site

Since the bridge is never used by pedestrians, the group of boat docks was the only outlet of concern at this entry point to Venice. Due to the layout of the counting site, only one counter was necessary at any given time. In fact the docks, both public and private, are only accessible through a walking path that connects them to the parking region on the Tronchetto, see red rectangle in Figure 13. The counter was stationed on this path for data collection, seen in Figure 14.

Figure 14: The Tronchetto Counting Location

At this counting location, there were fewer problems differentiating an excursionist tourist from a businessperson; however, it was possible to mistake overnight tourists for excursionists. It was believed that on occasions, tour companies bring tourists to Venice via the Tronchetto and send their luggage separately to a local hotel for them. These tourists then would appear to be excursionists according to the visual identification. To avoid error in identification, verbal confirmation from a member of each tour group was obtained. On two conducted days, no tour group was found to be composed of overnight tourists. For this reason, it is believed that future counts may not require verbal confirmation of the visual identification of tour groups at the Tronchetto.

5.9.2 Piazzale Roma

The Piazzale Roma entry location provides a higher business commuter influx than that of the Tronchetto. It is one of the most heavily used entrances into Venice by

those business people who reside on the mainland and commute by car or by bus to work in the city. For this reason, it was very important for us to be careful in distinguishing a tourist from a businessperson at this location.

The counting at the Piazzale Roma proved to be the most challenging because there are eight outlets that could be used by excursionists, illustrated in Figure 15. Actually there are a total of 10 possible outlets, but 2 of them are highly unlikely to be known or seen by people visiting the city of Venice for the first time.

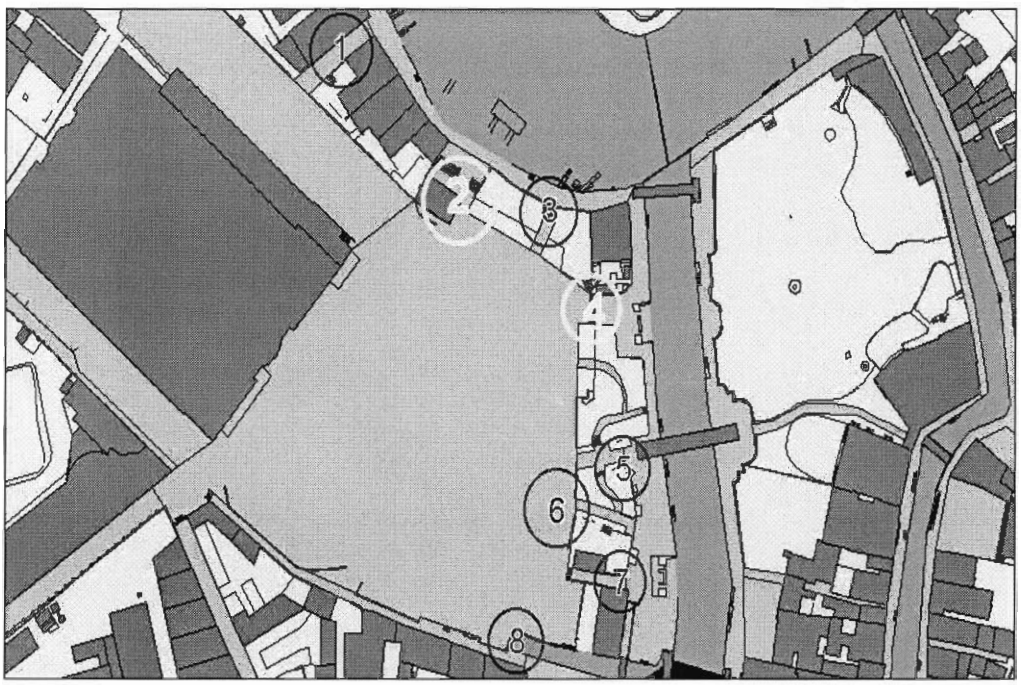


Figure 15: The Piazzale Roma Counting Site

For a continuous count at this location, an eight-person team would have been needed for the entire counting day. Due to the limited number of personnel available, the development of a unique counting method was necessary.

The method used for the multiple exits was to dedicate a preparation day during which a few simultaneous samples at all the locations were taken to derive the weight

factor for each exit. The counts then took place at the two most important exits, those labeled 2 and 4 on Figure 15, with percentage weights of 46% and 17%, respectively. Figure 16 shows the two counting locations.

Figure 16: The Piazzale Roma Counting Locations

(exit 2 at the top, exit 4 at the bottom)

The remaining exit location flow rates were then calculated using the proportions determined from the test. In this manner, only two counters were necessary to derive a reliable estimate.

The few tour buses that were making use of the Piazzale Roma were thought to have potential to cause uncertainty in identification of excursionists. However, it was noted during pre-counting reconnaissance that no buses were discharging excursionist tourists. Instead, all of the tour buses were unloading luggage onto boats shortly after the tourists had debarked from the bus. The *Venice Knopf Guide* supported our observation by noting, in 1993, that "All traffic will eventually be diverted to the Tronchetto, which is linked to the city by a public transport system; in future, only groups of tourists with hotel reservations will arrive in Venice through the Piazzale." [5] Thus, it was decided that all tour groups would be classified as residential tourists and omitted from the counts at the Piazzale Roma.

5.9.3 Santa Lucia Train Station

The Santa Lucia train counts were conducted at the station's main entrance in the front of the building. There are two sets of doors along the front of the building that allow travelers to enter and exit from the station. There are other exits to the building other than the main entrance; however, it is highly unlikely for a visitor to find and use these exits. Figure 17 shows the locations of the two counting locations, each coinciding with one of the station doors.

[5] Roberts, Anthony, trans. *Knopf Guide to Venice*. Alfred A. Knopf. (New York: 1993), p. 344.

Figure 17: Santa Lucia Counting Site

The two counters on duty were assigned to monitor a door for those excursionists who were exiting the station. Figure 18 shows one of the two identical sets of doors that were monitored.

Figure 18: Santa Lucia Counting Locations

There is a cafeteria in the Santa Lucia station which has it own exit. Although this door is not used significantly by excursionists, it was still monitored. The counter assigned to the right set of doors was responsible for the monitoring of the cafeteria door.

5.9.4 Bacino di San Marco

The Bacino di San Marco is only an excursionist tourist entry point. Thus, the project group had no major concerns about differentiating between normal tourists and excursionists. The area of the Bacino is wide and consists of two sets of docks, as seen in Figure 19.

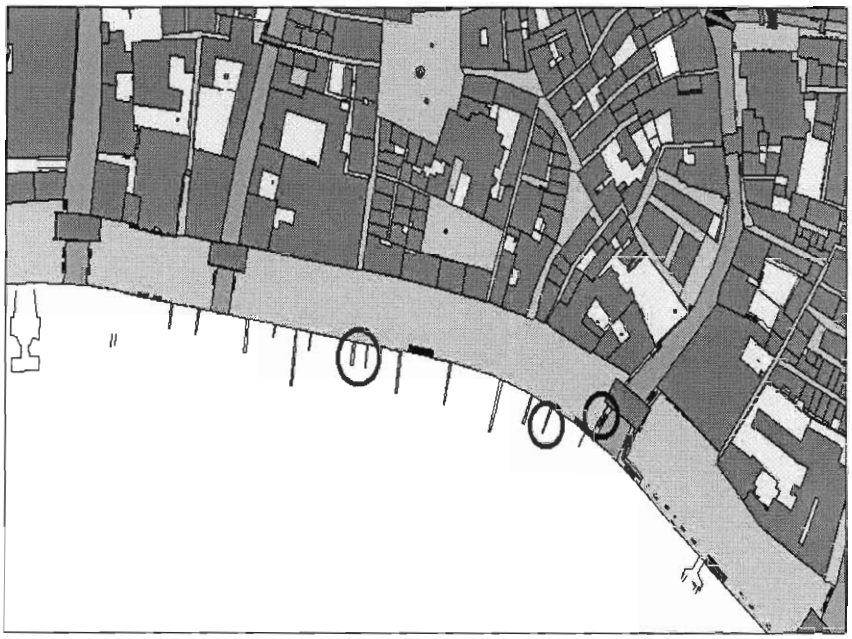


Figure 19: Bacino di San Marco Counting Site

Unfortunately, the boats arriving to drop off excursionists to the Bacino come from several places neighboring and in Venice. One of the origins of the boats docking at this site is the Tronchetto. Therefore, to avoid double counting of excursionists, each boat needed to be identified to determine its port of origin. The time of arrival, name, company, license number, total number of excursionists, and the port of origin were recorded for each boat. Excursionists disembarking at the docks, captains of the boats, and tour operators were asked for their port of departure to complete the information. After the data was gathered, those boats with points of originating at the Tronchetto were

omitted. It was decided to dedicate four counters simultaneously in order to accurately gather all of the information.

Figure 20: Bacino di San Marco Counting Location

5.9.5 Zattere Boat Stop

The Zattere boat stop is the destination of the boat line originating from Fusina. It consists of a pier where the ACTV boat arrives hourly on the tenth minute of the hour. Figure 21 shows the counting site.

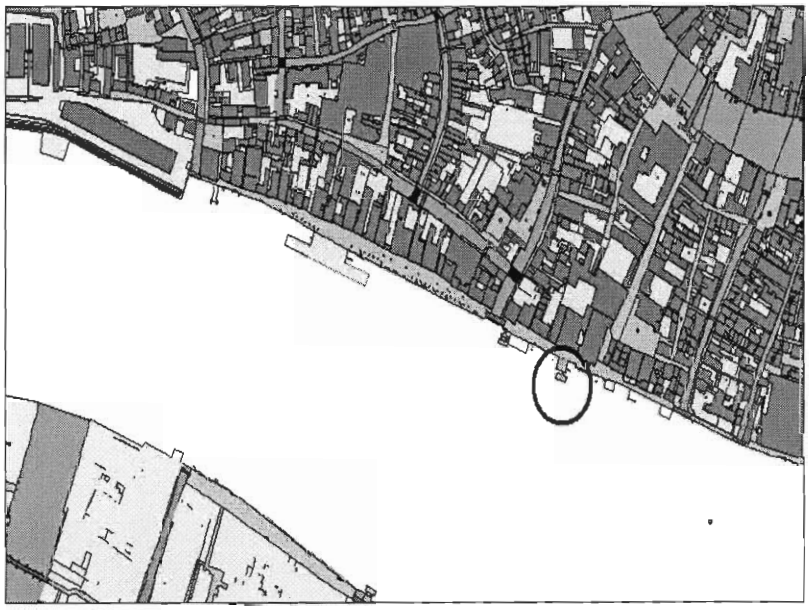


Figure 21: Zattere Counting Site

The counting location was set at the exit to the boat stop and required only one counter at a time. The departure point at Fusina for Venice is shown in Figure 22.

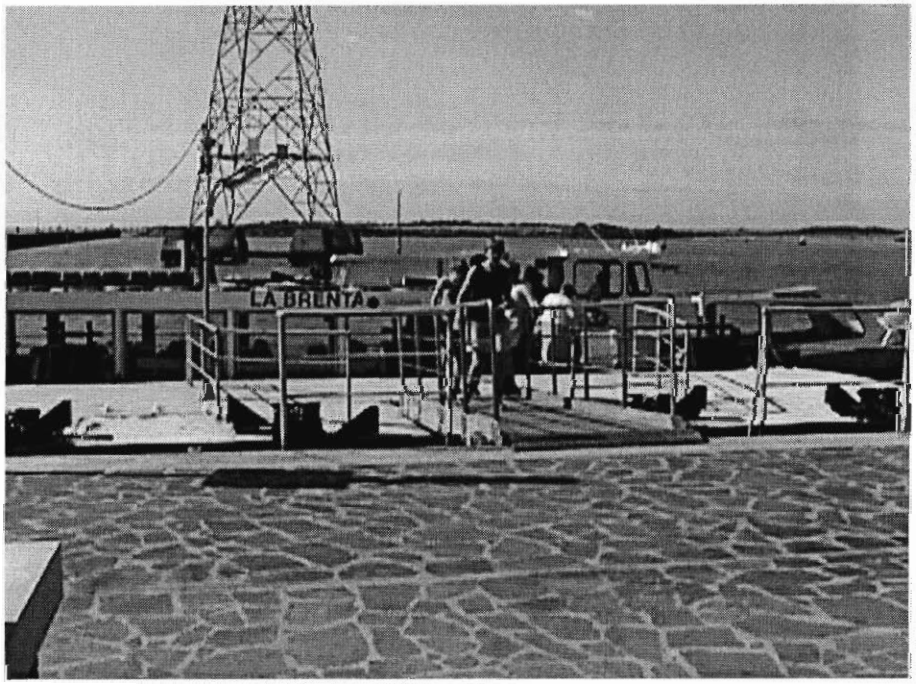


Figure 22: Fusina Terminal for Zattere, Venice

Of the six counting sites, the Fusina boat stop at the Zattere was considered a minor counting site. With that to consider and the limited time available towards the end of the project, this site was only counted on one day, a Friday. The rest of the week was estimated using the daily proportions obtained at the train station.

5.9.6 Punta Sabbioni Boat Terminal

The final counting site was the Punta Sabbioni. The counting location was located at the single boat stop for departures to Venice proper, illustrated in Figure 23.

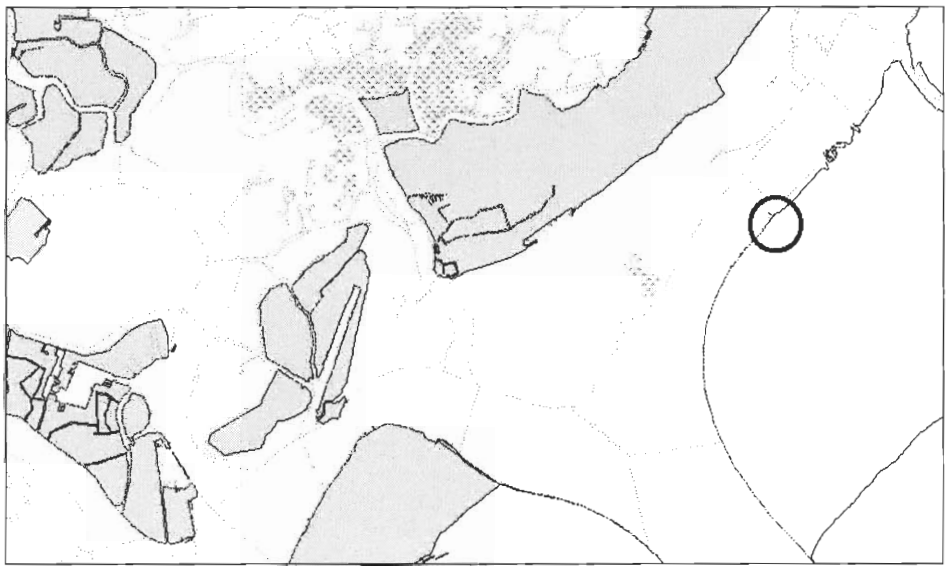


Figure 23: Punta Sabbioni Counting Site

Only one counter needed to be allocated due to the funneled flow of the travelers. Those headed towards Venice and the Lido, which is also considered part of Venice by the APT, were counted. . The counting location at the terminal can be seen in Figure 24.

Figure 24: Punta Sabbioni Boat Terminal

6 Results

The simple act of counting excursionists is not as straightforward as one might at first believe. Before a counting procedure can be implemented, there are many criteria that must be satisfied. For instance, a precise definition of an excursionist requires considerable thought. The excursionist must be separated from the tourist in general, and the accuracy of such delicate division must be tested and confirmed. In addition to the process of excursionist recognition, the counting locations themselves must be chosen to maximize the accuracy, as well as the efficiency, of the operation. For these and other reasons, the results of such a procedure will not only contain the hard data of the counts themselves, but will also include a complex method for obtaining and validating the numbers resulting from the final extrapolations of the collected data.

6.1 Methodological Results

The various techniques for identifying excursionist tourists are described below. This is a pilot project; thus, significant outputs from the project group's work include not only the estimated number of excursionists but, perhaps more importantly, the procedure itself that was employed to detect and measure the number of excursionists. The estimate itself will constantly decrease in importance as time passes, but the method will continue to be valid as long as excursionists continue to behave, dress, and outfit themselves as they do presently. With such ideas in mind, it is relevant to say that a very important result of this project is the methodology that was developed. The main results that are worth pointing out are the visual identification method, the choice of counting locations

and the counting hours. These have been described in detail in Section 5, so it is not necessary to go over them again.

6.2 Results from Field Observations

Although the data collected for this project was of a singular kind, it produced many different results. These results are discussed below.

6.2.1 Raw Results from Excursionist Counts

These raw results are perhaps the most direct results of the methodology. The actual numbers from the counts made at all six locations are given in Table 8. The detailed field data is given in Appendix A.

Table 8: Actual values from counts

Location	Weekday	Weekend
Santa Lucia	2222	4885
Tronchetto	5927	7313
Piazzale Roma	2587	3914
Bacino di San Marco	4287	1688
Punta Sabbioni	1772	2285
Zattere	729	-

6.2.1.1 Redentore Counts

Two sample counts were made on the Redentore Saturday, from 10.00 to 12.00 and from 15.00 to 17.30 in order to observe the difference between a normal high season Saturday and a festival Saturday. A rough estimation for the whole day was made using the sample counts seen in *Table 9*.

Table 9 : Redentore Counts

	Actual Counts	
	10:00 - 12:00	15:00 – 17:30
Santa Lucia	2202	1576
Piazzale Roma	555	435
Tronchetto	2702	1981

Comparing the estimate for the whole day at each of the above locations to a regular Saturday showed that the Redentore count was approximately 2.2 times the non-Redentore count. While the counts and estimations did give a general picture of the festival day excursionist influxes, they were not deemed reliable enough to include in the estimation.

6.2.2 Distribution of Excursionist Traffic

The data collection for this project took place at six different transit sites to Venice. Some locations were found to have significantly higher numbers of incoming excursionists than others. It can be seen in Figure 25 that Tronchetto is the most heavily trafficked entry point.

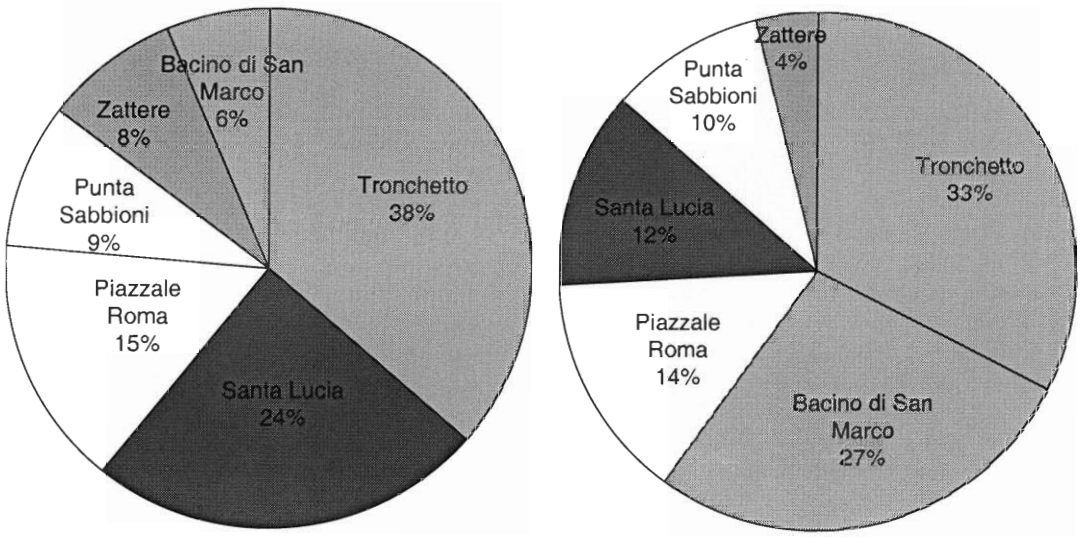


Figure 25 : Count Proportions
(weekend at the left, weekday at the right)

Tronchetto is followed by the Bacino di San Marco boat stop on weekdays and the Santa Lucia train station on weekends, showing a difference in the excursionists' choice of transportation.

6.2.3 Excursionist Influx Homogeneity

The issue of excursionist influx homogeneity was discussed earlier, in Section 5. The project group conducted tests to determine if excursionist influx was constant during the day in order to determine whether it would be possible to make a relatively short count and then extrapolate to the whole day. The test results showed the excursionist influx is heterogeneous throughout the day.

6.2.4 Peak Times of Excursionist Flow

As counts were being done at all the locations, the number of excursionists was recorded every fifteen minutes. It is therefore possible to analyze excursionist flow by the

hour. The numbers of excursionists from two successive fifteen-minute periods were added to get a half-hour count. These half-hour counts are graphed in Figure 26.

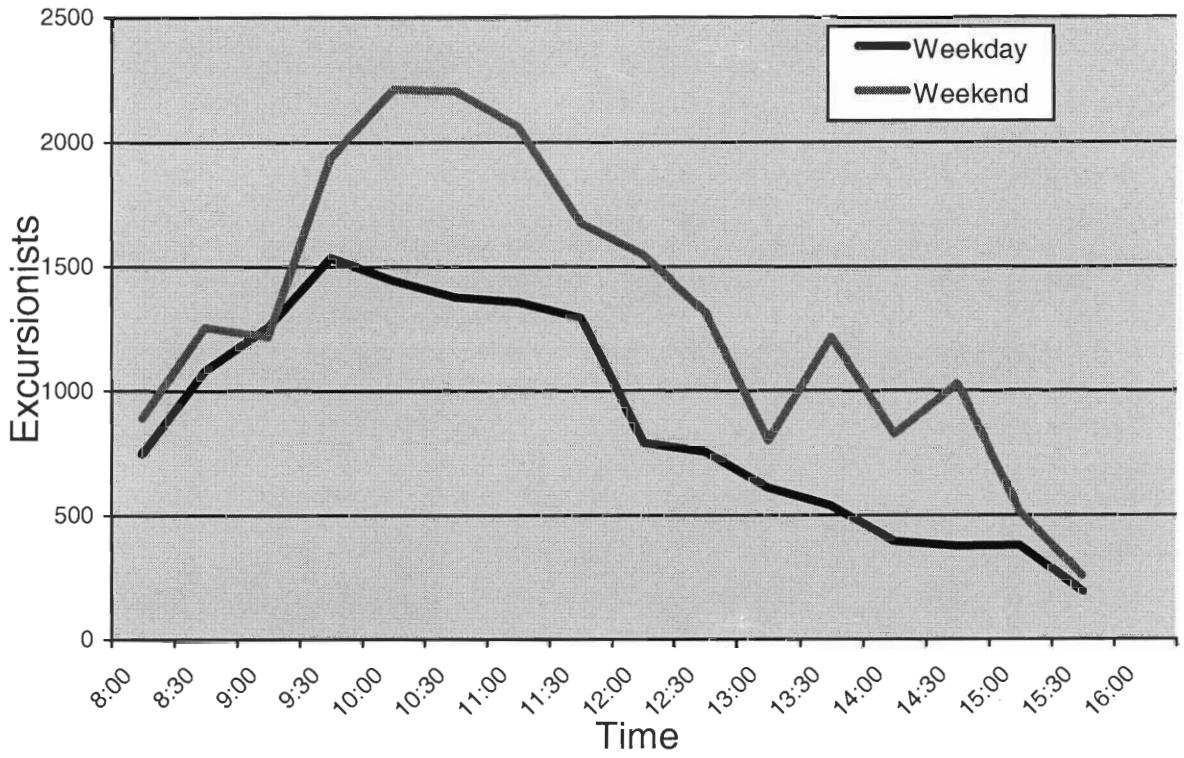


Figure 26: Hourly Trend of Excursionist Influx

The graph shows that the peak occurs between 9:00 and 11:30 on weekdays. On weekend, the peak is half an hour later, starting at 9:30 and ending at noon. It can also be seen that while excursionist flow slowly dies away after the peak on weekdays, a smaller second peak is experienced on weekends.

7 Analysis and Conclusions

After the raw data was collected and the results laid out, it was possible to begin the extrapolation process. This chapter goes through the extrapolation process step by step and discusses the validity of the estimation.

7.1 Extrapolation of Counts to a Yearly Estimate

The final estimate for the number of excursionist tourists was derived using the raw data counts, weekly excursionist flow data from sampling at the Santa Lucia train station, and yearly hotel stays from the APT.

7.1.1 Extrapolation to a Full Week

The first step in this process is getting an estimate of a full week for each location from weeklong proportions of excursionist arrivals obtained from sampling at the train station. A three-hour count was conducted on every day of the week in order to see how arrivals of excursionists fluctuated over seven days.

Table 10 : Weeklong Fluctuation Matrix

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Monday	1,00	0,88	0,75	1,28	0,88	1,51	1,92
Tuesday		1,00	0,85	1,45	0,99	1,71	2,17
Wednesday			1,00	1,70	1,16	2,01	2,55
Thursday				1,00	0,69	1,18	1,50
Friday					1,00	1,72	2,19
Saturday						1,00	1,27
Sunday							1,00

Once these ratios were available, the group was able to calculate the estimated number of excursionists for any day of the week depending on the day on which a count

was made. To illustrate this point, see Table 10. An actual count was done on a Friday at the Tronchetto. The ratios of all the other weekdays to Friday were known from the weeklong data collected at the train station. The value for Wednesday, for example, was found by multiplying Friday's count by the ratio of Wednesday to Friday. The fields with blue backgrounds indicate days on which actual counts were conducted. The other fields contain extrapolated data.

The results of the extrapolations are shown in Table 11.

Table 11 : Weekly extrapolations of excursionist tourists

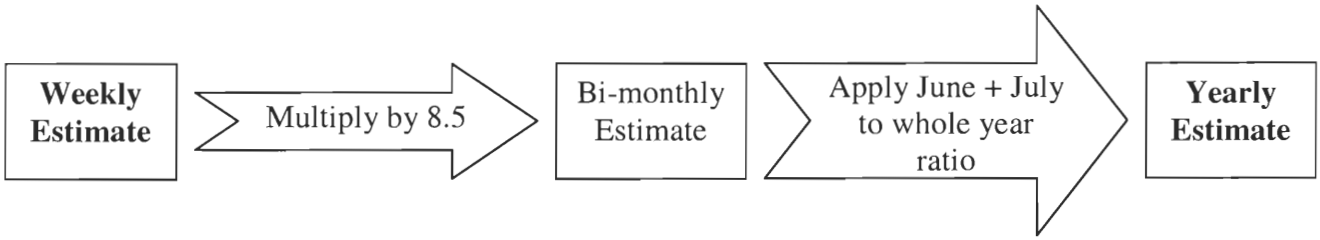
Location	MON	TUE	WED	THUR	FRI	SAT	SUN	Total
St. Lucia	2548	2241	1916	3256	2222	4885	6204	23272
Tronchetto	6796	5978	5109	8686	5927	7313	9288	49097
Piazzale Roma	2941	2587	2211	3759	2565	3082	3914	21059
Bacino	5702	5016	4287	7288	4973	1688	2144	31097
Punta Sabbioni	2014	1772	1515	2575	1757	1799	2285	13717
Zattere	836	735	628	1068	729	1257	1596	6849
Total from all locations								**145090**

From the calculations, it was found that approximately 145,090 excursionists come to Venice every week during June and July, assuming excursionist flow stays constant in these two peak months.

7.1.2 Extrapolation to a Year

There are sixty-one days in June and July together, which is approximately equal to 8.71 weeks. To find the number of excursionists who come to Venice during the course of June and July, one multiplies the weekly number by 8.71 and obtains 1,263,743. From these two months, one can find the whole year using the data from the APT, which consists of information from hotels on their occupancy rates, their capacity, and

information from other accommodation sites. The number of residential tourists for each month is given. One can use the ratio of the rest of the year to June and July.



The above calculation resulted in **6,173,633** as the estimate of excursionists visiting Venice every year.

7.2 Validity of Estimates

The project group has done its best to make the estimate as accurate as possible. In an ideal case, every single ingress point would be monitored continuously for the whole year and every single person entering Venice and the Lido would be surveyed to determine if they were excursionists. The farther away one gets from this ideal case, the more error is introduced to the estimate. Possible sources of error are discussed in this section, to give the reader an idea of the reliability of the estimate that was produced by this project. Refer to the Recommendations section on possible methods of avoiding these complications.

7.2.1 Mistakes in Identification of Excursionists

The project group's method of identification depends on human judgement, which is known to be fallible. A group member decides whether a passing traveler is an excursionist or not by comparing the way the subject looks to the criteria defined in the methodology. There are two sources of error in this process: wrong decision making by

group members, and inaccurate or incomplete criteria. As mentioned earlier, tests were done to determine the accuracy of the identification process. These tests consisted of a preliminary identification of a subject, followed by a two question survey of the same individual. The subjects were first asked if they were tourists, and if the answer was yes, if they were spending the night in Venice. Test results revealed that project group members correctly identified travelers for what they were 90.5% of the time in tests before any counting was undertaken, and 95.5% of the time in tests after the counting process. However, the point of the identification process was not to identify all kinds of travelers, but just excursionists. With this in mind, the data was re-analyzed to determine the deviation from the actual number of excursionists. It was found that 1.6% overestimation and 2.8% underestimation occurred simultaneously, reducing to a final 1.2% error, or 98.8% accuracy. It must be noted that group members noticed that they were inclined to survey travelers whom they could immediately identify, rather than those for which they hesitated.

7.2.2 Inconsistency Among Project Group Members

Consistency is directly related to accuracy. The group has an average accuracy of 95.5%; however, each individual does not count in exactly the same way as another. Again, tests were conducted to determine the extent of the variation. All four project group members were situated in the same place and counted simultaneously. The average of the four members' numbers was taken, and then subtracted from each member's count to determine the error. It was found that the average error was 5.8% before any counting was undertaken process and 4.5% afterwards.

7.2.3 Coverage of Ingress Points

The choice of counting locations has been explained in the methodology section. The reason it's mentioned here is that since the project group chose not to count at all possible entry points, the excursionists, who were coming in through the less conventional ways, were being missed. Test counts done at these less popular transit sites told us that the number of these people would be small enough to not affect the estimation. For further work that intends to be more accurate, it is advisable that all other ingress points, whether they are legal or illegal be covered, or at least factored in.

7.2.4 Sampling Errors

The project group's method of counting consisted of full-day counts on a weekday and a weekend day at each location, plus a full week of three-hour samples at the Santa Lucia train station. These samples were then used to model the tourist flow at all other counting locations. Both the full-day counts and the three-hour samples are prone to error because the project group doesn't know how they are affected by weather, special cultural events and the economy. It may also be that the three-hour samples are not representative of the other locations, thereby adding error to the calculations.

7.2.4.1 Special Events

Venice has many regular festivals throughout the year that bring in a significant amount of excursionists. These festivals require special attention because the excursionist flow on these days cannot be estimated using data from non-festival days. Also, each festival is unique and attracts different people.

7.2.4.2 Temporary International Incidents

International incidents may affect the excursionist flow into Venice. For instance, this project coincided with the Kosovo crisis. Although official information was not gathered, it was rumored that many mass cancellations of hotel reservations had taken place. One can reasonably assume that excursionist flow was similarly affected.

7.2.4.3 Effects of Weather

Venice is located on the sea in the subtropical region, and therefore is subject to seasonal weather changes. It is not known how exactly weather affects excursionist tourists. While it can be argued that they might find bad weather (clouds, precipitation) discouraging, it might also be the case that they are not troubled by it, since they only have one day for visiting the city.

7.2.5 Problems with the Yearly Estimate

The estimate for the months of June and July was derived from the weekly estimate. Excursionist flow information was used to get the weekly estimate, while the yearly estimate was made using residential tourist statistics from the APT. This can be a source of error because residential tourist flow and excursionist flow may not be parallel all through the year, especially since the number of beds in Venice is limited and fixed.

7.3 Conclusion

The project group concludes that although the above errors are significant, the estimates are based on a solid, proven methodology and are adequate given the time and

resource limitations experienced by the project group. The project group suggests that a more accurate estimate be achieved using the recommendations in the Section 8.

8 Recommendations

It was mentioned in Section 6 that the actual methodology of this project was just as important as the estimate itself because the estimate will be obsolete next year and totally useless in a few more. The method of getting the estimate, however, can be reused. The group was aware of this situation and therefore did its best to create a reliable and reproducible methodology. It must be kept in mind that the group was limited in resources (such as time and manpower) and therefore produced a method that would accommodate this condition. While this methodology might be useful for future project groups, it is not sufficient for the use of the APT. Therefore, the group decided to write an instruction manual on how to carry out an excursionist tourist count in Venice. The motivating factor behind this decision was that the project group had acquired significant experience during the implementation of the methodology, but was unable to make use of it since it did not have the luxury of time to go back and redo counts.

Because of inevitable errors that arose from limited time and resources, certain areas of the project could benefit greatly from continued study. The monthly flux of excursionists has not been established for the entire year; currently, hotel reservation data are used to model the flux of excursionists. In addition, the Biennale art festival was underway while the project group conducted its counts. The Kosovo crisis had possibly discouraged a significant number of tourists from visiting the area surrounding the war zone as well. Furthermore, the effects of weather on the arrival of excursionists were not determined by the project group. During the two months that the project group conducted counts, there was only one festival day. The project group was present in Venice during the months of June and July, therefore missed all of the other Venetian

festivals, which are known to attract a large number of excursionists. One other issue that the project group was not able to address was the identification of excursionists during seasons other than summer. This Recommendations Chapter is structured to suggest solutions to these problems and also to suggest sample programs to improve the estimate of excursionists for the year.

8.1 Establishing the Monthly Variation of Excursionist Flow

Hotels have a fixed number of rooms, which creates an upper limit to occupancy regardless of any excess demand. The number of overnight tourists cannot increase beyond a certain number. Excursionists do not have such a limiting factor; thus, the project group's use of the hotel occupancy data to establish monthly trends suggests that the true number of excursionists could be higher than calculated. Furthermore, the project group was unable to find any evidence to support the theory that overnight tourist flow and excursionist flow follow the same pattern throughout a year. Therefore, the project group strongly recommends that future study be undertaken to determine the flux of excursionist flow throughout the entire year.

The project group suggests that if excursionist flow is monitored at least monthly, then adequate information will be collected for accurate extrapolation to the entire year. The best solution to this problem of determining yearly excursionist flow would be, of course, to take a census; however, as this solution is not practically possible, the project group suggests a monthly monitoring schedule where the same weekday is chosen in every week of every month and monitored. Monitoring would consist of taking counts at all chosen ingress points simultaneously. This method would allow for the relative monthly flows of excursionists to be compared and would also allow for other

variables that might not stay constant such as weather, festivals, special events and international political incidents.

8.2 Establishing Festival Excursionist Flows

Venice has many regular festivals throughout the year that bring in a significant number of excursionists. These festivals require special attention because the excursionist flow on these days cannot be estimated using data from non-festival days. Also, each festival is unique and attracts different people. It is therefore not reasonable to count on only one festival day and assume the others will have the same excursionist influx. The project group suggests that each festival be monitored extensively (extended counting hours, modified excursionist identification methods) every couple of years. Once a number is established for a festival, a ratio to another specific day can be derived in order to get a festival estimate in the following years.

One special case among festivals is the Biennale, a modern art festival that takes place during June and July every two years. It differs from other festivals in that it is biannual and spans two months instead of just one day. The project group suggests monitoring a Biennale year and a non-Biennale year, and thereafter treating them as two separate instances of excursionist flow in Venice.

8.3 Temporary International Incidents

International incidents that may affect the excursionist flow into Venice must be accounted for in any estimate of yearly excursionist flow. For instance, this project coincided with the Kosovo crisis. Although official information was not available, it was rumored that many mass cancellations of hotel reservations had taken

place. One can reasonably assume that excursionist flow was similarly affected. The project group suggests re-collecting data that is used in extrapolations whenever major changes occur in international stability.

8.4 Investigating the Significance of Weather in Excursionist Tourist Flow

Venice is located on the sea in a subtropical region, and therefore is subject to seasonal weather changes. The project group suggests ascertaining whether or not excursionist flow is significantly affected by changes in weather conditions. If it should be found that weather conditions do affect excursionist flow, care should be taken to try to have a similar distribution of weather conditions in the sample year as in an average year.

8.5 Improvement of Visual Identification Methods to Account for Seasonal Differences

The visual identification methods discussed in the methodology are all based on observations made in the summer. Even though they have been found to quite reliable for this project, they would not be appropriate in seasons other than summer. A study intending to make counts outside of the summer season should propose and test an identification method similar to that defined in this project, except adjusted for the respective season of the test.

8.6 Recommendations for the Training of Counting Personnel

Even though the visual identification method described in this project is quite intuitive, it is still necessary to train individuals before they can be sent into the

field to make accurate counts. This can become problematic, especially when the individuals who have produced the identification method are not the same with those who will count. The project group therefore suggests the following course of actions for the training:

i. Study identification method if one exists; brainstorm for ideas if no method exists.

ii. Go to counting locations and observe tourists, trying to apply the method from step one. Survey passing travelers to determine if the counter's guess as to whether the subject is an excursionist or not is correct. Note causes for faulty decisions.

iii. Improve identification method using experience from step two.

iv. Re-test accuracy of method using step two.

v. Test for consistency among counters by making them count simultaneously at the same location

Steps one through four are aimed at training the individual while step five is meant for the whole group. The improvement of the identification method referred to in steps two and three is more appropriate when there is no pre-existing identification method, like in the case of counting during the winter. It is advisable to test for accuracy and consistency before, during, and after the counting period.

8.7 A Sample Estimation Procedure (Including Workforce Considerations)

This section describes how the APT or a similar organization could go about re-doing the estimation of excursionist tourists in Venice. The recommendations made here arise from the group's experience with the subject and sometimes from intuition. Because of the latter, this section should be critically reviewed before it's implemented.

The procedure described in this section is a continuous monitoring process. It aims to minimize the amount of work necessary to make an estimate through the use of a preparation period prior to the actual continuous monitoring. The preparation period is a first step, consisting of intense data collection.

One feature that needs to be pointed out is that this method does not have to be implemented exactly as it is described here. This is especially important if it is not desirable to have the estimation project last longer than one year. In such a case, the so-called preparation part of the here described method can be used as a stand-alone estimation procedure.

8.7.1 Preparation for the Continuous Monitoring Procedure

This section describes a yearlong procedure for estimating the number of excursionist tourists coming to Venice. It can be also used a first step in a long-term estimation process. While the one-time estimation project will only make use of the actual numbers, the long-term project will require the extraction of the following data from the counts:

- The monthly fluctuation of excursionist flow
- The daily fluctuation of excursionist flow
- The distribution of excursionist traffic among counting locations

The method for both the one-time estimate and the long-term estimate is given below. The long-term method would differ from the one-time estimate in that it would implement a Biennale coverage version of step 3.

i. Develop visual identification methods for each season. Refer to the training procedure in Section 8.6 for suggestions on how to develop an identification method.

ii. For one year, count at all chosen locations simultaneously, whenever you are counting.

iii. Count on seven days every month, for one year, to determine the fluctuation of monthly flow. These seven days should cover all the days of the week, but should not be in succession, so as to better represent the month. The fluctuation of excursionist flow from one day of the week to another should also be a result of these counts, since the counts cover every day of the week.

iv. Count on all festival or special event days. On these days, consider counting at more ingress points than usual because overcrowding might force travelers to use alternative means of transportation; also, investigate companies that run boats and bring in people on these days only.

Once all these steps are completed, the one-time estimation project will only need to extrapolate the weekly data to a yearly number. This extrapolation would be done by multiplying each month's weekly count by the number of weeks in that month (for example, there are approximately 4.43 weeks in January).

8.7.1.1 Estimation of Required Workforce for the Implementation of the Sample Counting Procedure

This section gives a rough estimate of the workforce needed for the implementation of the one-time estimation procedure. The estimate is made by determining the number of people needed on a regular counting day and multiplying that number by the number of counting days.

The numbers of counters needed at each location are as follows:

Table 12: Number of counters needed at all counting locations

Location	*Number of counters*
Tronchetto	*2*
Piazzale Roma	*4**
Santa Lucia	*4*
Bacino di San Marco	*8*
Punta Sabbioni	*2*
Zattere	*2*
Total	***22***

Eleven people are needed to simultaneously count at all counting sites. However, this number is doubled because it is necessary to count in two shifts to avoid fatigue and allow for physical needs. Hence the numbers in Table 12 are double that of how many each location needs at any point in time.

The number of counting days is calculated by taking the number of days of counting in each month (seven) and multiplying it by the number of months in a year (twelve). This calculation yields eighty-four days.

Up to this point in the estimation, twenty-two counters are needed to work four-hour shifts for eighty-four days. This is equal to 7392 man-hours. To this number must

be added the number of people times days that are needed for counts on festival days. A festival-day workforce estimation will not be made here because the project group does not have the necessary experience.

8.7.2 The Continuous Monitoring Procedure and its Development

(This section describes the second part of the long-term estimation process and is not necessary for the one-time estimation project)

Once the two years of intense data collection are finished, few actual counts are needed to complement the statistics of the first step to an extrapolation to the whole year. The rationale behind the few days of counting is explained below, alongside each count.

i. Count in only two months, one in peak season, and one in off-season.

ii. If the ratio of entrances through locations stays the same during the year (refer to previously collected data for this), count at only two locations.

iii. Count on only a small number of days in a month. The repetitive count of a chosen day is useful, because then the average of those counts can be taken and plugged into the daily fluctuation ratios from the preparation period.

iv. Count on special event and festival days.

These steps are a compromise between re-implementing the preparation period and making only one count on the basis that the data collected in preparation period will allow extrapolation to a year from just one day. Since this kind of a method was never part of this project, these steps are suggestions rather than recommendations.

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