

05C0081
FC-V041-50



The Evolution of Stores and Decline of Residential Comfort: The Availability of Necessary Goods in the Historical Center of Venice

An Interdisciplinary Qualifying Project

Submitted to the faculty of

Worcester Polytechnic Institute

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

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ABSTRACT

This project examined the evolution of Venetian shops and the decline of residential comfort by exploring the impact of economic changes in Venice through the cataloging of current shops and their transformations over time and proposes methods for the improvement of residential comfort in the city. An original methodology was produced in addition to databases and map layers created using data collected by the team. This study provides the groundwork for other studies on retail tourism and residential comfort.

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EXECUTIVE SUMMARY

In a city with very limited transportation, where walking over dozens of bridges is a part of everyday life, an aging population struggles to fulfill their daily needs. The chore of carrying groceries home from the store is complicated by not only numerous bridges and the limited mobility of aging pedestrians, but the obstacles of having to walk further than ever for simple commodities such as bread and fruit, and weaving around herds of oblivious tourists. This has become the day to day reality for the residents of Venice. A once vibrant and flourishing culture has experienced population loss at an alarming rate and those who remain find Venice to be much different from the city they grew up in. In the past fifty years the alluring lagoon gem has undergone tremendous changes, most visibly in the influx of tourists who now constantly flock to Venice and the gradual but evident shift in the shops throughout the city.

While residential needs change naturally over time with the advent of new technology and other societal changes, Venice is a unique city which has experienced a transformation unlike any other place on earth. Venice's unusual landscape is only one dimension of the complexities which influence the city's commerce. Since World War II a continuous decline in population accompanied by a substantial boom in tourism has forced a dramatic change in retail. The population drop may have caused shops to close and in some cases shop closings may have caused the population to drop. The two scenarios are inextricably linked, and the dwindling population must be considered when examining the retail trends.

Tourism is often a vital component of economies throughout the world but some cities have come to rely heavily on income from tourism and, in some instances, tourism has had an extensively negative impact. Venice's rich history and culture draw sightseers from around the world, but the increasing tourist trade threatens the Venetian way of life. More lucrative tourist stores replace the city's local shops and activities, which were once integral parts of everyday life. As the population deteriorates, the economy continues to shift towards tourism, converting sections of the city into primarily tourist economies. These areas, filled with glass souvenirs and mask shops, often fail to accommodate the needs of residents, forcing the aging inhabitants to travel further for groceries or move away from their homes.

The increased cost of living and decreased quality of life instigated by tourism makes it more difficult for residents to comfortably afford the city. Many residents work and shop on the mainland of Mestre, where prices are far cheaper than the tourism driven economy of Venice. Residents need convenient access to basic shops and resources to increase their satisfaction with the city. Research

shows that if the city makes this a reality, more residents are likely to remain in the city.¹ Although this would increase residential comfort, the cost of living is more directly affected by tourism. If nothing is done to remedy the situation, it is possible that the trend of mass population declines will continue.

The city has done very little to determine the severity of the tourist problem in Venice. A project completed by a student from the Massachusetts Institute of Technology studied the shops in Sant' Elena, and Worcester Polytechnic Institute projects have catalogued shop evolutions in the regions of Santo Stefano and Madonna Dell'Orto. The majority of Venetian shops remain uninvestigated and although researchers have documented similar mass tourism problems in other areas, there is not yet a standard method to analyze the state of economic change. Furthermore, a situation as unique as Venice requires a methodology tailored to the unusual challenges and changes the city faces. Our primary data collection is only the initial step in documenting shops present and past which must then be analyzed in a comprehensive manner to relate the data to the state of residential comfort in Venice.

Our project catalogs present day stores and begins to map the evolution of Venetian shops in an effort to examine the changes in the local commercial environment since World War II. Through personal interviews with Venetian residents our team collected data regarding local retail shops and how they have developed for better or for worse. The ultimate goal of this project is to categorize areas according the degree to which the retail sector caters to tourism and to identify regions where residential needs are not fully met and elucidate the amenities in demand. This project aims to provide Venetian residents, students and visitors alike with a complete and comprehensive searchable database and map providing instant access to the city's commercial resources.

Furthermore, the recommendations of this study aspire to improve the quality of residential life.

Our project entailed several distinct parts including: present-day data collection, store evolution data collection, an evaluation of retail tourism, and finally an assessment of residential comfort based on amenities present and absent. The retail tourism measurement is an initial evaluation whereas the comfort assessment is a more in-depth consideration of how well areas serve a need. The evolution of shops over time is assembled to consider how the area has developed, as well as why these changes may have occurred when making recommendations for increasing conveniences in the area. The method created by this project categorizes areas according to the degree to which retail caters to tourists in the area and the presence of resident comfort services. A sample of amenities is used to illustrate the method and provide a basic consideration of comfort.

¹ *Idem.*

The cataloging of all present day shops was accomplished through four weeks of data collection. The photos, descriptions and frontage measurements were all products of our data collection and can be located in a searchable Access database of over 3800 storefronts. Once data was collected, additional store descriptions including tourist, residential and mixed orientation were added. The other component of our data collection involved touring neighborhoods with long-term Venetian residents and recording the locations of previously existing stores with dates as provided by our interviewees. The evolution data was collected for the sestiere of Castello and is also available in searchable Access database which includes approximately 577 store changes in the areas studied.

All of this data has also been mapped with the aid of GIS and is searchable by address, area, store type, and other criteria. These maps and databases alone are useful tools for searching the retail shops of Venice and can be utilized in future studies. Our assessments exemplify the types of studies which can be conducted using this data.

The population changes of Venice between 1951 and 2001 were needed for our method of determining residential comfort. Interactive census tract maps with the population embedded in each tract were drawn for each decade using raw census data obtained from the *Ufficio Statistica*. Thematic population density maps were created to produce a compelling graphical representation of the significant population decline in Venice since 1951. Population density is more useful than basic population data because it eliminates the bias of island size and allows standard ranges to be used in order to better compare the colored maps. Significant population trends includes decreases in areas with tourist attractions, such as San Marco and the Rialto Bridge, and increases in more residential areas including points west of Arsenale and on Giudecca, the eastern island of which has experienced a doubling in population.

All shops were classified based on what types of goods or services the shop provided. Approximately 475 stores were closed with 26% of open shops deemed tourist, 19% residential and the rest of mixed accommodation. The sestiere of San Marco has the largest number of tourist shops and mixed shops, while most residential shops are located in Castello. Mixed is the predominant store type in all sestieri, but the ratio of tourist to resident shops varies. In San Marco, Cannaregio, and San Polo tourist shops are predominant, with San Marco having the highest percentage of tourist shops overall. In Dorsoduro the tourist shops are slightly outnumbered by residential shops. Both Castello and Santa Croce have no faction of significance.

A broad classification system was used to categorize each shop based on the initial descriptions recorded during data collection. The category with the largest percentage is tourist related businesses followed by food services. Since food services are strongly tourist oriented, the commerce of Venice can be considered primarily tourist related based on this categorization.

The highest frequency of each of the basic necessity shops is consistently in the two largest sestieri by area, Castello and Cannaregio. San Marco has very low, if not the lowest, frequencies for each category.

Comfort levels were not necessarily higher for areas with a dense presence of a particular amenity. Comfort levels were significantly higher for densely populated areas that had access to at least one store that provided each amenity. Our amenity maps are valuable means of locating what resources are present and absent in each area.

The output of our project can be utilized in a variety of ways; some of our primary recommendations include the use of our methodology and map layers in determining the best location for a particular type of store as well as determining the best type of store for a specific location. Our chief recommendation for the improvement of residential life is through the development distributed supermarkets.

A distributed supermarket is a traditional chain-owned supermarket, whose various departments are broken up into different smaller stores, much like the individual food stores that populate the majority of Venice. The shops are under central management, and spaced owned by either the supermarket company, or the city of Venice which would lease to the operators for little or no rent. This central ownership provides the constant supply and lower prices of a supermarket. However, the de-centralized location allows the superior quality of individual stores, as well as the ability to meet store needs in neighborhoods that normally would not have the space, or economy to support a few local stores.

We believe that distributed supermarkets are a powerful remedy to the lack of residential comfort in certain residential neighborhoods. In addition to improving residential comfort, distributed supermarkets will provide a compromise between the economics and lifestyle Venetians desire.

Our recommendations for implementation are accompanied by an explanation of what should be done to continue this project in the future. This includes methods which expand upon our data collection and analysis. This project produced an original methodology as well as databases and map layers created using the data we collected.

1 INTRODUCTION

Resident needs are known to naturally vary over time due to societal changes and advancements in technology. Once vital shops sometimes become obsolete and new goods are constantly emerging, but as shops close and change, it is often difficult to pinpoint the actual cause of the transformation as opposed to simply elucidating a trend. The city of Venice, rich in culture and unlike any other city, has experienced significant change since World War II. A substantial boom in tourism accompanied by a continuous decrease in population has influenced shifts in the Venetian economy.

Many areas of Venice indicate the economical shift the city has experienced in recent decades. Campos throughout the city illustrate the closed shops, some used for storage and others simply unused, scattered all over Venice. Worn away signs reveal once prosperous areas which had fulfilled residential needs. The complex changes in commerce that Venetians have experienced could be accredited to numerous influences. While some commodities, such as coal, have become obsolete and new products, such as computers, have been introduced, some shops have changed over to more lucrative tourist endeavors and many have simply closed permanently.

Venice's history of world-renowned craftsman has nearly ceased to exist but the concept of the local craftsman has become obsolete for a multitude of reasons. Venice is not unique in this type of change as the art of craftsmanship is constantly being replaced by manufacturing. The time and skill of craftsmanship is simply too expensive. Goods of similar quality can be produced with far less time and manpower, leaving consumers with far cheaper alternatives. Consequently, the work of the craftsmen simply cannot compete with manufactured goods. This is also partially due to the "vicious circle" of tourism explained in the next section. Additionally, the skills of the craftsman have apparently become lost over time, failing to be passed onto the next generation due to more lucrative opportunities which have emerged as society evolves.

While tourism has in fact increased and population decreased, the correlation between these occurrences must be examined closely. A waning population could be a reflection of too much tourism, an increased cost of living, an absence of residential conveniences and so on. The population drop may have caused shops to close and in some cases shop closings may have caused the population to drop. The two scenarios are inextricably linked, and the dwindling population must be considered when examining the retail trends.

Tourism is often a vital component of economies throughout the world but as some cities have come to rely on income from tourism, local culture is often subdued. Economic prosperity pushes business owners to convert their shops from those selling local necessities like food and medications, to ones selling more tourist-oriented items such as souvenirs. The negative impacts of

tourism are particularly visible in Venice. The city's rich history and culture draw sightseers from around the world, but the increasing tourist business threatens the Venetian way of life. More lucrative tourist stores replace the city's local shops and activities, which were once integral parts of everyday life. Since the end of World War II, a boom in tourism has coincided with a population drop of approximately 140,000 residents. Meanwhile, the economy continues to shift towards tourism, converting sections of the city into largely tourist economies. It is important to preserve the city's cultural identity by identifying these areas before the transition is complete.²

There are various other factors which can influence the commerce, for example the recent emergence of supermarkets must be considered carefully because although the opening of a supermarket often forces small shops to close, they often fulfill a need. The question then arises: Is the absence in local shops due to a new supermarket or is the supermarket the result of a need not being fulfilled by local shops?

The dramatic population loss in recent years causes many to fear for the loss of Venice's unique culture and way of life. The increased cost of living and decreased quality of life caused by tourism makes it more difficult for residents to afford, and live comfortably, in the city. Residents need convenient access to basic shops and resources to increase their satisfaction with the city. Research shows that if the city makes this a reality, more residents are likely to remain in the city.³ Although this would increase residential comfort, the cost of living is more directly affected by tourism. If nothing is done to remedy the situation, it is possible that the trend of mass population declines will continue, causing Venice to lose even more of its culture.

The city has done very little to determine the severity of the tourist problem in Venice. A project completed by a student from the Massachusetts Institute of Technology studied the shops in Sant'Elena, and Worcester Polytechnic Institute researchers have catalogued shop evolutions in the regions of Santo Stefano and Madonna Dell'Orto. The majority of Venetian shops, however, remain uninvestigated and although researchers have documented similar mass tourism problems in other areas, they have not created a standard method to analyze the state of economic change. Our data collection is only the initial step in documenting shops present and past which must then be analyzed in a comprehensive manner to relate the data to the state of residential comfort in Venice.

Our project catalogs present day stores and begins to map the evolution of Venetian shops in an effort to examine the changes in the local commercial environment since World War II. Through personal interviews with Venetian residents our team will collect data regarding local retail shops and how they have changed. The ultimate goal of this project is to categorize areas according the degree to which the retail sector caters to tourism and to identify regions where residential needs

² Karen Witten, Daniel Exeter and Adrian Field. The Quality of Urban Environments: Mapping Variation in Access to Community Resources. *Urban Studies* 2003 ; 40 no. 1 : 161-177.

³ *Idem.*

are not fully met and elucidate the amenities in demand. This project aims to provide Venetian residents, students and visitors alike with a complete and comprehensive searchable database and map providing instant access to the city's commercial resources. Furthermore, the recommendations of this study aim to improve the quality of residential life.

2 BACKGROUND

The city of Venice has a rich history and culture which flourished for centuries until its relatively recent decline. The distinctive canals and architecture create an unusual dynamic which presents the city with many challenges from sewage disposal to aqua alta. The unique city of Venice draws tourists from all over the world but the very same sightseers who come to admire the city's mystic have become a serious threat to the Venetian way of life.

The life of a tourist city has been described as a “vicious circle” beginning when tourism first outgrows the city, overburdening its resources.⁴ Soon, day-trippers inundate the city looking for a quick glimpse of the major hot-spots and to purchase a cheap souvenir, contributing a great deal to congestion in the city, but very little to the economy. Eventually, local merchants may be displaced by shops purveying lower quality souvenir items which appeal to the mass tourists.⁵ Finally, with the loss of quality products and the increasing congestion from day-trippers would-be overnight tourists find cheaper and better places in the city’s outskirts, in the case of Venice the mainland of Mestre, to stay.⁶ This cycle could eventually cause such a decline in quality and accessibility that people will no longer wish to visit the city.⁷

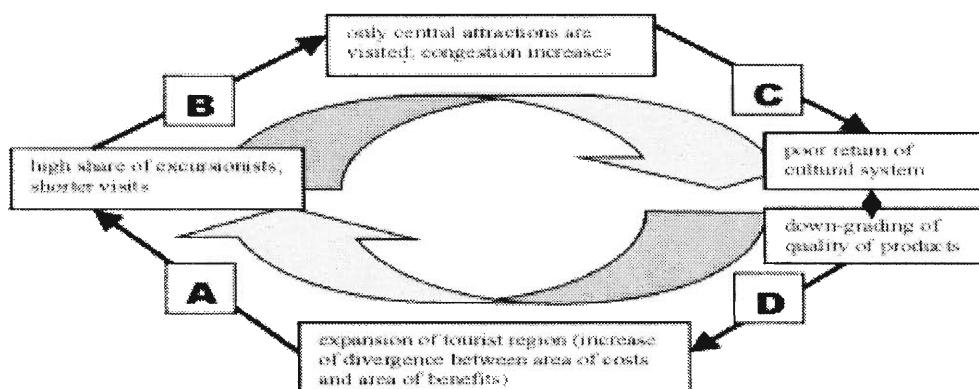


Figure 1. Tourism Development Cycle⁸

Although tourism can be beneficial there is a limit to how much a city can sustain. It is believed that every city has a “socioeconomic carrying capacity”; a certain amount of tourism which the city’s resources can sustain. In Venice the carrying capacity is believed to be 22,500 tourist

⁴ Antonio Paolo Russo. The “vicious circle” of tourism development in heritage cities. *Annals of Tourism Research*. 2002; 29, no. 1: 169-170.

⁵ *Ibid.* 171-172

⁶ *Idem.*

⁷ *Ibid.* 176

⁸ *Ibid.* 170

arrivals every day, with no more than 10,700 of these being excursionists.⁹ Unfortunately, this limit is now surpassed on a regular basis in Venice, where the overnight tourist to resident ratio is around 50 to 1 or 175 to 1 if day-trippers are included.¹⁰ Residents are most affected by the next stage in the cycle, the decrease in product quality, and this change could serve as a possible impetus for them to leave the city.¹¹ Consequently, precautionary measures should be taken to avoid this potentially dangerous population decline. Monetary incentives, such as taxes for visitors not staying overnight, are a possible solution, as is a complete reorganization of the cultural sector.¹² Below is a chart outlining potential actions to counteract some of the portions of the cycle which most heritage cities face. The specific needs and requirements of the city need to be thoroughly studied in order to determine what action(s) would be best suited for it.

Causation	Context	Hard Interventions	Soft Interventions
1. Increase of tourist demand⇒enlargement of tourism region, shorter visits	Difficult expansion of tourism supply, irreproducible heritage (small centers, islands)	Zoning, regional planning, enlargement of accommodation capacity in the city center	Entrance ticket, incentives based on adv. booking, discrimination policies, tariffs, creation of a supralocal “tourism authority”
2. Shorter visits⇒increasing congestion costs, asymmetric information	Many cultural resources, difficult mobility (medium-sized art cities)	Zoning, access regulation, closing of portions of city center, infrastructure policy, decentralization of cultural supply	Information and discrimination policies, promotion, creation of “alternative routes”
3. Asymmetric information⇒decline in the quality of tourism supply (primary and complementary)	Limited competition, low controls, scarce homogeneity of cultural institutions (mature destinations, transition countries)	Licensing regulations, law enforcement, police controls in central areas, interpretation and welcome centers	Integral management of the cultural system, incentive to start ups, quality labels, virtual access to cultural products, tourism e-commerce
4. Decline in quality⇒incentive to commuting and disincentive to cultural visits	Sensitiveness to reputation, international attention, prevalence of tour-operated holidays, presence of alternatives in the hinterland (mature metropolitan destinations, high accessibility)	Regional-national planning	Reputation policies, promotion, diversification of tourism supply, fidelization, marketing, rejuvenation of products

Figure 2. Possible Policies to Prevent Harm from Tourism¹³

The negative impact of tourism on local life has been documented all over the world. A simple case may be seen in the city of Lijiang, China, which has received thousands of tourists every year since it was named a World Heritage Site by the United Nations.¹⁴ The number of native families living in the city dropped from 4,000 to 2,500 in just one decade, and with them went much

⁹ *Ibid.* 172-174

¹⁰ *Ibid.* 173

¹¹ *Ibid.* 175-176

¹² *Ibid.* 176-178

¹³ *Ibid.* 177

¹⁴ Lara Wozniak. Shared Heritage. Far Eastern Economic Review 2003 ; 166, no. 22 : 27

of the native culture.¹⁵ The government has intervened by offering native residents monetary rewards for restoring their historic homes, and is in the process of revamping the city's infrastructure in order to encourage native villagers to stay.¹⁶ The possible implementation of a similar system could prove useful in Venice and other threatened cities.

The state of resident comfort is an important factor for the people of Venice. The increase in cost of living and decrease in quality of life may be a major cause of the population loss. Investigating the impact of tourism on resident comfort will involve first determining what a resident needs in order to be comfortable in a neighborhood. Venice poses many specific issues that are taken into account when determining these. Since walking is the main mode of transportation for Venetian residents, necessities must be closer than in areas where other forms of public transportation exist and are convenient. Developing a system to determine what is missing in certain areas entails first deciding what is needed in an area and the importance of each criterion.¹⁷ In this study the types of shops are most pertinent in terms of importance. For example, a supermarket or dairy would be of greater importance than a mall or thrift shop.¹⁸ An acceptable range of proximity of these shops must be determined, taking into account transportation and possibly the aging Venetian population.¹⁹ A study conducted in New Zealand creates general categories or domains which are then divided into sub-domains and ranked by importance with the maximum distance at which they should be found.²⁰ The concept of local and regional resources takes into account when determining maximum distances. For example, a corner store is considered local and should be closer than a hospital, which is a regional facility. Our study is a simplified method of evaluating residential comfort but considering a select group of everyday essential retail stores and indicating whether areas meet or fail to meet requirements of acceptable comfort levels. The importance of these stores ranked based on how often they are patronized by the typical Venetian resident. The optimal proximity is determined using several radii as explained in the next section.

Population changes are relevant to the tourist shop level and residential comfort assessments. We created graphs and charts elucidating population trends. This information, in conjunction with tourist trends, complements the tourism classifications as well as evolution data. Using information obtained from the Census Bureau we were able to create population maps showing the population and population density of each island. This data is required for residential analysis. For example, although an island may be lacking nearly all residential amenities, the

¹⁵ *Idem*

¹⁶ *Idem*.

¹⁷ Witten 165-167

¹⁸ *Ibid.* 166

¹⁹ *Ibid.* 165-166

²⁰ *Ibid.* 166

population data may reveal that very few people, if any, live on that island. In this case, the residential comfort for this island is irrelevant.

Shops are classified in several ways as explained in Section 3, Methodology. We have adopted the official Italian system developed by the Istituto Nazionale di Statistica (ISTAT). This agency has produced a set of commerce codes whereby all types of retail, wholesale, and service shops have a unique number code which can be used to classify them. This is the system chosen to classify Venetian shops as it is one which the largest group of people is familiar with. The code system used a series of numbers starting with a general category, and getting more specific with each successive number. For example, the code for a bakery is 52.24.1. In this example 52 designates the retail sector, 24 indicates a shop selling some type of baked goods, and the 1 indicates a shop exclusively for bread.

Previous projects have begun to investigate the evolution of Venetian shops in an attempt to understand how the retail industry has changed. In 2001, the initial idea for this study began when a student from MIT investigated shop evolutions in St. Elena. In 2003, a project was completed which continued these efforts in the regions of Santo Stefano and Madonna Dell'Orto.²¹ The evolution of the shops in these regions was recorded, and serves as a basis for our project.

By systematically mapping the history of Venetian retail shops it will be possible to see how the city has changed, in some ways due to tourism. We will locate areas of the city which are lacking certain resources, and help identify specific ways to make residents more comfortable.

²¹ Hoey, S., Kahan, M., Marchetti, P., Mazza, K. 2003 "Convents, Palaces and Churches: Transformation of Historic Buildings and the Impact on Venice's Neighborhoods." Interactive Qualifying Project, E03. WPI Venice, Italy : 36

3 METHODOLOGY

This project assesses residential comfort and examines the impact of economic change in Venice by cataloging current shops and examining their evolution over time with the goal elucidating methods of improvement to the state of residential comfort in the city.

Areas are initially classified by the level of retail tourism present. The state of residential comfort is a more in depth consideration of the amenities present from a resident point of view. The evolution of shops over time is assembled to consider how the area has developed, as well as why these changes may have occurred when making recommendations for increasing conveniences in the area. The data collected by our team includes pictures and measurements of store fronts as well as how local retail shops have evolved based on interviews with residents.

The method created by this project categorizes areas according to the degree to which retail caters to tourists in the area and the presence of resident comfort services. Amenities and their acceptable range for comfortable living are based on previous studies of residential comfort and adapted to Venetian needs. Areas lacking essential comforts, or in danger of losing sufficient comforts, are clearly identified along with which amenities are absent for the area. [Preservation and establishment of amenities where needed is critical in maintaining and improving residential comfort.] This project provides the groundwork for other studies on retail tourism and residential comfort throughout the world.

The objectives of this project are:

- 1) Catalog current shops through photography and categorization in searchable databases and map layers
- 2) Classify areas according to the degree to which the retail sector caters to tourists
- 3) Assess the state of residential comfort and illustrate amenities present and absent in each area
- 4) Compile the evolution of the retail sector in available areas

This chapter is comprised of the following sections:

- **Section 3.1** defines the scope of the project as well as key concepts.
- **Section 3.2** describes the data collection process and cataloging of shops.
- **Section 3.3** illustrates the classification of areas according to the degree to which the retail sector caters to tourists.
- **Section 3.4** explains the assessment of residential comfort and the illustration of amenities present and absent in each area.
- **Section 3.5** communicates the process of evolution compilation of the retail sector in areas where interviews were available and its relevance to residential comfort.

3.1 Scope of Study and Definitions

The tourist shop presence and residential comfort assessments are based upon the current shop data obtained. Amenities such as schools, transportation and recreational facilities are not included in the scope of our analysis. The domain of inquiry is restricted to any establishment with an address that appears to sell goods or provide a retail-related service. Closed shops are identified by signs, large display windows, shutters or other indicators. Store front used as displays for other stores are recorded separately by their own addresses. Services such as doctors, lawyers, or daycares are not within the scope of our study. Hotels are a good indicator for tourist areas and are therefore included for tourist shop classification purposes.

Residential comfort is a measure of access to essential amenities regularly utilized by residents. For an area to be residentially comfortable, all needed shops must be present within a proximity deemed acceptable. When residents have a difficult time buying everyday goods such as bread and meat, the area has a low level of residential comfort and has room for improvement.

Present day data collection has been completed for all areas of Venice and store evolution data collection, which was conducted based on resident availability, includes the areas shown by figure 3, including Castello and a section of San Marco.

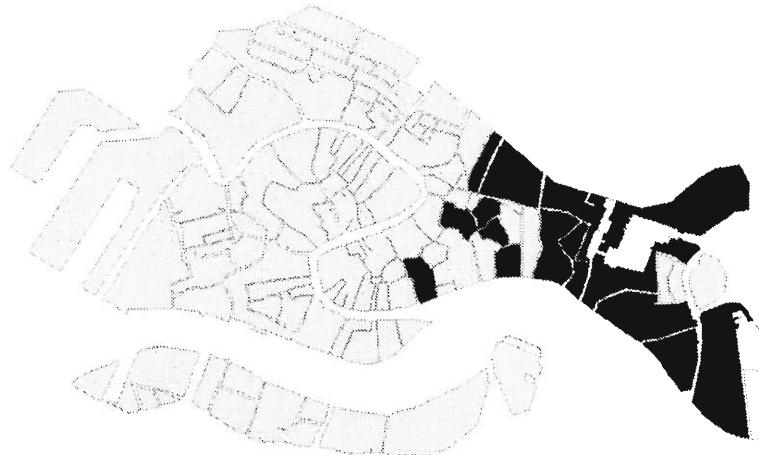


Figure 3. Store Evolution Areas Completed

Data collection was primarily conducted when stores were open in the morning from about 9:00AM until mid-day, when many shops close for siesta, and in the afternoon from about 4:00PM until evening. It was often necessary to collect data for crowded areas during less busy periods, such as very early in the morning when many, but not necessarily all, shops were open. Evolutions are restricted by availability of residents and can be conducted at any time regardless of whether the shops are open.

3.2 Catalog of current shops through photography and categorization

In order to determine what areas can be considered residential, and to assess the level of comfort in each area, we catalogued the stores in each *sestiere*. The catalogue consists of the address, name, classification by commerce code, type (whether tourist or resident oriented), measurement (frontage) and picture of each storefront. Restaurant seating was also approximated when possible. Store fronts used as displays for other store are recorded independently. Data collection is conducted by systematically inspecting each street. We began our collection on the island of San Pietro in Castello and gradually moved through each *sestiere*, until data collection for all of Venice was complete. Opportunities for store evolution interviews with locals were preceded by primary data collection for that area regardless of region. Data collection was done regularly over the course of four weeks and evolution interviews were conducted intermittently when available.

Each establishment is photographed and measured along with the address(es), name (if discernible) and a brief description of store offerings. Frontage is the total measurement of all exposed faces (i.e. both faces of a corner) in meters. Store frontage is measured from the corner, midpoint between shop ends, or at any distinguishable marking that indicates the store space. Measurements of restaurants offering outdoor seating is the frontage of the clearly defined seating area unless the seating is somehow disjointed from the store front, in which case the seating is disregarded in the measurement.

The searchable database, a sample of which can be found in Appendix A, is cross-referenced with alternate addresses, is linked with one or more picture of each store as necessary and includes the frontage and seating data. It provides clear ISTAT commerce codes and type classifications needed for tourist level and residential comfort analysis. The type classifications of “Tourist”, “Resident” and “Mixed” are explained in the next section. The database is incorporated into a MapInfo layer that displays the location of each store on the island and allows access to the collected data. Our layers were created with the aid of the numeri civici layer and expand upon the primitive negozi layer from 2001. Each area includes pictorial representations of the businesses in its boundaries and each business enlarge and show its information. The databases and layers are searchable by address, area, store type and any other criterion in the databases. This catalog has many uses, not only for projects and assessments of this nature but can aid residents, students and tourists in searches for various retail conveniences.

3.3 Classification of areas by the degree to which the retail sector caters to tourism

The catalogue of stores is used to classify the area's shops as mostly residential, tourist and mixed. Tourist shops are defined as any shop offering goods or services specifically geared towards tourists or bear little or no importance to residential living. Residential amenities were determined based on our residential comfort amenities list. Shops providing services to both, such as many clothing stores and restaurants, are considered "mixed". The table lists "residential", "tourist" and "mixed" shops as classified by our team. Each store in the database is categorized as dictated by these lists.

Residential	Mixed	Tourist
Macelleria - butcher	Ristorante	Souvenir
Salumeria - deli	Caffe	Glass
Pescheria - fish	Bar	Masks
Panetteria - bakery	Bancomat	Hotel
Pasta	Clothing	
Lattaria	Tabacchi	
Fruttivendolo - produce	Travel agency	
Vino		
Caffe		
Farmacia		
banca/bancomat		
Tabbachi		
*toiletries		
Bar		
pasticceria - Pastry		
Gelato		
edicola - newsstand		
hair salon		
lenoteca - liquor store		
ristorante - restaurant		
Clothing		
	men	
	women	
	children	
Shoe repair		
Tailor		
office supplies		
hardware store		
Housewares		
Appliances		
copyshop		
libreria - bookstore		
beauty supplies		
Shoes		
dry cleaners		
fiorajo - florist		
movie rental		
toy store		
marine shop (boat parts)		
Furniture		
computers/electronics		
cell phones		
photo printing		
internet/cafe		
Jewelry	- gioielleria	
antiques - antiquariato		
Gym		

Figure 4. Store Orientation Classifications

Each neighborhood is evaluated based on what the majority of shops are oriented towards and placed in one of three stages accordingly: primarily tourist, residential or mixed shops. Figure 5 is an example of a map showing the tourism classifications of shops in each region.

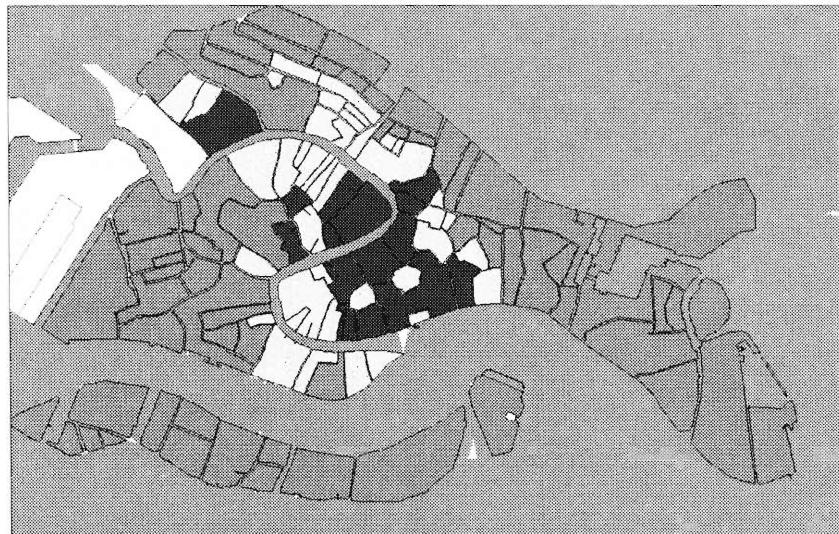


Figure 5. Final Tourist Shop Level Map

Areas with few tourist shops are deemed “residential” and are ideal for our residential comfort study. The residential comfort component examines the actual comfort level of these areas that have been labeled residential due to the absence of tourist shops. Areas which are not clearly tourist or residential may be referred to as “mixed”. These include areas in which the ratio of tourist to residential shops is nearly even, as well as areas in which a majority of shops are considered “mixed” shops. Note that areas sparse in commerce may be designated based upon the few shops that do exist or other indicators in the area such as an area of almost entirely housing. Plausibly, areas with more residential than tourist shops may be more residentially comfortable than tourist areas but as the residential comfort assessment indicates, these areas may lack essential living needs and therefore be less residentially comfortable than a tourist area which still fulfills resident needs. The residential comfort assessment is explained in the next section.

3.4 Assessment of the state of residential comfort of each area

Residential comfort is a consideration of what shops and services residents need versus what amenities are actually present. Our inquiry of the state of residential comfort is comprised of several parts including the process of inventorying and analyzing shops and services, creating a method for comfort assessment and the ratings themselves. Factors not included in the actual assessment are taken into consideration in our recommendations. The store evolutions discussed in the next section is invaluable to our recommendations, as it is important to consider how areas have developed over time. Concerns such as the aging population, very limited forms of transportation and obstacles such as bridges were major influences in determining proximity.

Evaluating existing amenities

We determined what stores exist in each area based on our data collection and for our sample purposes mapped the following eleven types: bread, deli, fish, fruit and vegetable, hardware, hotel, meat, mini market, pharmacy, souvenir, and supermarket. We created maps showing the types and locations of each store by compiling our store data. Figure 6 shows an example of a resource map, a full version can be found in Appendix B.



Figure 6. Sample Resource Map

Resident Comfort assessment and rating

Our determination of resident comfort took into account the two major factors of proximity and population. We selected four primary commodities: bread, deli, fruit and meat, to use in our comfort assessment. With the aid of the MapInfo program, three radii at 50, 100 and 200 meters were drawn around each store and with the aid of the 2001 census tracts, we were able to determine how many people included in the census tracts each radius intersected. Each category has a total population of how many people live within each zone: pop50, pop100, and pop200.

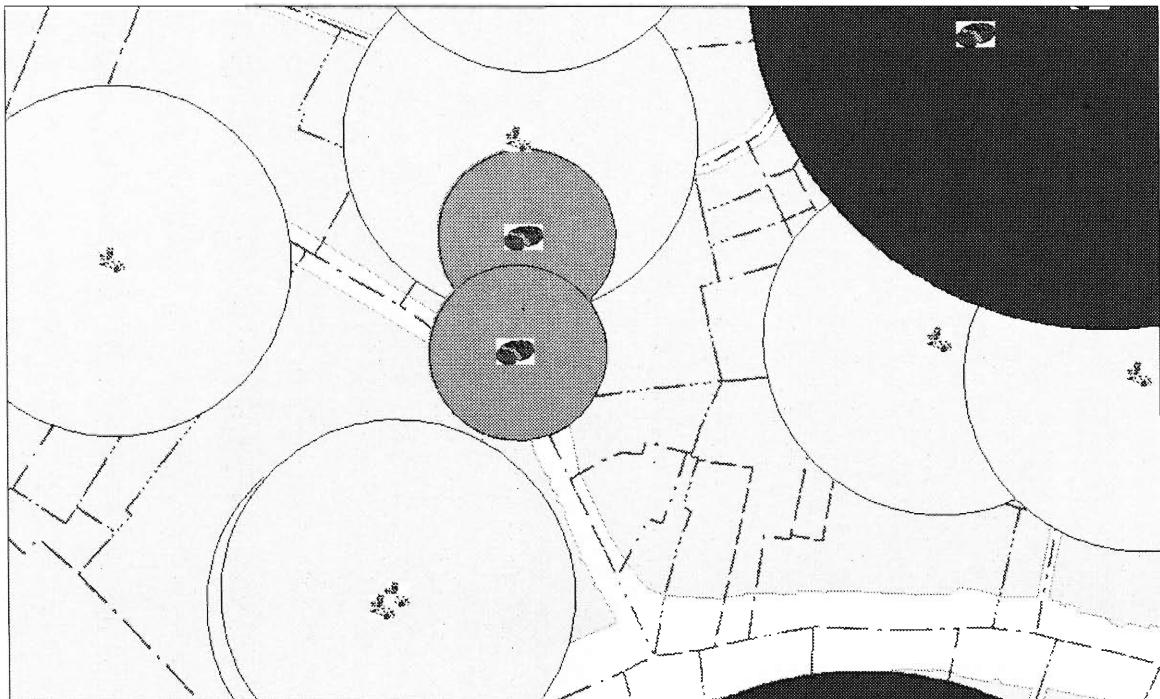


Figure 7. Example of buffer zones created around each amenity

This data then had to be distributed over the census tracts that each buffer intersected. Again, with the aid of MapInfo, we proportionally split census tracts along buffer lines. This produced a numerical portion of each census tract that was covered by each buffer. Figure 8 is an example of this.



Figure 8. Example of census tract area

Each commodity takes into consideration various types of stores where the product can be obtained. For example, bread can be purchased not only at a bakery, but also at store offering variety of goods such as corner stores and supermarkets. The buffer for supermarkets has been set at 200m since people are willing to walk further for the larger size and lower prices that this convenience offers, and 100m for corner stores since they still sell a variety of goods, but have less of a draw than supermarkets. We summed the total population reached by the 200m supermarket radius, 100m corner store radius and the 50m bakery radius. We then divided this number by the total population of our area of study, which is Venice proper, Guidecca excluded for comfort assessment purposes. The number was multiplied by 3 to produce a new index of comfort for bread. These three new figures are added to produce the comfort rating for bread. For the overall comfort rating of the area, this process is repeating for the remaining three commodities and census tracts are rated based on the four commodity ratings.

3.5 Compilation of retail sector evolution

In addition to cataloging the current stores in the city, we researched how the stores had evolved since World War II by touring Venetian neighborhoods with long-term residents. They were able to recall approximately when stores had opened and what stores had previously been at various locations. This information allows us to piece together how shops in each area have evolved.

We conduct interviews using a standard form to keep records of all of the information acquired. Data collected includes address, name (if available), description of shop type and year open and closed (as reported by residents). Any additional information, such as the owner of a store, was recorded in a “notes” column. The data is put into a database, providing easy searchable access to the information. Figure 9 is an example from our store database. Obtaining the store evolution data allowed us to partially determine the residential comfort and tourist shop presence of decades past, and see trends of how stores changed.

Castello Evolutions									
ID	Area	number	Letter	Date from	Date to	Name	Description	Description 2	Notes
453	CS	5543			1998		jewelry maker	jeweler	
454	CS	5543		1998			Mask	souvenirs	
455	CS	5540			1990		toy store	toy store	
456	CS	5540		1990			Shoes	shoes	
457	CS	5689			1970	Lio Bar		Bar	
458	CS	5689		1970	1988		high end bread	bread	
459	CS	5689		1988			bar, sweets	Bar	
460	CS	5690			1970		Macelleria	butcher	
461	CS	5690		1970	1980		Closed	closed	
462	CS	5690		1980			shoe store	shoes	
463	CS	5475		1970	2004		Clothing	clothing	
464	CS	5475			1970		Latteria	Dairy	
465	CS	5473					Clothing	clothing	always
466	CS	5705		1970			Watches	jewelry	
467	CS	5705			1970		Florist	florist	with 5706
468	CS	5706		1970	1995		Cartoleria	stationary	

Figure 9. Example Data Collection²²

Businesses are initially categorized with Italian and English descriptions accompanied by the corresponding ISTAT code. Using our store classifications of present and past shops based on our data collection and interviews, we are able to track the changes in specific types of shops in each area. Figure 10 is a graph showing commerce trends for the area of Madonna Dell’Orto.

²² Hoey 121

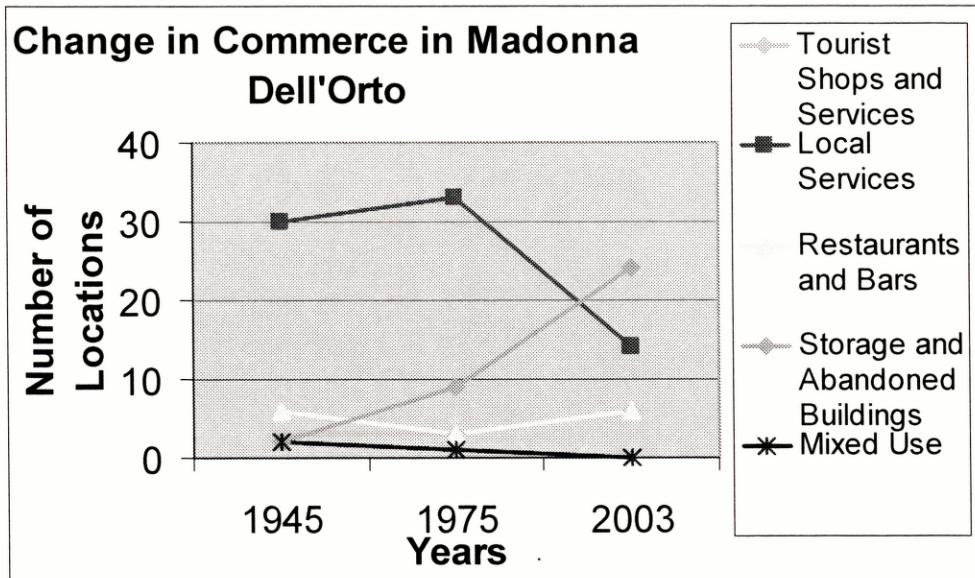


Figure 10. Retail Evolution in Madonna Dell'Orto from 1945 to 2003²³

²³ Hoey 69

4 RESULTS

Data collection was completed for all of Venice, yielding 3844 recorded stores of which 3369 are open. Our results include a compilation of census data, databases of stores both past and present, maps of amenities and areas categorized based on the shops available to each region.

4.1 Population

Census information from 1981, 1991 and 2001 were mapped using MapInfo.

Figure 11 shows the population from 1981, 1991 and 2001 on each island, most of which have experienced a population decrease.

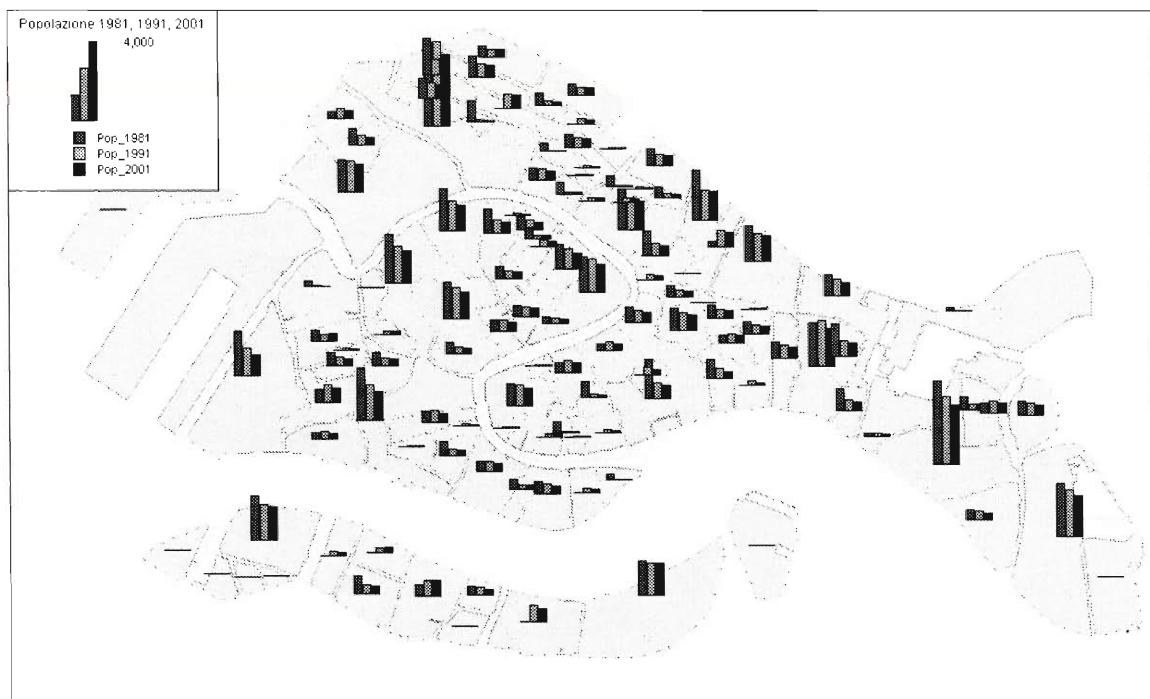


Figure 11. Overall population changes by island: Red represents the population in 1981, green 1991, and blue 2001.

The following figures depict the population for each island by decade. The population change between the three decades is shown using the color system of red indicative of a higher population and blue of a lower population. The change over time in the tourist attraction areas of the San Marco area and the two islands of the Rialto Bridge shows a population shift from red, relatively high to purple, which is significantly lower. The islands left of Arsenale saw an increase in population and on Guidecca, the eastern island sees a doubling in population.

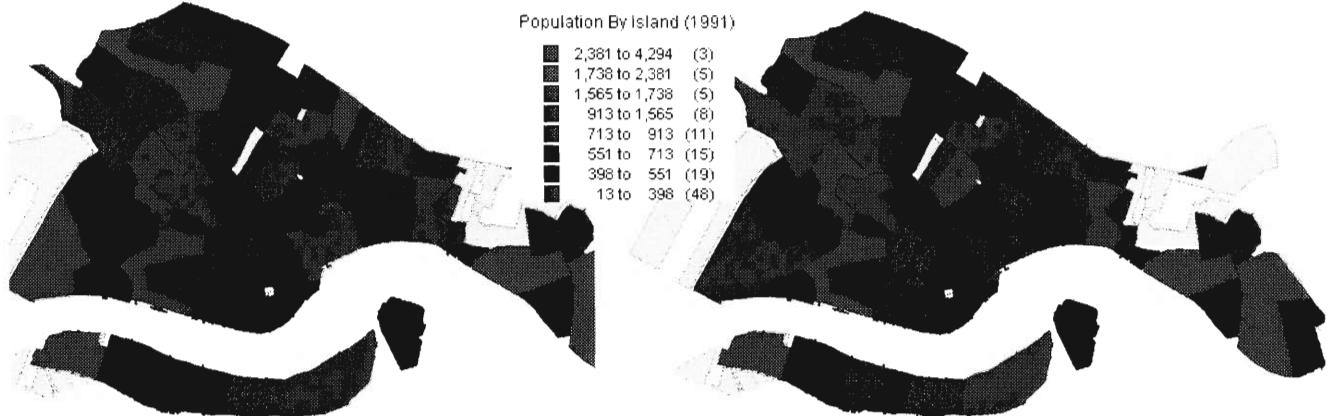


Figure 12. The 1981 census data grouped by island.

Figure 13. The 1991 census data grouped by island.



Figure 14. The 2001 census data grouped by island.

4.2 Shop Orientation Classifications

All shops were classified based on what types of goods or services the shop provided. From the initial descriptions recorded during data collection were used to create the different levels of classification used. The broadest classification was based on which demographic, being residents, tourists or some combination, the store catered to. Any shops whose primary clientele is tourists was considered a tourist shop, shops used primarily by residents were considered resident shops, and those used by both tourists and residents were considered mixed. Below is a chart and graph demonstrating the distribution of these types of shops in the city of Venice.

T/R/M Total	
Type	SumOfValue
closed	475
Mixed	1786
Resident	610
Tourist	848

Figure 15. Table of Store Orientations for All of Venice

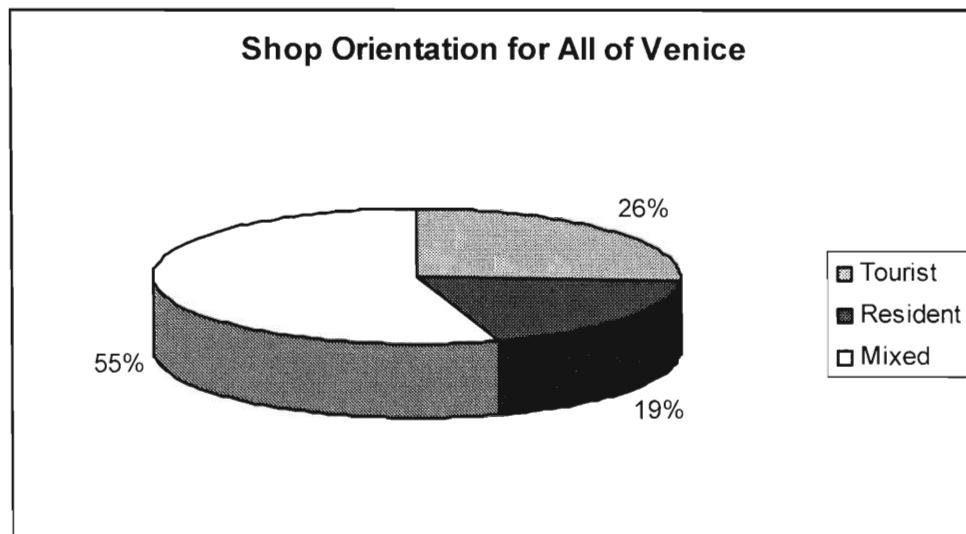
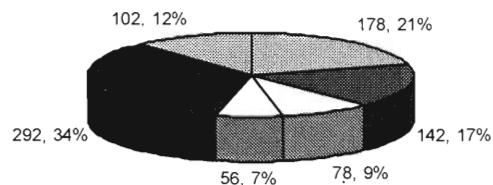


Figure 16. Pie Chart of Shop Orientations for All of Venice

The charts below illustrate each of the three classifications by sestiere. The sestiere of San Marco has the largest number of tourist shops and mixed shops, while most residential shops are located in Castello.

Tourist Shops by Sestieri



Residential Shops by Sestieri

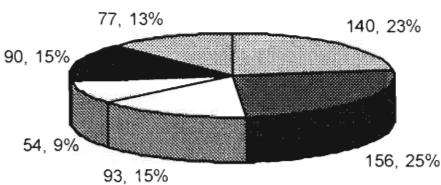


Figure 17. Pie Chart of Tourist Shops by Sestieri

Figure 18. Pie Chart of Residential Shops by Sestieri

Mixed Shops by Sestieri

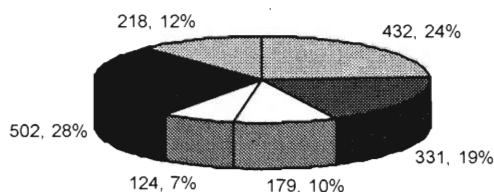


Figure 19. Pie Chart of Mixed Shops by Sestieri



Figure 20. Map of All Store types by Tourist, Residential, Mixed Classification System

The charts below show what percentage of each sestieri is oriented towards the different classifications of consumers. Mixed is the predominant store type in all sestieri, but the ratio of tourist to resident shops varies. In San Marco, Cannaregio, and San Polo tourist shops are predominant, with San Marco having the highest percentage of tourist shops overall. In Dorsoduro the tourist shops are slightly outnumbered by residential shops. Both Castello and Santa Croce have no faction of significance.

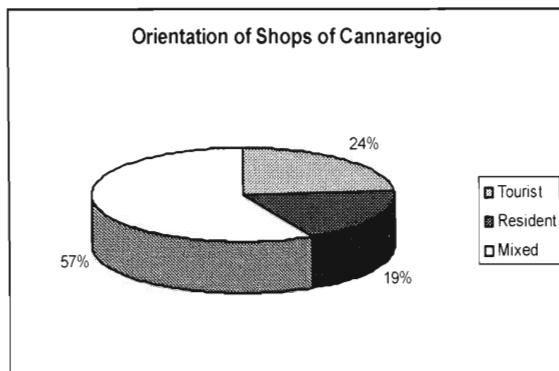


Figure 21. Shop Orientations for Cannaregio

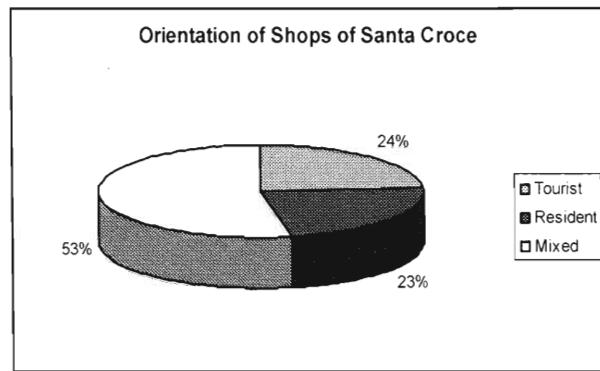


Figure 24. Shop Orientations for Santa Croce

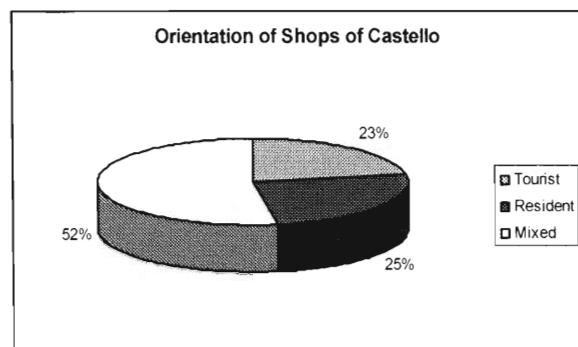


Figure 22. Shop Orientations for Castello

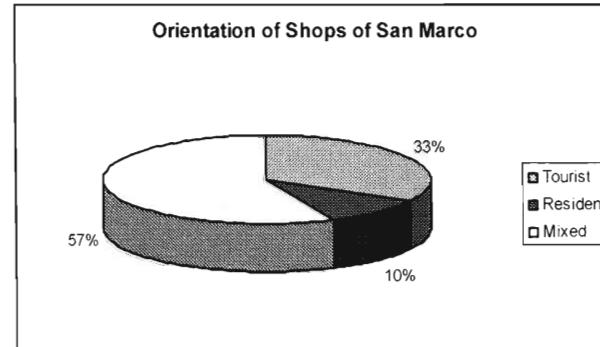


Figure 25. Shop Orientations for San Marco

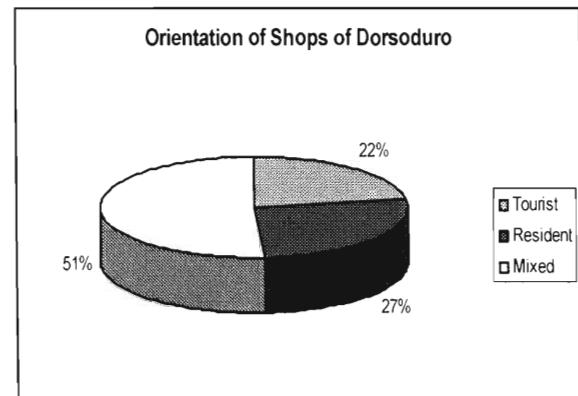


Figure 23. Shop Orientations for Dorsoduro

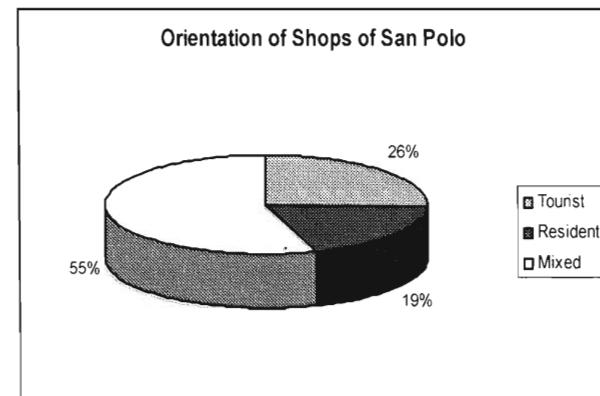


Figure 26. Shop Orientations for San Polo

4.3 Store Types

A broad classification system was used to categorize each shop based on the initial descriptions recorded during data collection. The categories are a standardized modification, and to some extent simplification, of the original descriptions in order to produce meaningful results. Figure 27 illustrates the presence of shops grouped by broad categories for the entire city. The category with the largest percentage is tourist related businesses followed by food services. Since food services are strongly tourist oriented, the commerce of Venice can be considered primarily tourist related based on this categorization. Figures 28 through 30 show some basic necessities, including bread stores, fruit and vegetable stands and delis, by sestiere. Other shop types included in our study are pharmacies, butchers, and hardware stores. Charts for these necessities as well as supermarkets, hotels, and souvenir shops are located in Appendix G.

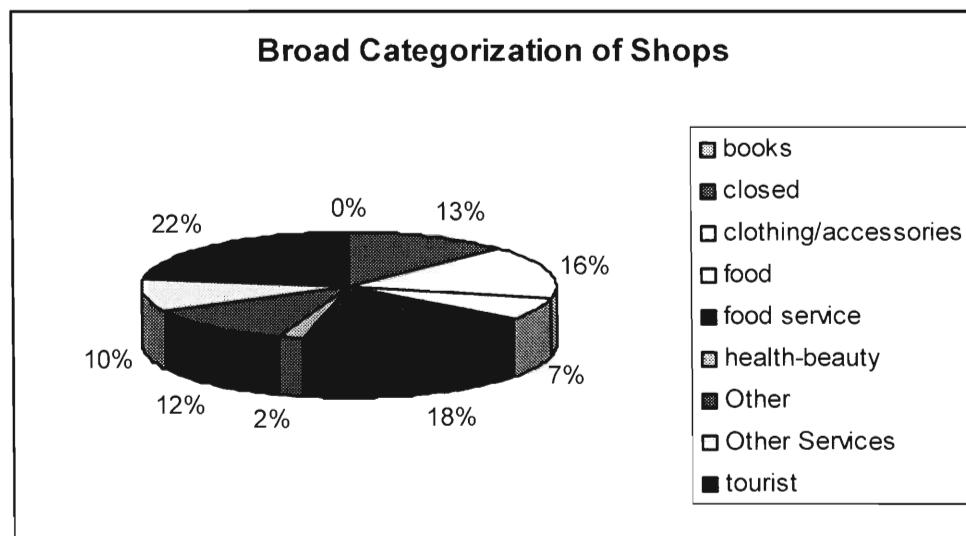


Figure 27. Broad Categorization of Shops

These resource charts show that the highest frequency of each of these basic necessity shops is consistently in the two largest sestieri by area, Castello and Cannaregio. San Marco has very low, if not the lowest, frequencies for each category.

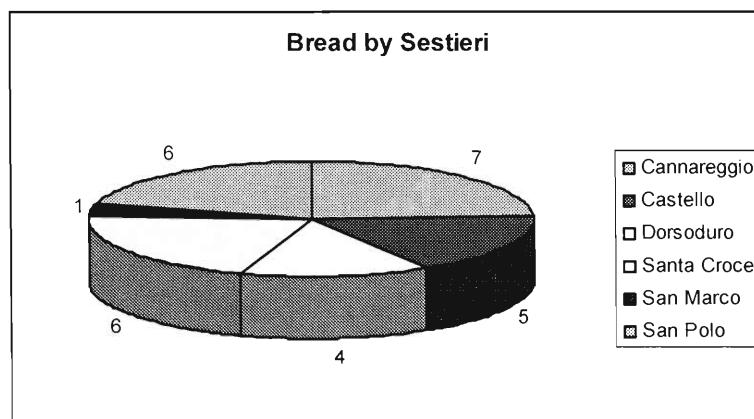


Figure 28. Pie Chart of Bread by Sestieri

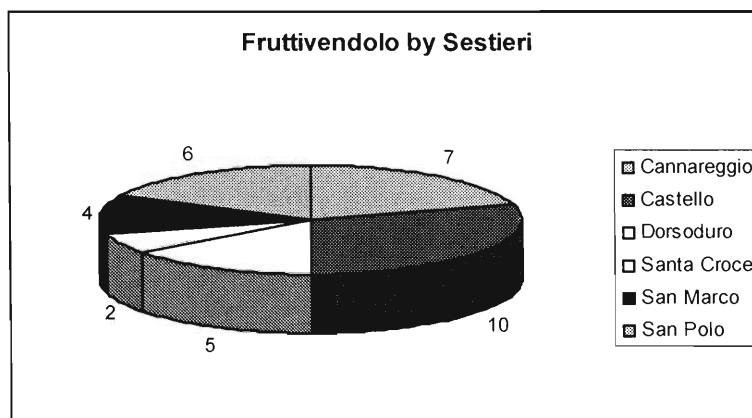


Figure 29. Pie Chart of Fruttivendolo by Sestieri

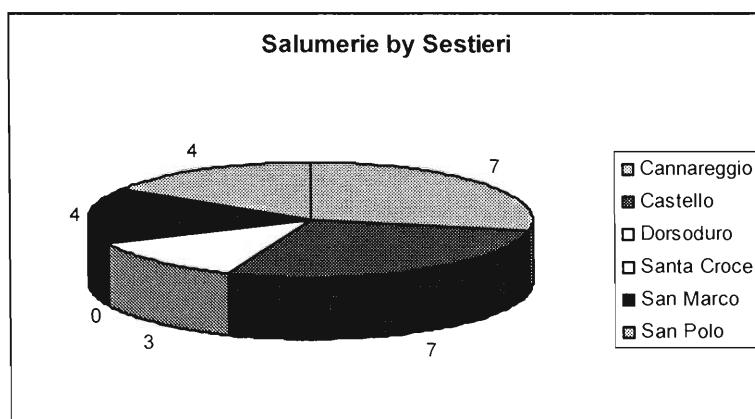


Figure 30. Pie Chart of Salumerie by Sestieri

The table below shows the number of each type of shop in Venice. This classification is more specific than the previous categorization method.

All Stores in Venice by type

Store Types Total		
Description 2	SumOfValue	
accessories	46	
Antiques	62	
Art	46	
art gallery	93	
Baby	8	
Bags	2	
Bank	49	
Bar	237	
Beauty	23	
book store	33	
Books	3	
Bread	29	
Butcher	31	
Closed	475	
Clothing	296	
copy shop	18	
Craft	15	
Dairy	4	
Deli	25	
Display	7	
drug store	5	
dry cleaner	10	
electronics	54	
Exchange	11	
eyeglasses	21	
Fish	11	
Florist	16	
Food	49	
fruit/veg stand	34	
Funeral	1	
funeral home	7	
Gelateria	33	
Gym	4	
hair dresser	67	
Hardware store	20	
homegoods	88	
Hotel	220	

Store Types Total		
Description 2	SumOfValue	
information	1	
Internet	2	
Jewelry	150	
Kids clothes	1	
Laundry	2	
leather goods	1	
Mail	13	
metal work	2	
Misc	157	
Non-store	22	
Pasta	4	
pasticceria	30	
perfume	10	
pharmacy	31	
Photo	21	
PO Box	7	
Real estate	37	
restaurant	400	
shoe repair	5	
Shoes	52	
souvenirs	458	
stationary	27	
Storage	4	
sunglasses	12	
supermarket	15	
tabacchi	64	
Toys	15	
travel agency	17	
unknown	84	
video rental	1	
watches	1	
Wine	26	
woodwork	15	
workshop	2	

Figure 31. All Stores in Venice by type

4.4 Store Evolutions

Store evolution data was collected for the sestiere of Castello. The database created from the evolution data collection includes approximately 577 store changes in the areas studied. Figures 32 through 37 show the placement of bread stores for each of the decades studied. An example of the database created during the evolution study can be found in Appendix C.

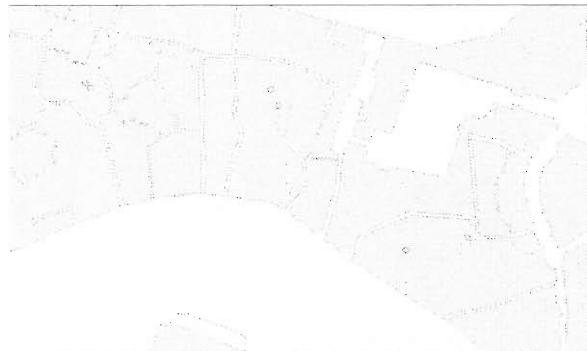


Figure 32. Bread stores in 1951



Figure 35. Bread stores in 1981

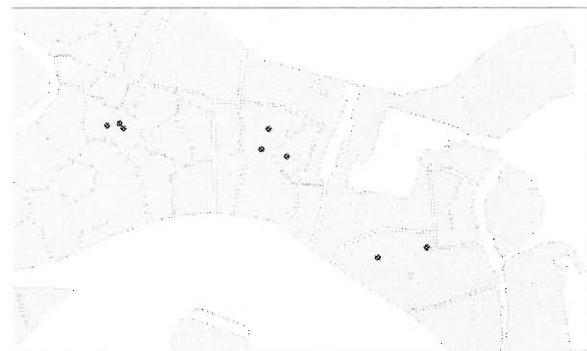


Figure 33. Bread stores in 1961



Figure 36. Bread stores in 1991

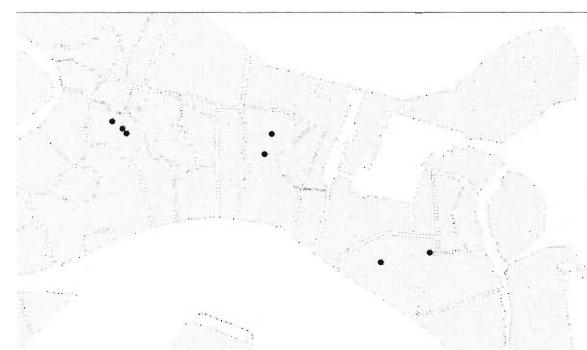


Figure 34. Bread stores in 1971



Figure 37. Current bread stores

5 ANALYSIS

5.1 Aggregation and Manipulation of Population Data

The population changes of Venice between 1951 and 2001 were needed for our method of determining residential comfort. Interactive census tract maps with the population embedded in each tract were drawn for each decade. Raw census data obtained from the *Ufficio Statistico* in Venice was used to create these layers.

5.1.1 Creation and Re-Drawing of Census Tract Maps

Maps for the 1991 and 2001 census tracts were preexistent and the drawing of census tract maps for each of the remaining decades was done in two different ways. The map of 1981 census tracts entailed combining some of the 1991 census tracts. For example, tracts one through nine in 1991 were tract 1 in 1981. The 1971 census tract map was provided on paper which involved re-drawing and combining the 1991 census tracts to produce the 1971 census tracts. The 1971 map was then used for the previous decades as the tracts had not changed during that period.

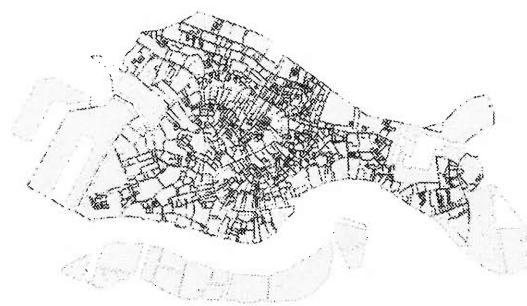


Figure 38. 2001 Census tracts

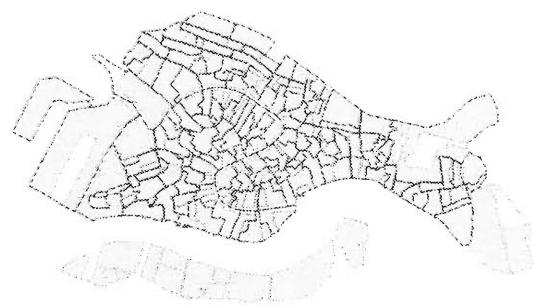


Figure 40. 1981 Census tracts



Figure 39. 1991 Census tracts

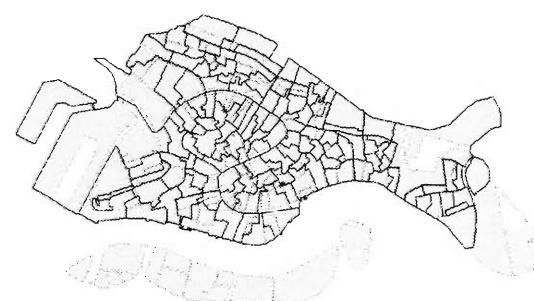


Figure 41. 1971, 1961, 1951 Census tracts

5.1.2 Inclusion of Population Data in Census Tract Maps

After the maps were drawn, the population data from each census year had to be added to the corresponding map. This was a straightforward process for 1981-2001 because the data was already computerized. The population data from 1971, as with the map, was provided on paper only. We entered this data into a database before it was linked to the table. For 1961 and 1951, only total population by sestiere was available. We created an accurate representation per census tract for those years by summing the 1971 data by sestiere, and divided this by the 1961 and 1951 totals. This we produced a factor which we used to divide the population total of each 1971 tract by to get the tract data for 1961 and 1951. Once we had computed and organized all the population data, we linked it to the census tracts in the corresponding maps.

SEZIONE2000	Pop2001
454	34
460	174
462	347
463	82
446	55
465	80
467	57
469	33
470	18
471	90
472	20
1,000	52
1,002	104
1,003	49
1,004	40
1,005	56
1,006	100
1,008	7
1,009	16
1,010	20
1,011	55
1,012	20
1,013	17
1,014	16
1,015	22
1,016	22
1,017	9
1,106	74

Figure 42 Example of population data linked to 2001

Sestiere	Sezione	totale	61	51
SP	1	724	921	1179
SP	2	667	848	1086
SP	3	700	890	1140
SP	4	653	831	1063
SP	5	697	887	1135
SP	6	718	913	1169
SP	7	473	602	770
SP	8	714	908	1163
SP	9	775	986	1262
SP	10	712	906	1159
SP	11	692	880	1127
SP	12	678	862	1104
SP	13	740	941	1205
totale		8943	11376	14562 1.272056 1.628313

Figure 43 Computation of unknown population tracts

5.1.3 Thematic Population Density Maps

After we had compiled all the census data into six census population maps, we mapped population density per tract to show the population trends of this data. We used MapInfo to divide the population of each tract by its area in square meters which was then multiplied by 1000 to create a population density rating of each census tract for each decade. We color-coded each tract to clearly show which areas were densely and sparsely populated. We were able to illustrate how population had dropped in Venice by showing all six density maps in order. Below, the 1951 and 2001 maps are shown. The red areas are the most sparsely populated, and the blue areas are densely populated.

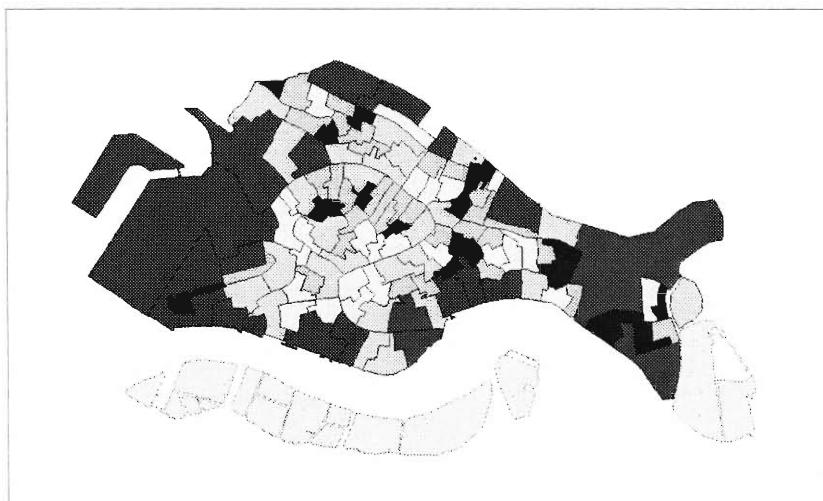


Figure 44. Population density in 1951

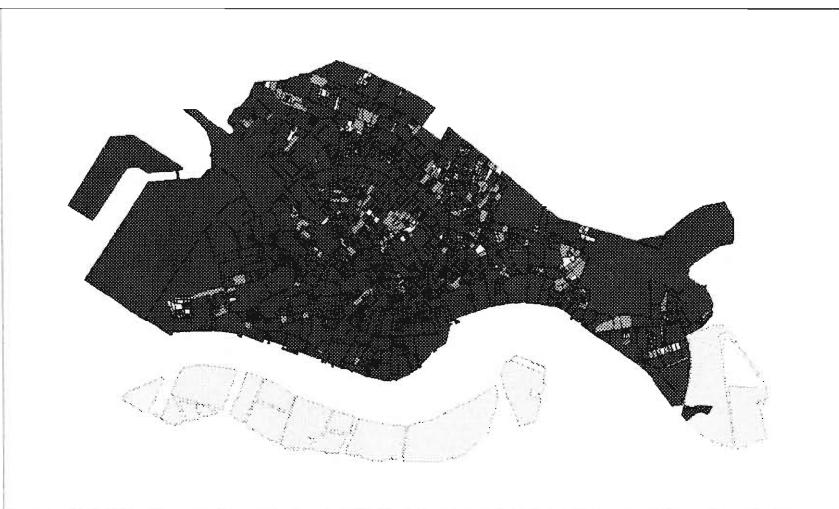


Figure 45. Population density in 2001

This graphic representation is a compelling means of illustrating the significant population decline in Venice since 1951. Population density is more useful than basic population data because it eliminates the bias of island size and allows standard ranges to be used in order to better compare the colored maps.

5.2 Resident Comfort Maps

Once we had both population and proximity data in map form, we were able to compute residential comfort. Using the method explained in section 3.4, we computed the residential bread comfort for all of Venice. Due to time constraints, we were unable to compute the comfort levels for the other three necessities, and therefore total residential comfort of the city of Venice. However, this can easily be done by a future team by simply computing the comfort levels for each of the other necessities, averaging all of the comfort levels and thematically mapping these results.

We found that comfort levels were not necessarily higher for areas with a dense bread store presence. The locations of all mapped necessities and their buffers can be found in Appendix B. Comfort levels were significantly higher for densely populated areas that had access to at least one store that sold bread. Figure 46 is our bread comfort map.

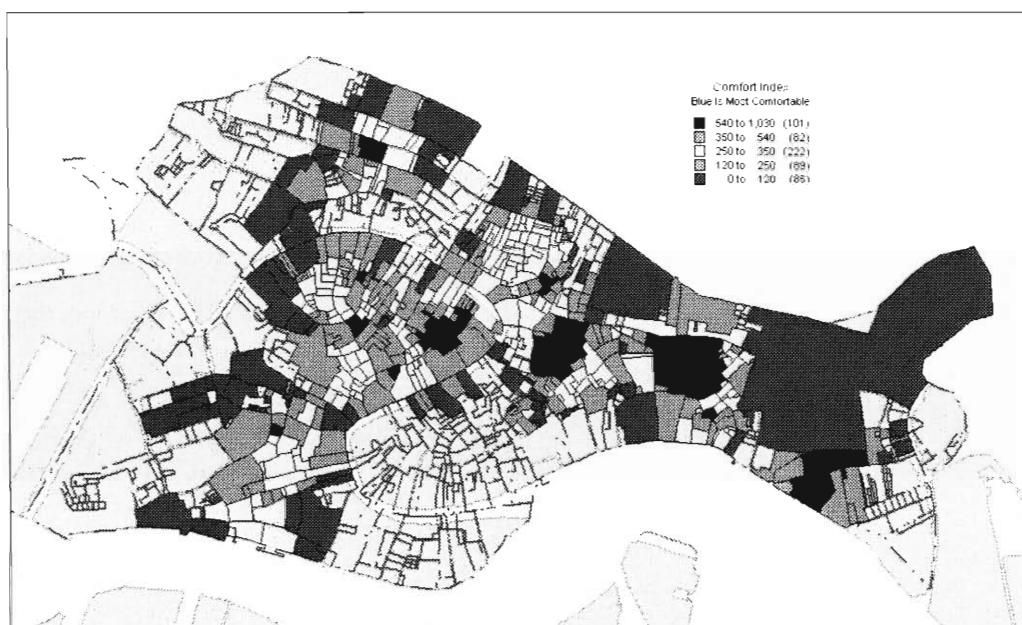


Figure 46 Comfort based on the availability of bread

Because we took both proximity and population into account when computing comfort, we were also able to use the inverse of the population data to compute discomfort in the city. Figure 47 is our bread discomfort map.

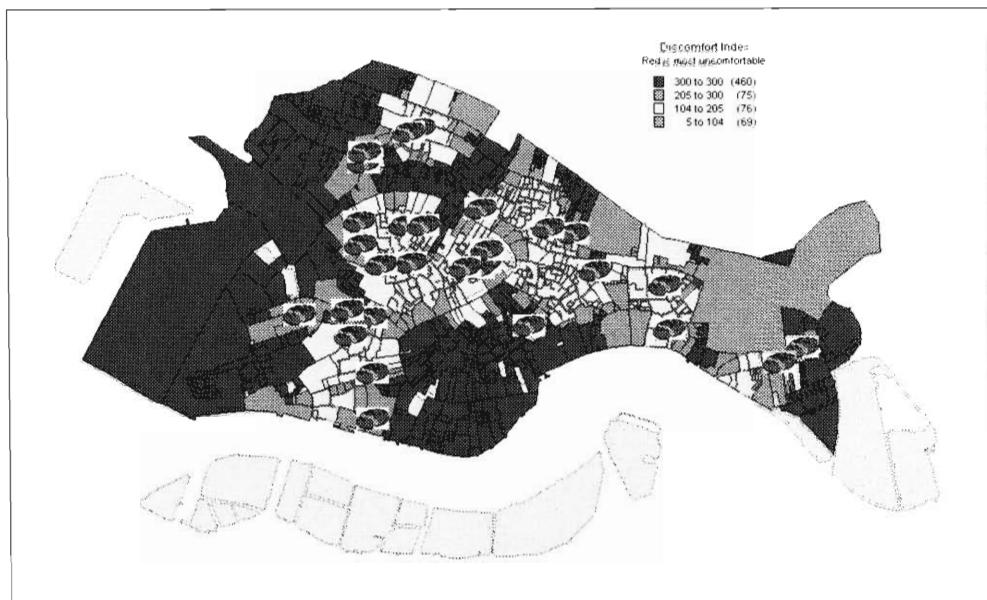


Figure 47 Discomfort due to unavailability of bread

This type of map clearly shows that the most uncomfortable places are the least populated areas furthest from the amenity.

6 CONCLUSIONS

6.1 Recommendations for Implementation

Our project produced a very comprehensive database as well as a useful method for determining residential retail comfort. We recommend the following ways of implementing our project's products.

6.1.1 Determining the best location for a type of store

Our project can be consulted to determine the best location for a specific type of store. A store owner who wishes to open a new location can use our method to map comfort for that type of store and determine the best possible place to put a store of that type. For instance, a bakery in the San Marco area would be much more beneficial for the city than another bakery in the San Polo area.



Figure 48. Determining potential locations for a bread store

6.1.2 Determining the best type of store for a specific location

Similar to the previous use of our project is determining the best type of store for a specific location. If a person wishes to open a store in a specific place, they can use our maps to see what stores already exist there, and determine what type of store will provide the neighborhood with needed services, and also allow the business to flourish because of less competition. For example, if a person owns an apartment building in San Polo, and wishes to turn the first floor into a store, they would find that there is a lack of mini markets in that area. That would make a mini market the most logical choice for a business that will be successful, as well as improve comfort in that neighborhood.



Figure 49. Determining the best type of store for a specific location

6.1.3 Distributed Supermarkets

Even with the implementation of the previous two methods to determine store placement, there will still be neighborhoods in Venice that do not have their needs met. This could be remedied if a supermarket were opened in the neighborhood, but most of these neighborhoods lack the space for such a large store. Fortunately, a “distributed supermarkets” suggestion has begun to circulate throughout community lately. This concept could solve the retail problem, thus significantly improving the comfort of Venetian residential neighborhoods.

A distributed supermarket is a traditional chain-owned supermarket, whose various departments are broken up into different smaller stores, much like the individual food stores that populate the majority of Venice. The only differences are that the stores are under central management, and the buildings that the stores are in are either owned by the supermarket company, or the city of Venice which would lease to the operators for little or no rent. This central ownership provides the constant supply and lower prices of a supermarket. However, the de-centralized location allows the superior quality of individual stores, as well as the ability to meet store needs in neighborhoods that normally would not have the space, or economy to support a few local stores.

We believe that distributed supermarkets are a powerful remedy to the lack of residential comfort in certain residential neighborhoods. Many residents that our team conversed with preferred the old-fashioned manner of traveling from store to store, and return to it if it were possible and practical. However they realized that supermarkets are taking over, and people will always shop where they can get a lower price, regardless of tradition and nostalgia. In addition to improving residential comfort, distributed supermarkets will provide a compromise between the economics and lifestyle Venetians desire.

6.2 Recommendations for Continuation

Although we were able to complete a current store database, our project would greatly benefit from certain continuations. We recommend that groups that continue to work on our project in the following years prioritize the following objectives.

6.2.1 Complete store evolutions

We were only able to complete the evolutions and map the main types of stores in that decade for Castello. In order to get accurate and useful data for the last 60 years we recommend that future groups finish collecting evolution data for the entire main island. We also feel that creating the same maps that we created for present day for each decade is the best way to analyze the evolution data. In addition it would be prudent to collect evolution data in each area with multiple independent parties. This will make the very sparse data that we collected a bit more complete and accurate.

This is a significant amount of time consuming data collection but once these steps are completed the output of an invaluable database and collection of maps will greatly aid in the understanding of Venice's economic change since World War II.

6.2.2 Cost and Location analysis for distributed supermarkets

Before the concept of distributed supermarkets is implemented, more research needs to be done to validate the benefits of such a venture. The two areas that WPI students continuing this project could aid in are cost and location analysis.

Cost analysis is needed to justify the lack of rent collected by the owner of the 5-7 stores required. The analysis should take at least all of the following into account: the cost to purchase space, hypothetical cost of a normal supermarket in the same location, the change in price between an individual store and one which is part of a distributed supermarket, and the amount of business that the distributed supermarket would attract. The latter would be a function of the population of the area and the amount of money that they spend on groceries weekly. The cost analysis should be mapped thematically to show the most cost effective locations for a distributed supermarket. This will play a major part in the location analysis.

The location analysis should combine the cost location data and the residential comfort data for the city of Venice. A custom residential discomfort map should be made based on our methodology section 3.4 and analysis section 5.2, and should take into account all individual stores that sell the same goods as a supermarket. Both of these data sets should be combined to form a new thematic map that shows the best locations for a distributed supermarket.

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Annotated Bibliography

Duffy, J., Gagliardi, J., Mirtle, K., Tucker, A. 2001 "Re-engineering the City of Venice's Cargo System for the Consorzio Transportatori Veneziani Riuniti." Interactive Qualifying Project, E01. WPI Venice, Italy

This source contains a partial database of the stores present in Venice.

Hoey, S., Kahan, M., Marchetti, P., Mazza, K. 2003 "Convents, Palaces and Churches: Transformation of Historic Buildings and the Impact on Venice's Neighborhoods." Interactive Qualifying Project, E03. WPI Venice, Italy

This source contains foundations of our project including data collected for the Madonna dell'Orto and Santo Stefano regions of Venice.

Meadows, Donella. "Malling America: how to stop a superstore takeover." *Amicus Journal* 16 (1995): 12.

This article refers to the book "How Superstore Sprawl Can Harm Communities: And what citizens can do about it" which is a collections of articles concerning the adverse effects of major mall development from the Nations Trust for Historical Preservation in Washington, D.C. The book includes stories of towns that have successfully dealt with superstores by sending them away or redirecting them to more appropriate locations.

This article and book are very relevant to the overall goal of this project. Examples of how towns have prevented stores from entering communities are particularly useful for exploring methods of retail restrictions in Venice.

Social Sciences Abstracts from Wilson Web search: historic preservation

Murray, I. "Day-trippers cause death in Venice," *Marketing Week*. 17 June 1999, Page 114

This article discusses the impact of tourism on Venice. It argues how much tourism has had a negative effect on Venice. Since a major portion of our project is determining which areas of Venice have been most changed by tourism this article may be useful.

This article was located by completing a search for "Venice, tourists" in the LexisNexis database linked form the Gordon Library.

Russo, Antonio Paolo. "The "vicious circle" of tourism development in heritage cities," *Annals of Tourism Research*, Volume 29, Issue 1, January 2002, Pages 165-182

This article discusses how tourism helps, but eventually hurts "heritage" cities. The life cycle of a tourist city is discussed, and the influence of tourism on a region's cultural is also mentioned. In the article Venice is used as an example of a city where this has occurred. This article provides an overview of the problem which Venice, and other cities are facing, along with a connection between a general theory and Venice.

This source was located by searching 'Venice' in the *Annals of Tourism Research* journal

Teye, V., Sirakaya, E., and Sönmez, S. "Residents' attitudes toward tourism development," *Annals of Tourism Research*, Volume 29, Issue 3, July 2002, Pages 668-688

This article has an explanation of what factors affect how residents of a city feel about tourism. It also discusses both positives and negatives of tourism.

This source was located by searching 'economy' in the *Annals of Tourism Research* journal

Werberg, Jon. Santa Elena. Cambridge: Massachusetts Institute of Technology; 2001

This is a paper written by an MIT student that outlines the change of businesses in Santa Elena.

Witten, K., Exeter, D., Field, A. "The Quality of Urban Environments: Mapping Variation in Access to Community Resources," *Urban Studies*, Vol. 40, No. 1, 2003, Pages 161-177

This paper discusses a method by which the comfort of urban residents may be determined. A description of what local amenities should be considered, and how they influence a resident's well-being. The concept of the importance of accessibility to different facilities is discussed as well. This paper was located through the Social Sciences abstracts database search linked from the Gordon Library using the keyword "residential satisfaction".

Wozniak, Lara. "Shared Heritage," Far *Eastern Economic Review*, Vol. 166, Iss. 22, June 5, 2003, Page 27

This short article discusses the problem of tourism destroying the local culture in Chinese towns. It is mentioned that in many parts of the country heritage cities are being destroyed to create more "modern" locales. Specifically, the city of Lijiang, a United Nations "World Heritage site", is discussed as a town where tourism is rampant, but the government is trying to give monetary rewards to those citizens who remain in the city and help preserve its culture.

This article was found through the Periodicals Abstracts search linked from the Gordo Library using the words "cultural preservation historic tourism" for a search.

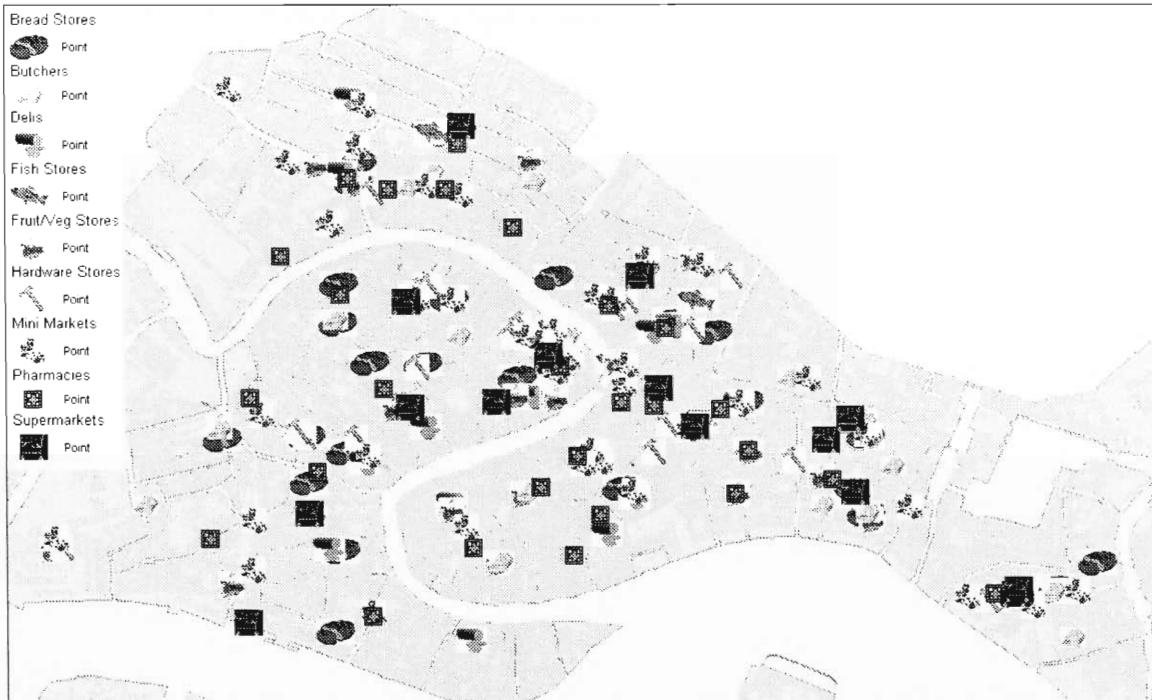
Appendices

Our complete databases, map layers and other information can be found on the accompanying CD.

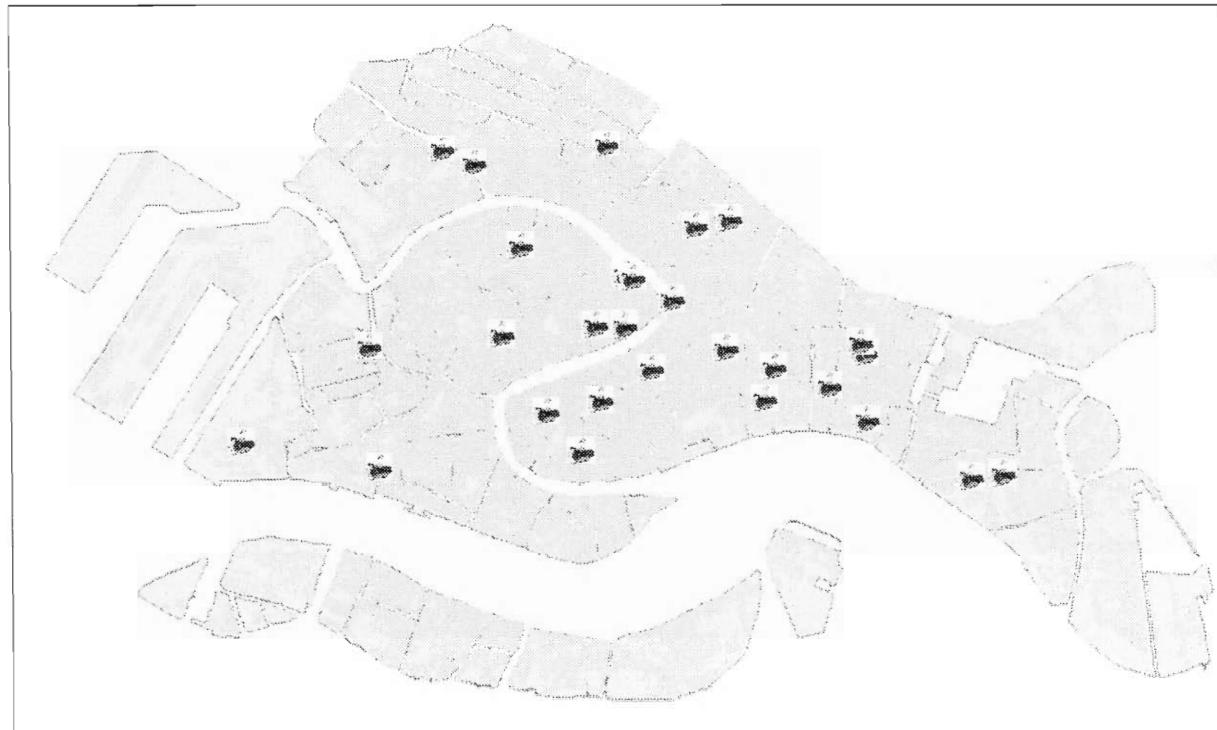
Appendix A: Store Database Sample

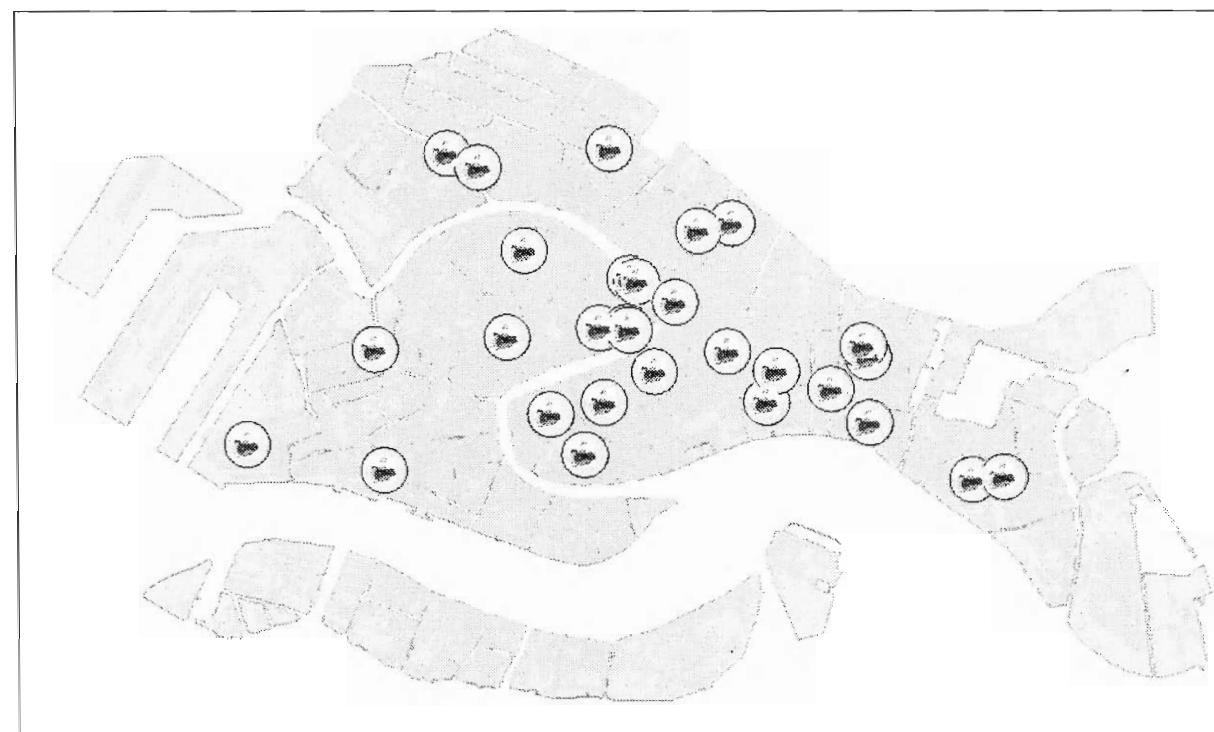
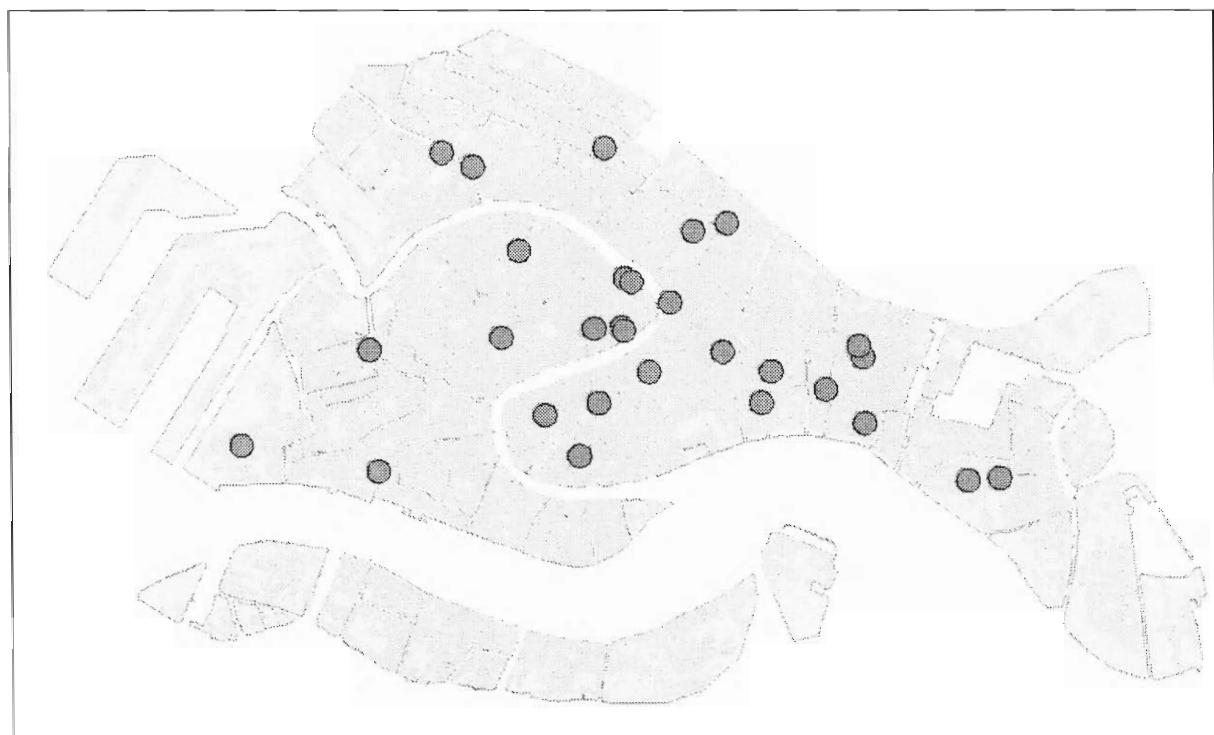
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1	Package	CN	4391 C	CN4391/C	CN4391C	tà kalá	masks/trinkets	souvenirs	tourist	tourist	52.48.34	Tourist	5	1				
2	Package	CN	4391 A	CN4391/A	CN4391A	Locanda Al Santi Apostoli ***	hotel	hotel	tourist	tourist	52.10.0	Tourist	1.55	1	***retake picture			
3	Package	CN	4391 B	CN4391/B	CN4391B	Mariani Profumeria	perfume	perfume	health-beauty	health-beauty	52.33.2	Resident	5.5	1				
4	Package	CN	4386	CN4386	CN4386	Hestena Al Vecio Bradosso	restaurant	restaurant	Food Service	food service	55.30.1	Mixed	7.7	1				
5	Package	CN	4317	CN4317	CN4317	Perlier Kelemtata - Aromie Natur	perfumes and bod	perfume	health-beauty	health-beauty	52.33.2	Resident	6	1				
6	Package	CN	4312	CN4312	CN4312	Caffè Brasilia	caffè	bar	Food Service	food service	55.40.0	Mixed	5.6	1				
7	Package	CN	4311	CN4311	CN4311	Fucina De Rossi s.n.c di De Ro	glass and other liq	souvenirs	tourist	tourist	52.48.34	Tourist	4	1				
8	Package	CN	4292	CN4292	CN4292	colored glass	souvenirs	tourist	tourist	52.48.34	Tourist	5.5	1					
9	Package	CN	4291	CN4291	CN4291	D'Andre	jewelry	jewelry	Clothing/access	clothing/access	52.48.21	Mixed	5.8	1				
10	Package	CN	4290	CN4290	CN4290	tourist trinkets	souvenirs	tourist	tourist	52.48.34	Tourist	4	1					
11		CN	2745	CN2745	CN2745	Gelateria Ca'D'Oro	gelateria	Food Service	food service	52.27.12	Mixed			1 ***need picture/measurement/address				
12	Package	CN	4273 A	CN4273A	CN4273A	DM	"CVS" type	drug store	health-beauty	health-beauty	52.33.10	Resident	4	1	"Cinema Teatro Progresso" on front			
13		CN	4273 C	CN4273/C	CN4273C	same restaurant	restaurant	Food Service	food service	55.30.1	Mixed	7.2	1	1.11.2 w/seating, Strada Nova front				
14		CN	4273 C	CN4273/C	CN4273C	same restaurant	restaurant	Food Service	food service	55.30.1	Mixed	9.9	1	1.9.9 w/seating, Campo S. Sofia				
15	Package	CN	4201 A	CN4201/A	CN4201A	Foscan Palace ***	hotel	hotel	tourist	tourist	55.10.0	Tourist	27	1				
16		CN	4001 C	CN4001/C	CN4001C	Cassa di Risparmio di Venezia	bank	bank	Services	Other Services	bank	Mixed	12.4	1				
17		CN	4001 C	CN4001/C	CN4001C	Cassa di Risparmio di Venezia	bank	bank	Services	Other Services	bank	Mixed	20.3	1	ATM			
18		CN	4000	CN4000	CN4000	Totocalcio	???	tabacchi	tabacchi	Other Services	52.26.10	Mixed	6	1	should be completed 03-06			
19	Package	CN	3945	CN3945	CN3945	G Benevento	fabric and tassels	craft	art/antiques	Other	52.41.11	Mixed	7.5	1				
20	Package	CN	3942	CN3942	CN3942	Sergi Tachini	clothing	clothing	Clothing/access	clothing/access	52.42.1	Mixed	8.1	1				
21	Package	CN	3929	CN3929	CN3929	Salmoiragh & Vigano	eyeglasses	eyeglasses	Clothing/access	clothing/access	52.48.14	Mixed	10.7	1				
22	Package	CN	3927	CN3927	CN3927	Al Gingillo	masks/glass/trnk	souvenirs	tourist	tourist	52.48.34	Tourist	3.7	1				
23	Package	CN	3926	CN3926	CN3926	Bottega Verde Erbonstena	Erbonstena (body)	misc	Other	Other	52.33.1	Mixed	5.2	1				
24		CN	3843 A	CN3843/A	CN3843A	Pasticceria Pittieri	bakery	pasticceria	Food	food	52.24.12	Resident	7.5	1	***picture???			
25	Package	CN	3843	CN3843	CN3843	Panificio F. paronuzzi	bakery	bread	Food	food	52.24.11	Resident	6.2	1				
26	Package	CN	3834 A	CN3834/A	CN3834A	Xetra Italia by La Galerie	women's clothing	clothing	Clothing/access	clothing/access	52.42.1	Mixed	7.5	1				
27		CN	3832 A	CN3832/A	CN3832A	Sara Murano Glass	glass	souvenirs	tourist	tourist	52.48.34	Tourist			***need measurement			
28	Package	CN	3944	CN3944	CN3944	CS187	tabacchi	tabacchi	tabacchi	Other Services	52.26.10	Mixed	3	1				
29	Package	CS	187	CS187	CS187	bread and snacks	bread	Food	Food	52.24.11	Resident	8.9	1					
30	Package	CS	145	CS145	CS145	tabacchi/bar	tabacchi	tabacchi	Other Services	52.26.10	Mixed	4.9	1	***need pic				

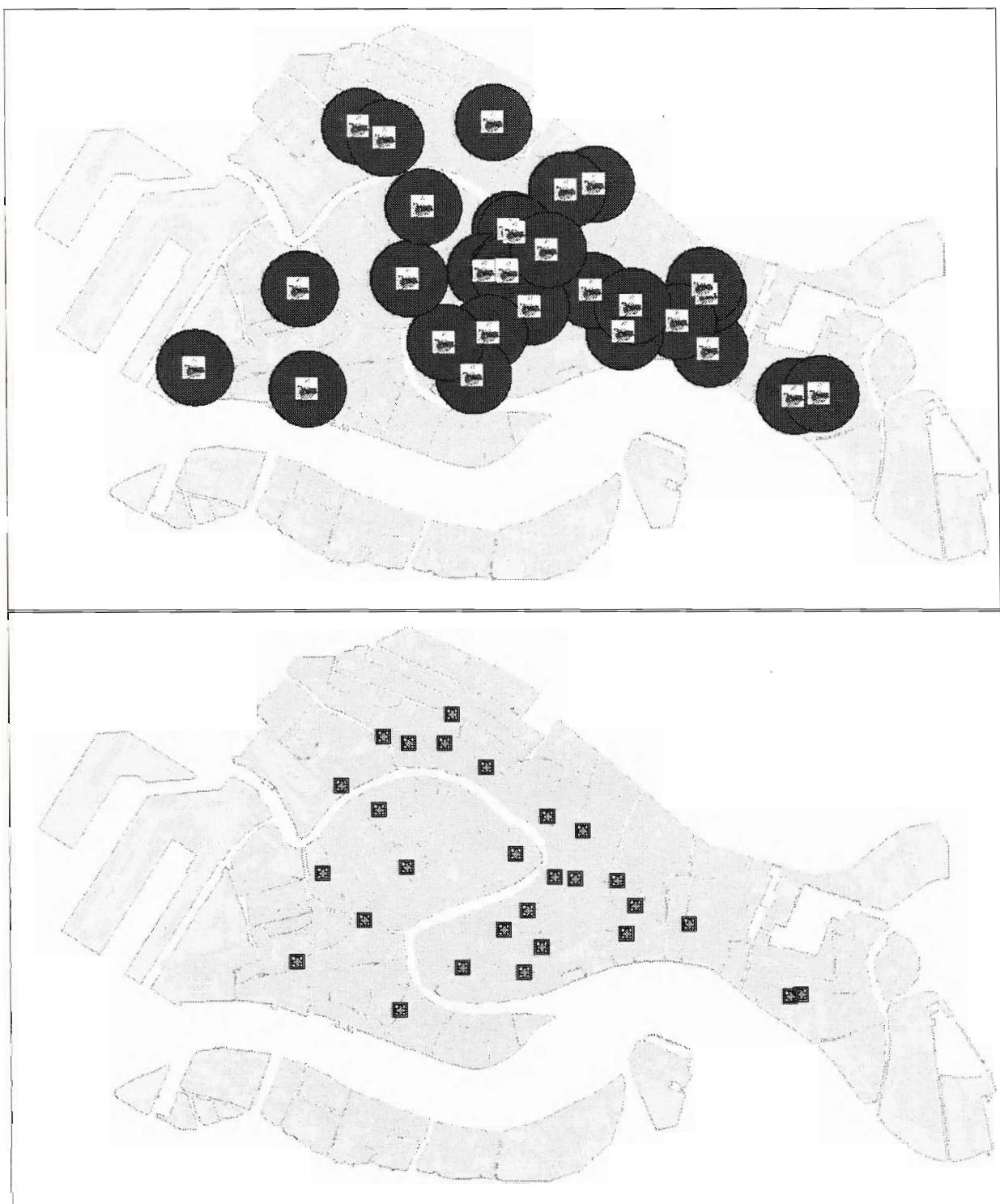
Appendix B: Resource Maps

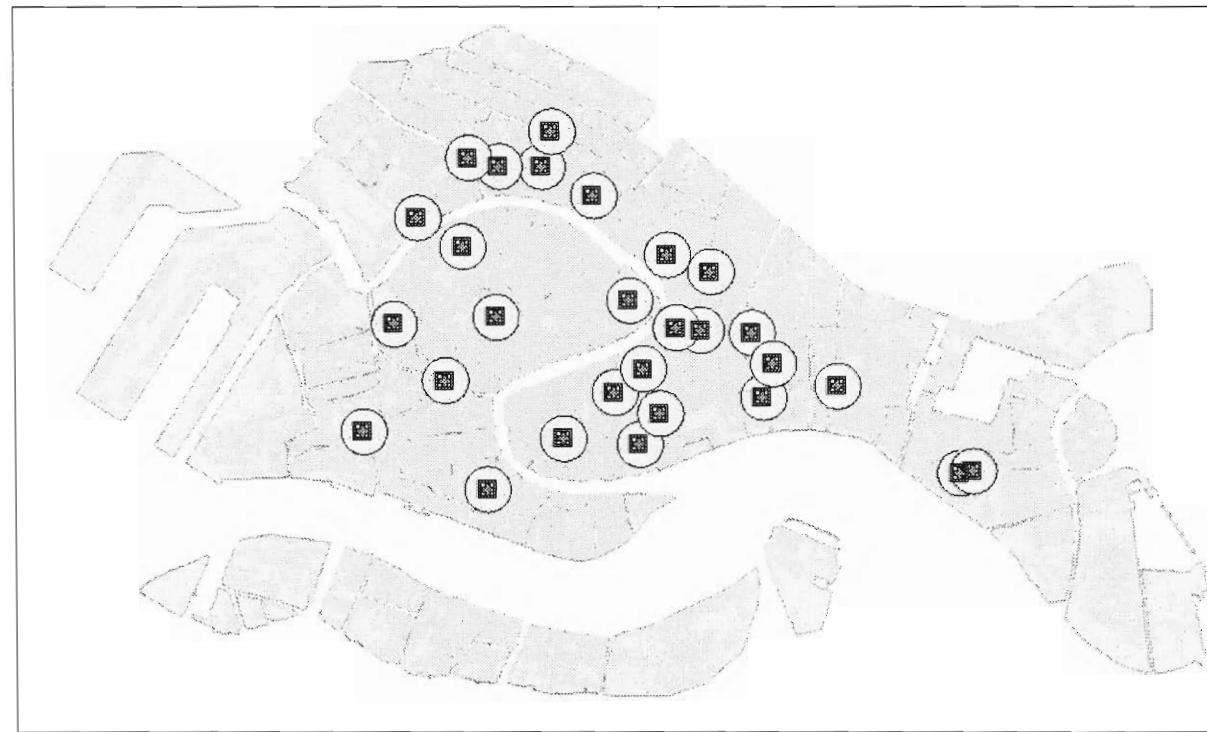
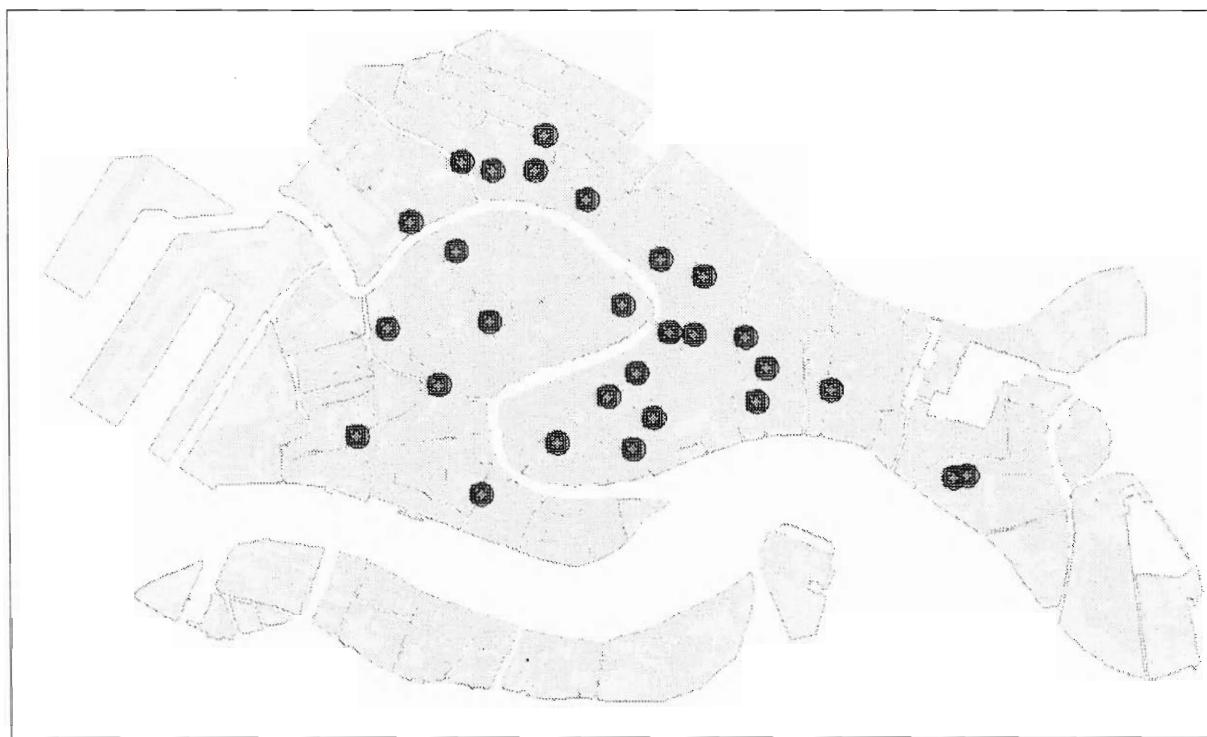


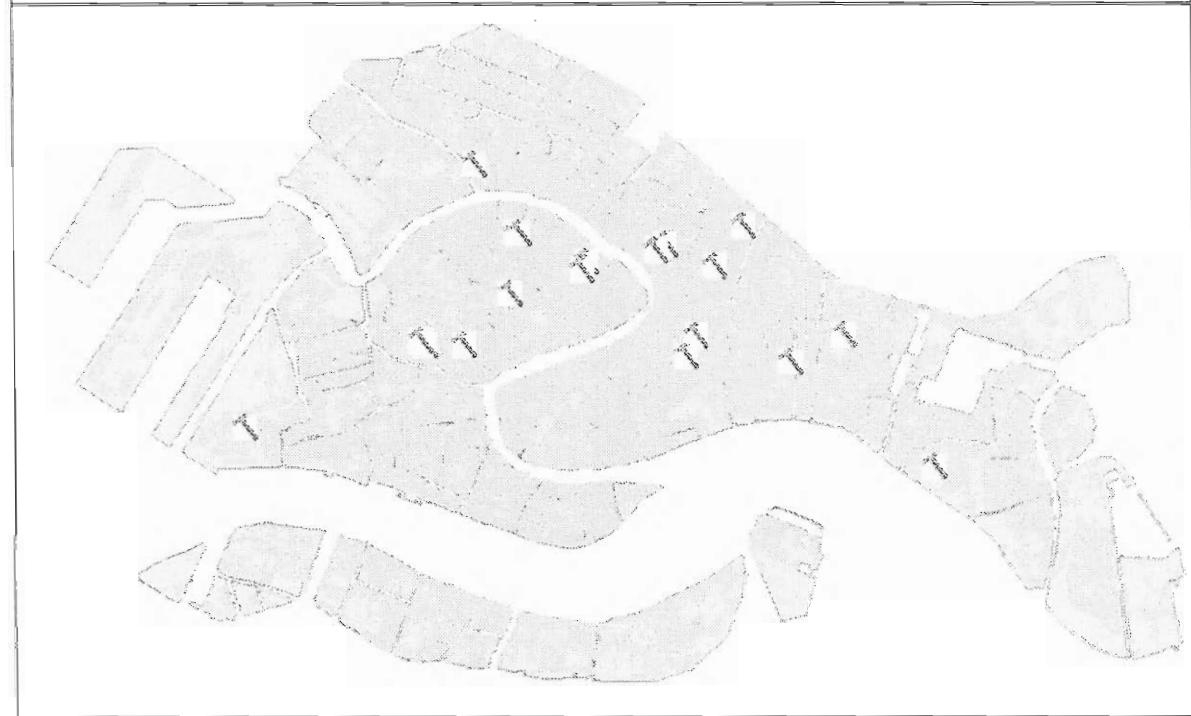
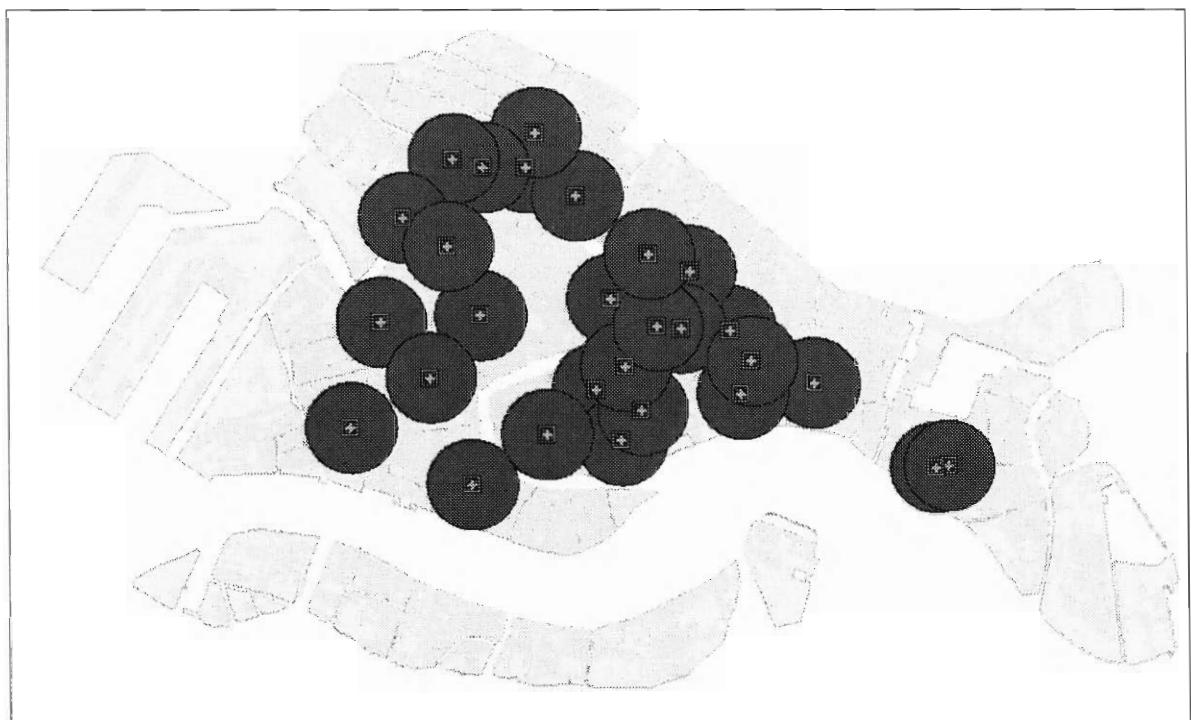
Full Resource Map

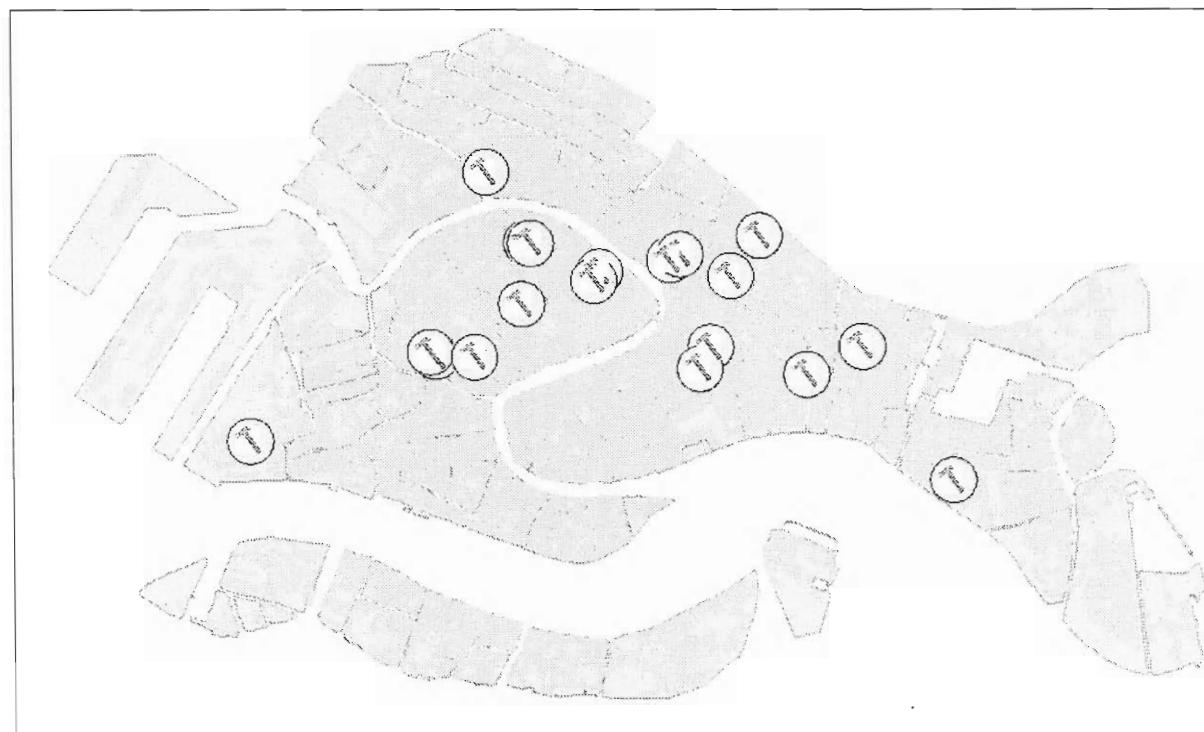


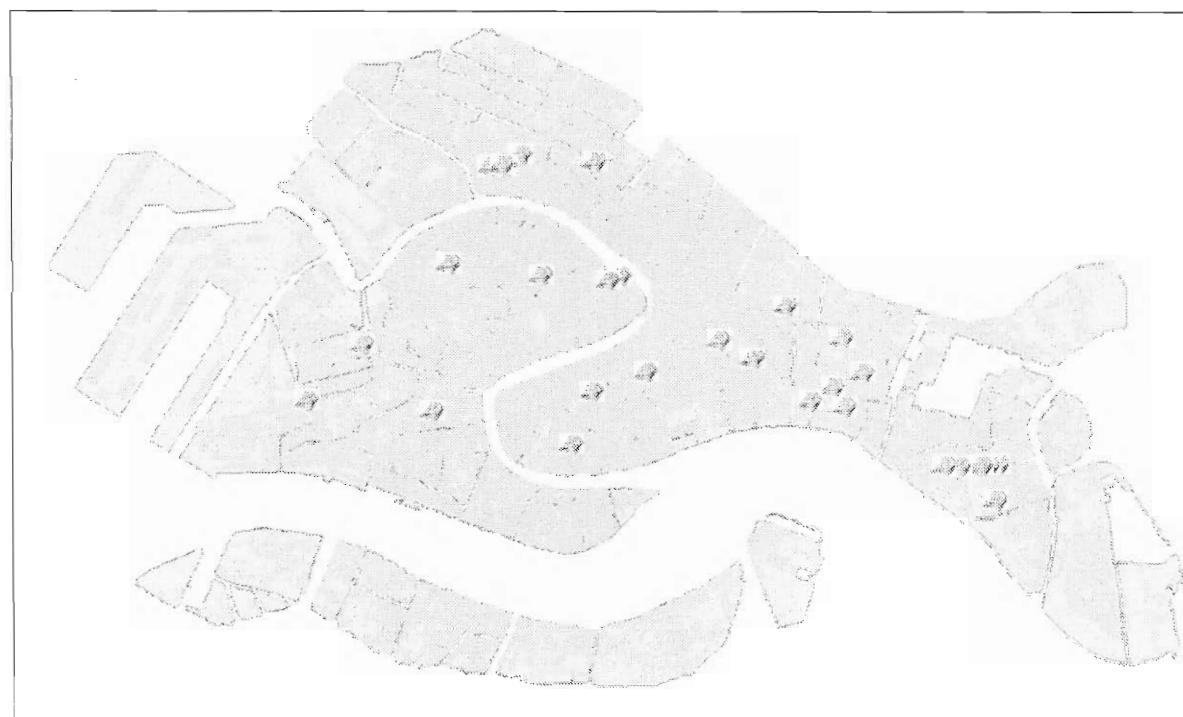
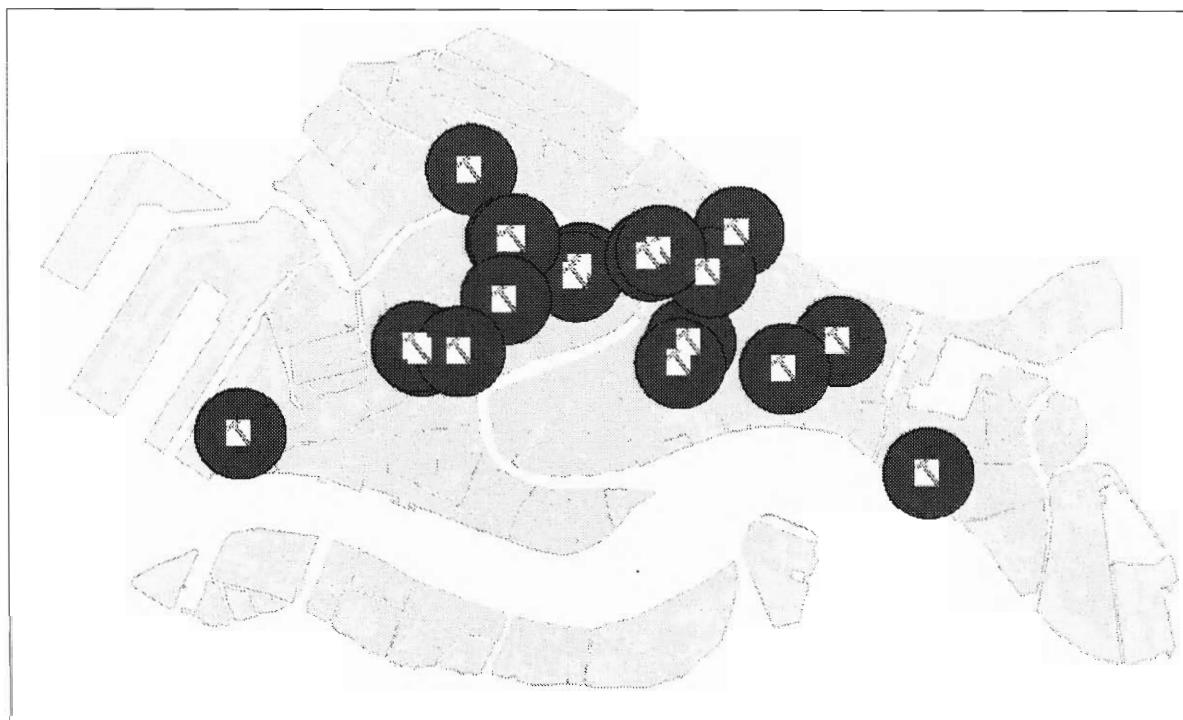


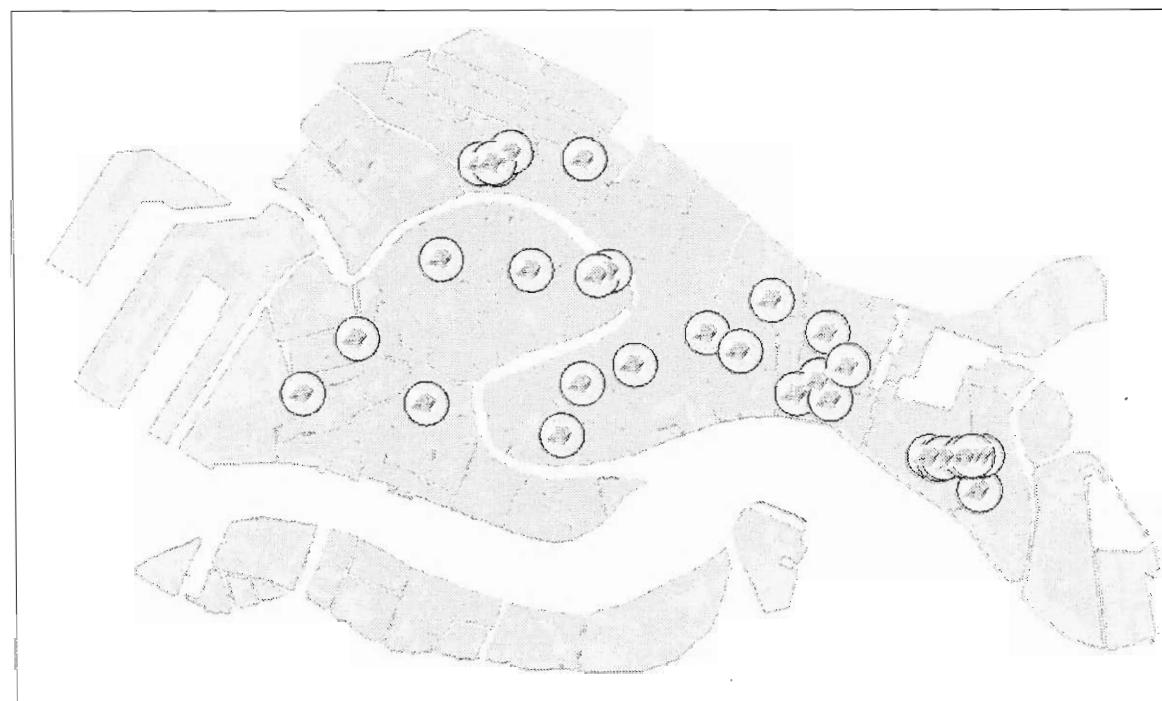
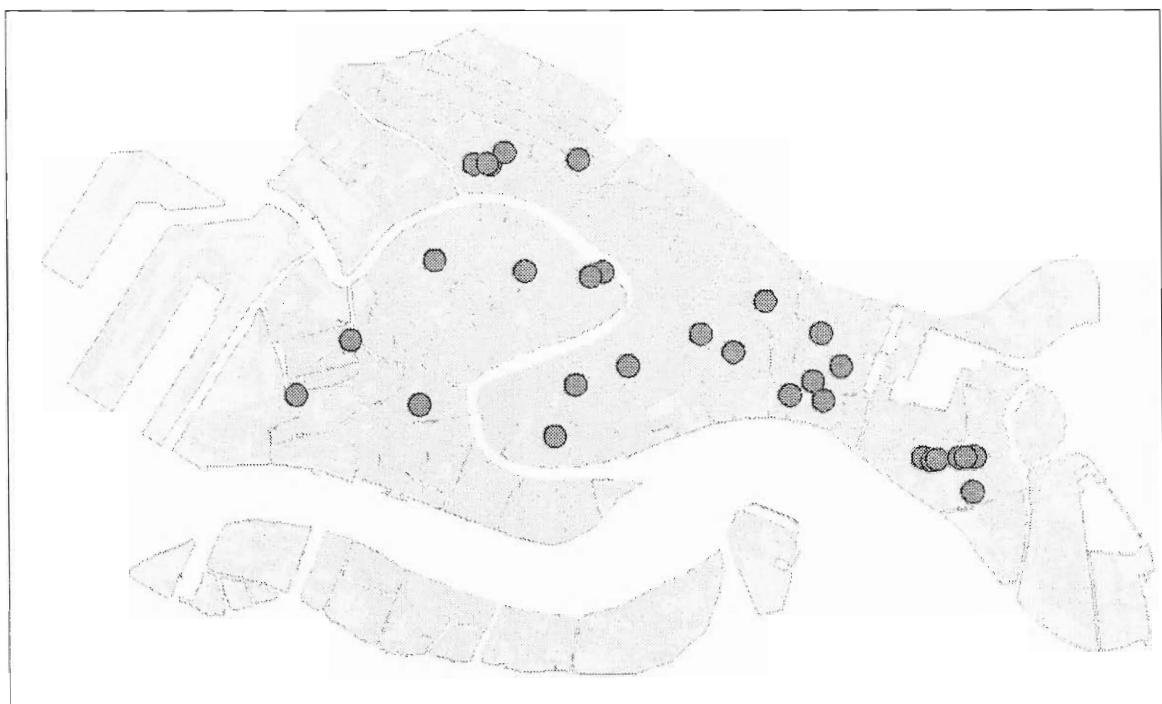


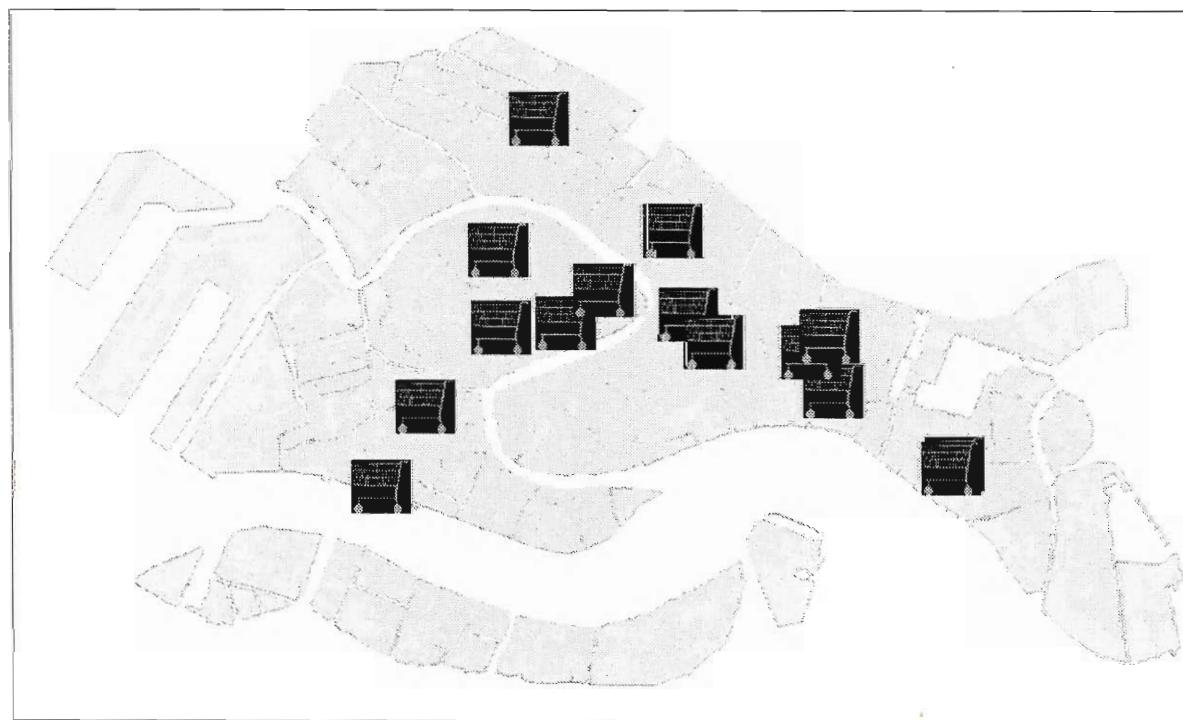
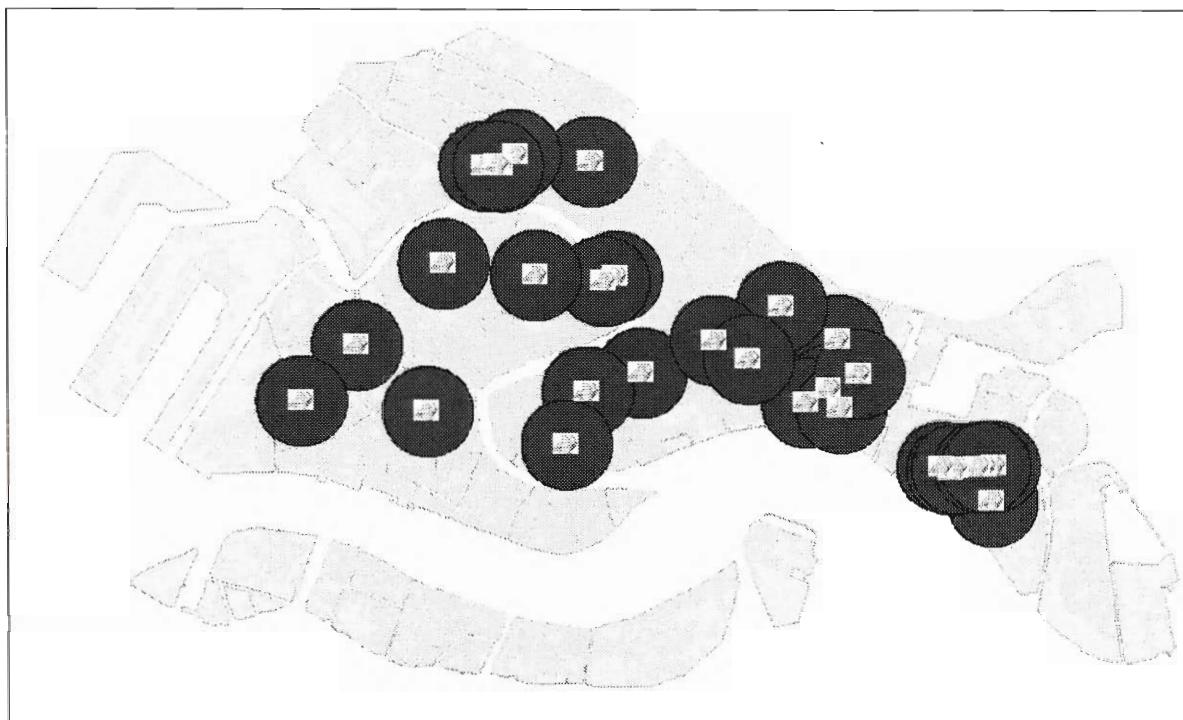


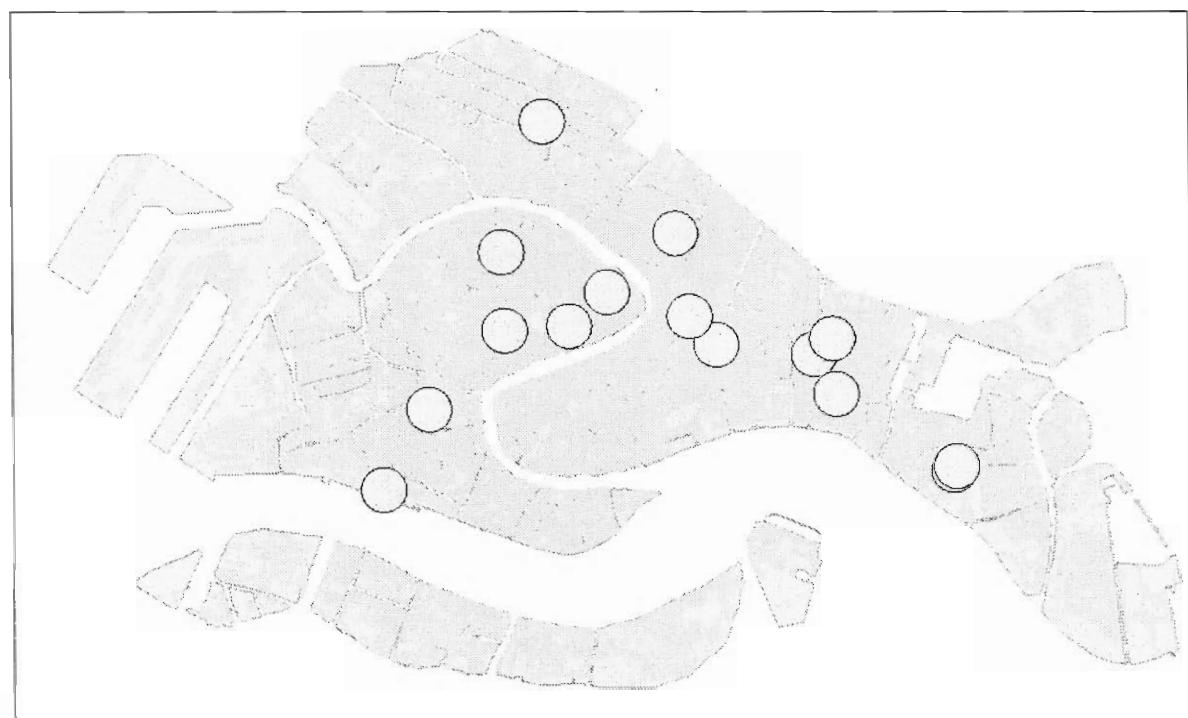
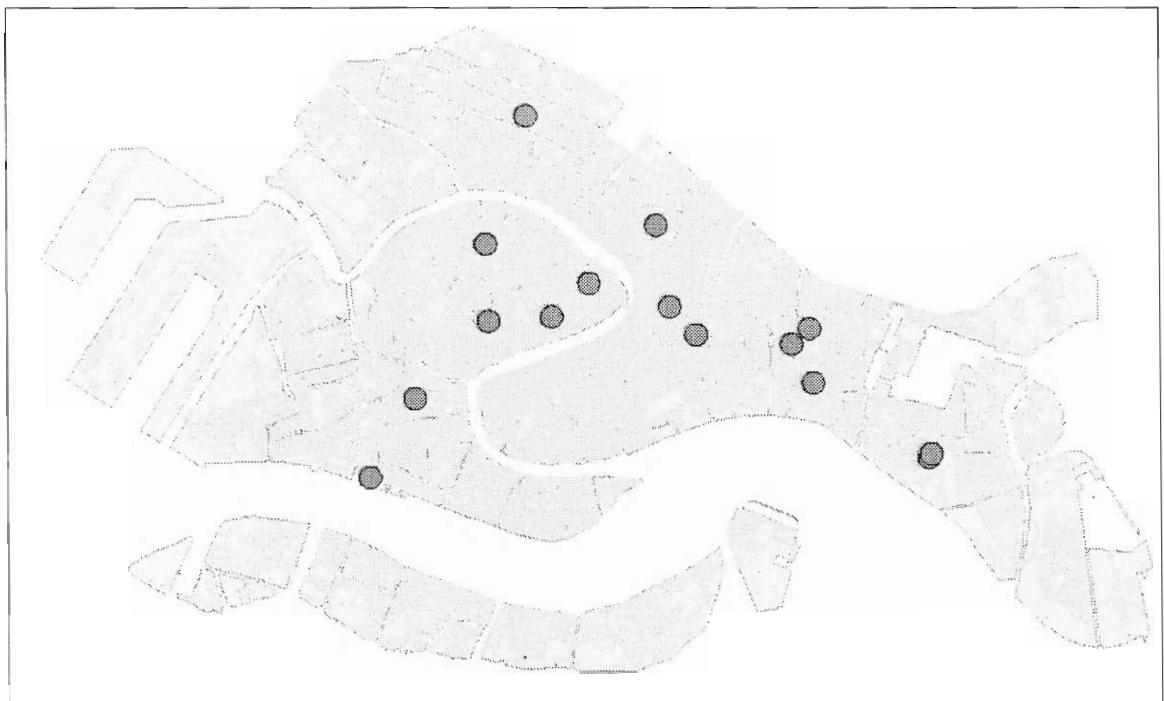


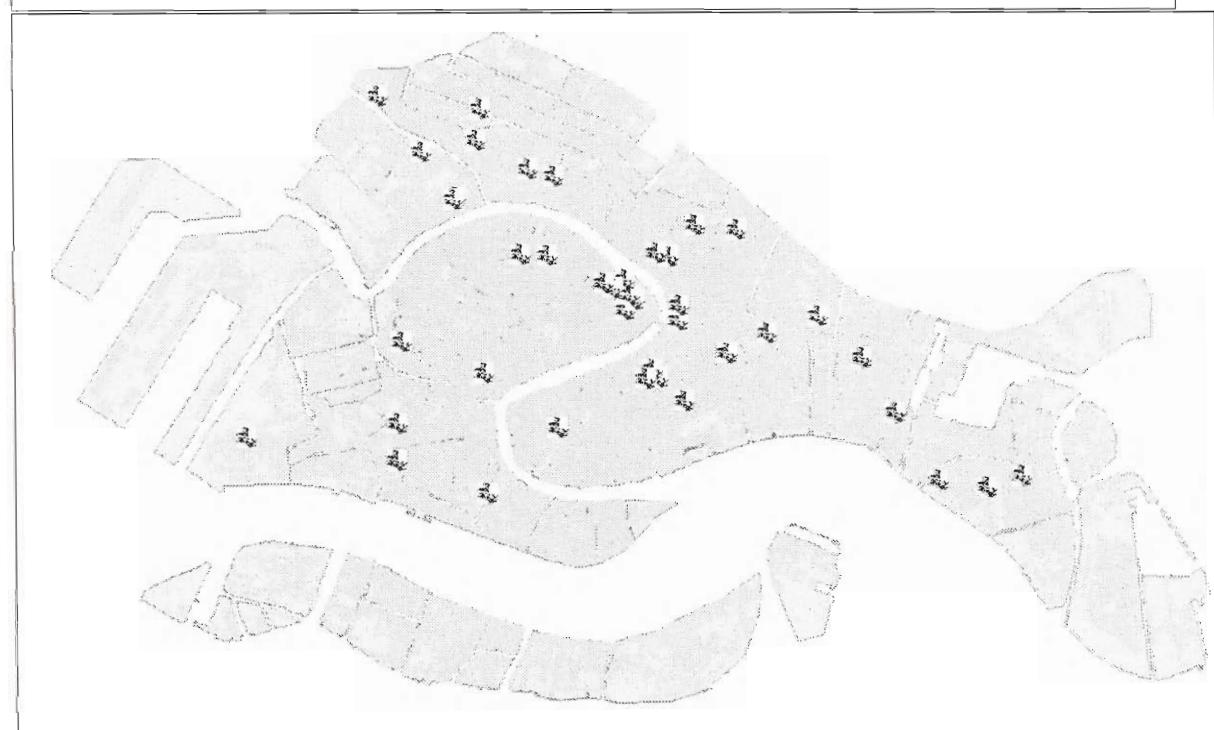
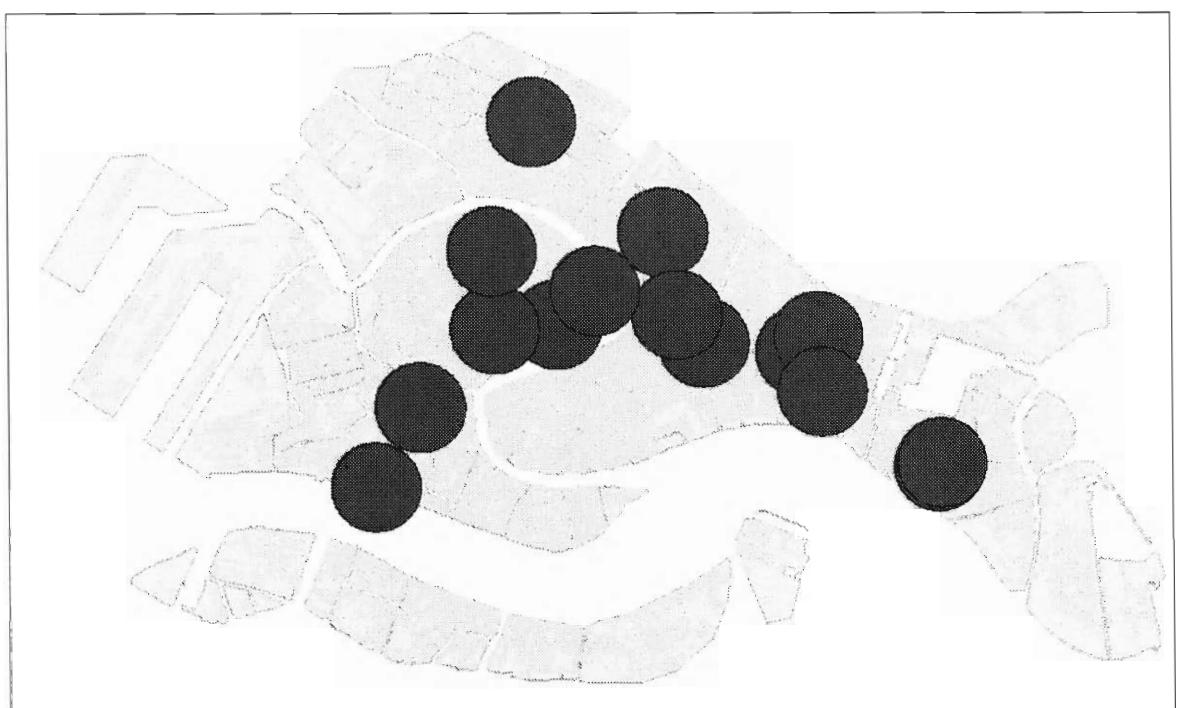


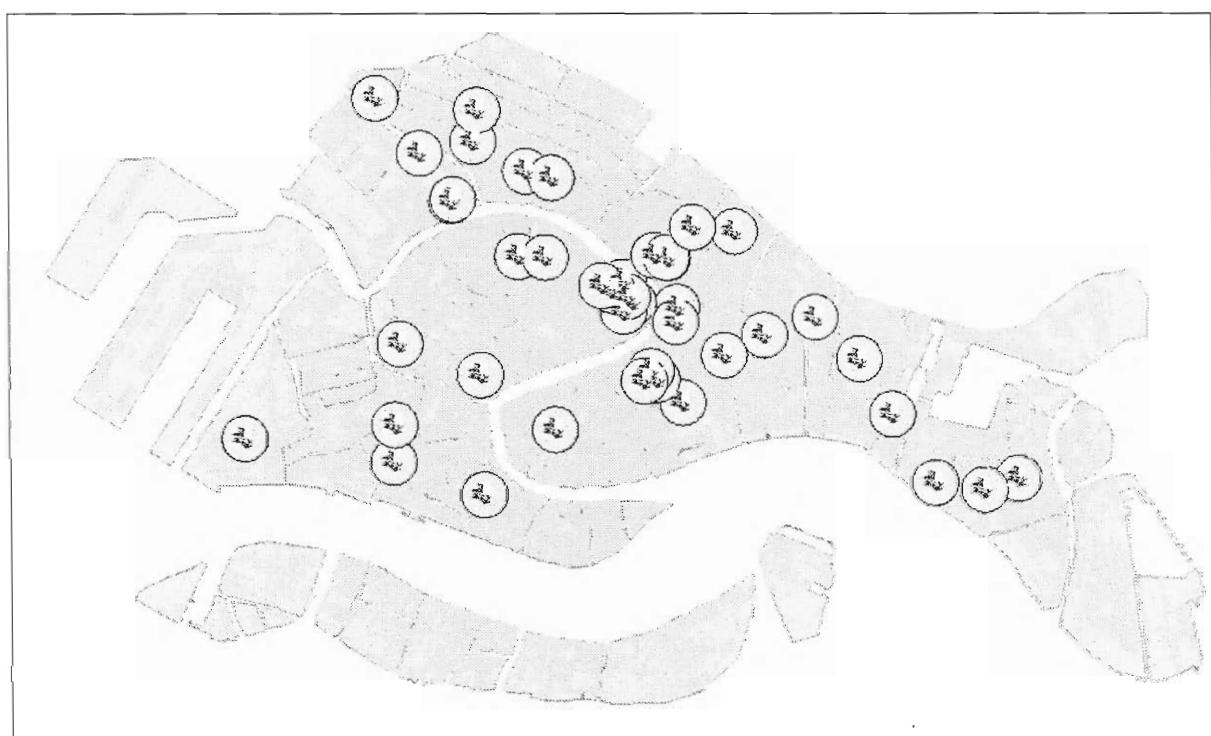
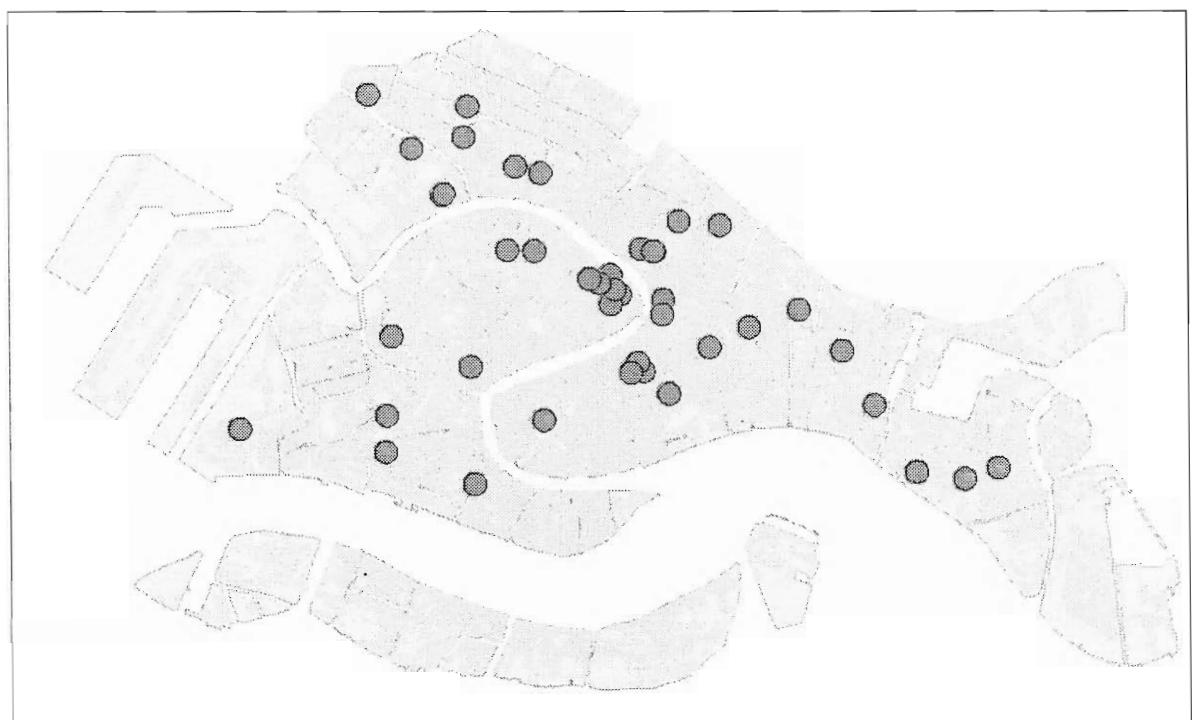


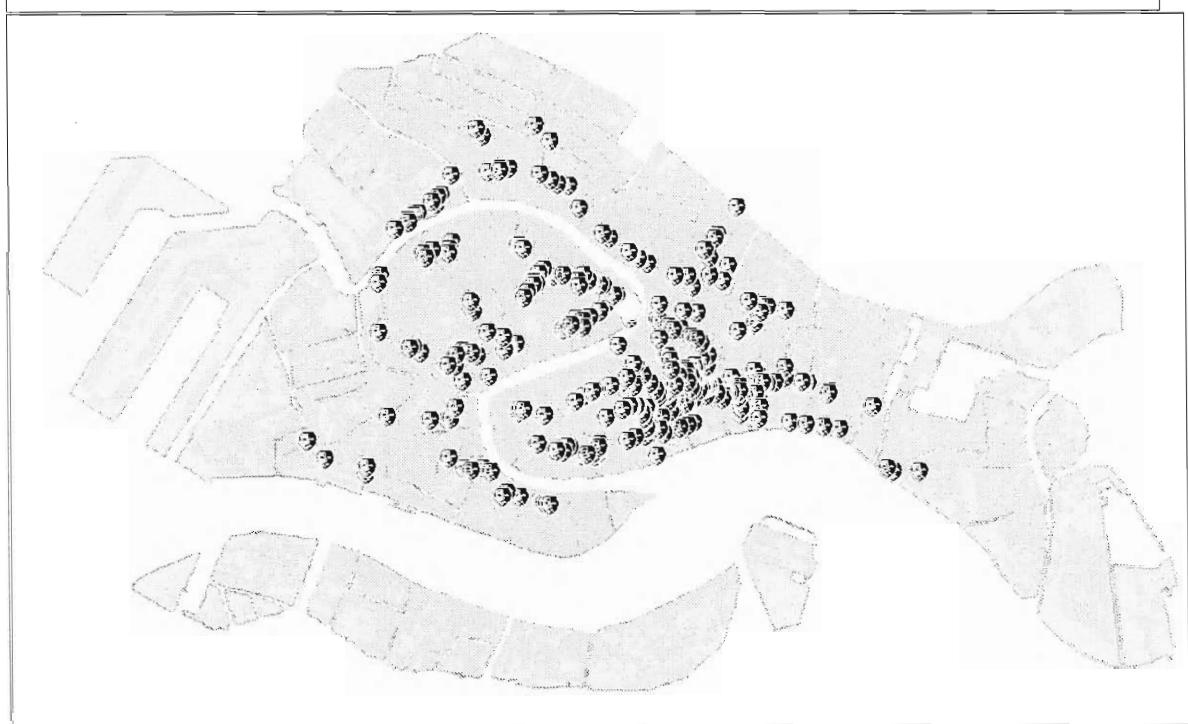
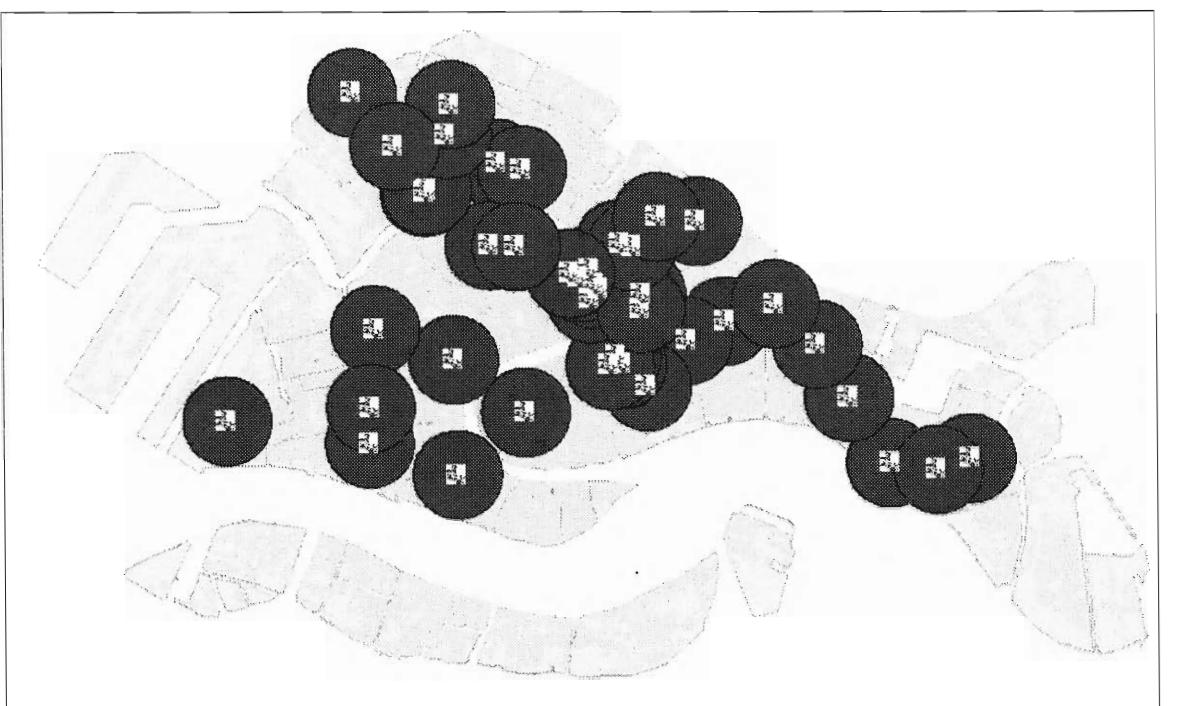


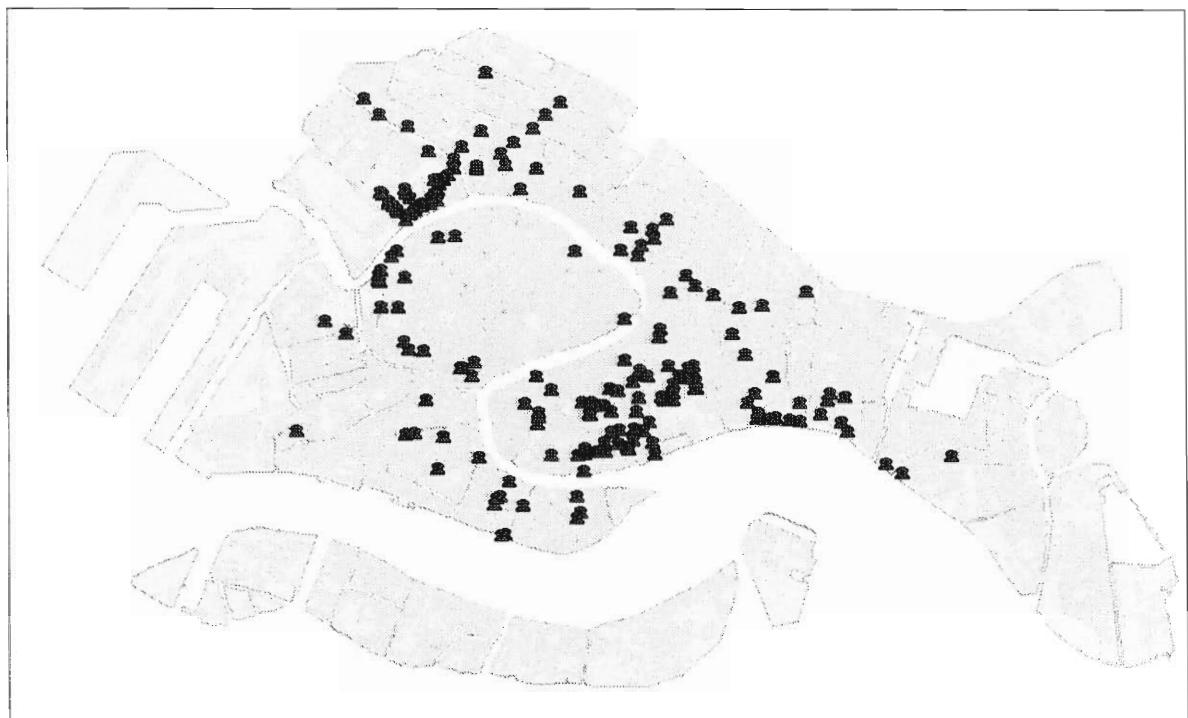












Appendix C: Store Evolutions Database Sample

Castello Evolutions

ID	Area	number	Letter	Date from	Date to	Name	Description	Description 2	Notes
1	CS	11	R		1980		Fruttivendolo	fruit/veg stand	
2	CS	30			1980		Latteria	dairy	
3	CS	43			1980	Trattoria Dalla Armida	Trattoria	restaurant	
4	CS	345			1990		stone, cement	stone, cement	
5	CS	143					restaurant	restaurant	always
6	CS	394			1990		alimentari	food	
7	CS	330			1990		tabacchi	tabacchi	
8	CS	328			1980		latteria	latteria	
9	CS	313			1980		trattoria	restaurant	
10	CS	159			1980		alimentari	food	
11	CS	161					panificio	bread	
12	CS	187			1970		paint	paint	
13	CS	270					falegnameria (woodwork)	woodwork	always
14	CS	269		1985			hotel	hotel	current
15	CS	219	A		1970	Pasta Fresca	fresh pasta	fresh pasta	run by Guido
16	CS	493			1980		macelleria	butcher	
17	CS	994					antiques	antiques	always
18	CS	454					Venetian Specialties	souvenirs	
19	CS	1081			??		fabbro	metal work	
20	CS	1079			1980		underwear, pajamas	clothing	
21	CS	1040			1980		cartoleria	stationary	
22	CS	1058			1980		salumeria	Deli	
23	CS	1058	C				negozi di giocatelli	Toys	
24	CS	942			1980		barbiere	Hair dresser	
25	CS	769					panificio	bread	
26	CS	766	A				parucchiere	Hair dresser	
27	CS	766			1995		alimentari	Food	
28	CS	738					trattoria	restaurant	always
29	CS	713			1990	Alimentari da Pierro	alimentari	Food	

Appendix D: Tourist Store Classification Maps



Tourist Stores



Residential Stores



Mixed Stores



Closed stores

Appendix E: Tourism Store Classifications by Sestieri

T/R/M bySestieri		
Area	SumOfValue	Type
CN	161	closed
CN	23	ignore
CN	432	Mixed
CN	140	Resident
CN	178	Tourist
CS	23	closed
CS	3	ignore
CS	331	Mixed
CS	156	Resident
CS	142	Tourist
DD	128	closed
DD	25	ignore
DD	179	Mixed
DD	93	Resident
DD	78	Tourist

T/R/M bySestieri		
Area	SumOfValue	Type
SC	54	closed
SC	7	ignore
SC	124	Mixed
SC	54	Resident
SC	56	tourist
SM	47	closed
SM	46	ignore
SM	502	Mixed
SM	90	Resident
SM	292	Tourist
SP	62	closed
SP	21	ignore
SP	218	Mixed
SP	77	Resident
SP	102	Tourist

Appendix F: Store types by sestieri

Stores in Cannaregio by type

StoreTypesbySestieri		
Area	Description 2	SumOfValue
CN	accessories	12
CN	Antiques	6
CN	Art	10
CN	art gallery	8
CN	Baby	1
CN	Bank	8
CN	Bar	63
CN	Beauty	3
CN	book store	8
CN	Books	1
CN	Bread	7
CN	Butcher	6
CN	Closed	161
CN	Clothing	55
CN	copy shop	3
CN	Craft	3
CN	CT	1
CN	Dairy	2
CN	Deli	7
CN	Display	1
CN	drug store	3
CN	dry cleaner	2
CN	electronics	12
CN	exchange	2
CN	eyeglasses	3
CN	Fish	2
CN	Florist	6
CN	Food	19
CN	fruit/veg stand	7
CN	Funeral	1
CN	funeral home	3
CN	Gelateria	10
CN	Gym	1
CN	hair dresser	15
CN	hardware store	6
CN	homegoods	14
CN	Hostel	1
CN	Hotel	83
CN	Jewelry	29

StoreTypesbySestieri		
Area	Description 2	SumOfValue
CN	kids clothes	1
CN	laundry	1
CN	mail	2
CN	metal work	2
CN	misc	56
CN	pasticceria	8
CN	perfume	4
CN	pharmacy	9
CN	photo	9
CN	PO Box	1
CN	real estate	9
CN	restaurant	96
CN	shoe repair	2
CN	shoes	12
CN	souvenirs	69
CN	stationary	7
CN	storage	1
CN	sunglasses	6
CN	supermarket	2
CN	tabacchi	17
CN	toys	3
CN	travel agency	4
CN	unknown	19
CN	video rental	1
CN	wine	5
CN	woodwork	2
CN	workshop	1

Stores of Castello by type

StoreTypesbySestieri

Area	Description 2	SumOfValue
CS	accessories	5
CS	Antiques	10
CS	Art	15
CS	art gallery	4
CS	Baby	2
CS	Bank	3
CS	Bar	48
CS	Beauty	7
CS	book store	2
CS	Books	2
CS	Bread	5
CS	Butcher	15
CS	Closed	23
CS	Clothing	41
CS	copy shop	1
CS	Craft	2
CS	Dairy	1
CS	Deli	7
CS	drug store	1
CS	dry cleaner	3
CS	electronics	17
CS	exchange	3
CS	eyeglasses	3
CS	Fish	2
CS	Florist	3
CS	Food	9
CS	fruit/veg stand	10
CS	funeral home	4
CS	Gelateria	7
CS	Gym	2
CS	hair dresser	20
CS	hardware store	4
CS	homegoods	28
CS	Hotel	27
CS	Internet	2
CS	Jewelry	18
CS	Laundry	1
CS	Mail	1
CS	Misc	27
CS	Pasta	3
CS	pasticceria	8

StoreTypesbySestieri

Area	Description 2	SumOfValue
CS	perfume	2
CS	pharmacy	8
CS	photo	3
CS	PO Box	1
CS	real estate	5
CS	restaurant	87
CS	shoe repair	1
CS	shoes	11
CS	souvenirs	88
CS	stationary	6
CS	storage	1
CS	sunglasses	2
CS	supermarket	7
CS	tabacchi	14
CS	toys	8
CS	travel agency	3
CS	unknown	1
CS	watches	1
CS	wine	9
CS	woodwork	1

Stores of Dorsoduro by type

StoreTypesbySestieri		
Area	Description 2	SumOfValue
DD	Antiques	9
DD	Art	4
DD	art gallery	27
DD	Baby	3
DD	Bags	2
DD	Bank	7
DD	Bar	39
DD	Beauty	2
DD	book store	7
DD	Bread	4
DD	Butcher	2
DD	Closed	128
DD	Clothing	20
DD	copy shop	9
DD	Craft	1
DD	Deli	3
DD	Display	3
DD	dry cleaner	2
DD	electronics	7
DD	exchange	1
DD	eyeglasses	2
DD	Fish	1
DD	Florist	2
DD	Food	6
DD	fruit/veg stand	5
DD	Gelateria	5
DD	hair dresser	10
DD	hardware store	1
DD	homegoods	16
DD	Hotel	20
DD	information	1
DD	Jewelry	8
DD	Mail	1
DD	Misc	17
DD	non-store	19
DD	pasticceria	3
DD	pharmacy	3
DD	Photo	1
DD	real estate	3
DD	restaurant	41
DD	shoe repair	1

StoreTypesbySestieri		
Area	Description 2	SumOfValue
DD	shoes	2
DD	souvenirs	25
DD	stationary	2
DD	supermarket	2
DD	tabacchi	9
DD	toys	1
DD	travel agency	2
DD	unknown	3
DD	wine	3
DD	woodwork	8

Stores of Santa Croce by type

StoreTypesbySestieri		
Area	Description 2	SumOfValue
SC	accessories	1
SC	Antiques	4
SC	art gallery	6
SC	Bank	3
SC	Bar	13
SC	book store	1
SC	Bread	6
SC	Butcher	3
SC	Closed	54
SC	Clothing	8
SC	copy shop	3
SC	drug store	1
SC	electronics	4
SC	exchange	1
SC	Florist	1
SC	Food	3
SC	fruit/veg stand	2
SC	Gelateria	3
SC	hair dresser	9
SC	hardware store	4
SC	homegoods	8
SC	Hotel	20
SC	Jewelry	7
SC	Mail	4
SC	Misc	14
SC	non-store	1
SC	pasticceria	1
SC	Perfume	1
SC	pharmacy	2
SC	Photo	1
SC	real estate	6
SC	restaurant	46
SC	Shoes	2
SC	souvenirs	29
SC	stationary	2
SC	sunglasses	1
SC	supermarket	1
SC	Tabacchi	8
SC	Toys	2
SC	travel agency	1
SC	Unknown	6

StoreTypesbySestieri		
Area	Description 2	SumOfValue
SC	wine	1
SC	woodwork	1

Stores of San Marco by type

StoreTypesbySestieri

Area	Description 2	SumOfValue
SM	accessories	18
SM	Antiques	20
SM	Art	12
SM	art gallery	41
SM	Baby	2
SM	Bank	22
SM	Bar	46
SM	Beauty	6
SM	book store	10
SM	Bread	1
SM	butcher	3
SM	closed	47
SM	clothing	140
SM	craft	9
SM	deli	4
SM	display	3
SM	dry cleaner	2
SM	electronics	11
SM	exchange	4
SM	eyeglasses	11
SM	florist	2
SM	food	6
SM	fruit/veg stand	4
SM	gelateria	7
SM	gym	1
SM	hair dresser	6
SM	hardware store	1
SM	homegoods	14
SM	hotel	66
SM	jewelry	66
SM	leather goods	1
SM	mail	3
SM	misc	21
SM	non-store	1
SM	pasticceria	7
SM	perfume	2
SM	pharmacy	6
SM	photo	5
SM	real estate	5
SM	restaurant	84
SM	shoes	13

StoreTypesbySestieri

Area	Description 2	SumOfValue
SM	souvenirs	169
SM	stationary	8
SM	sunglasses	2
SM	tabacchi	10
SM	toys	1
SM	travel agency	7
SM	unknown	42
SM	wine	3
SM	woodwork	2

Stores of San Polo by type

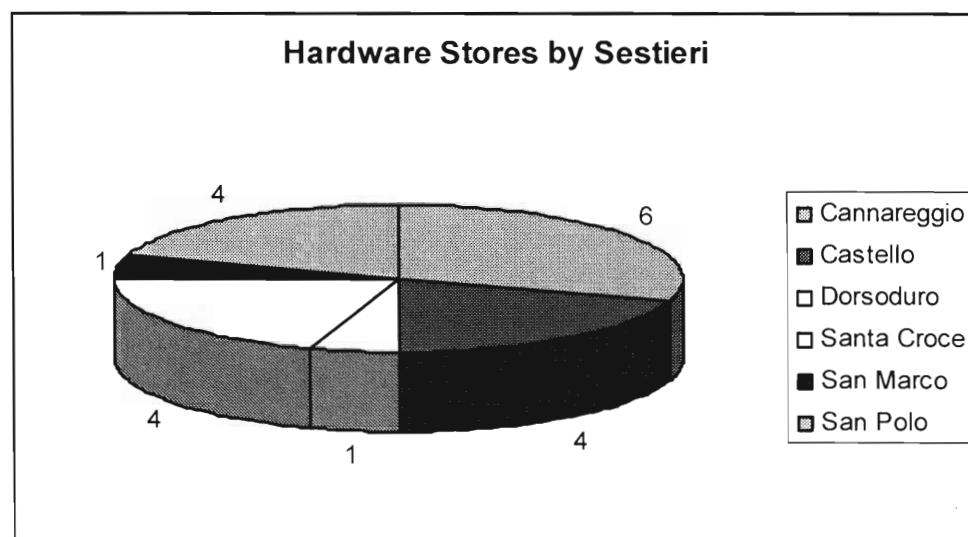
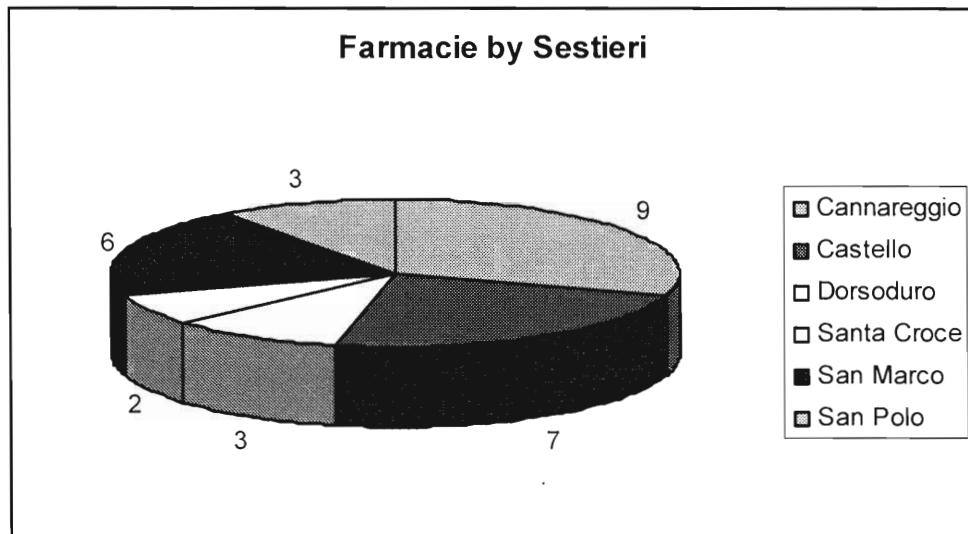
StoreTypesbySestieri

Area	Description 2	SumOfValue
SP	accessories	10
SP	antiques	13
SP	art	5
SP	art gallery	7
SP	bank	6
SP	bar	28
SP	beauty	5
SP	book store	5
SP	bread	6
SP	butcher	2
SP	closed	62
SP	clothing	32
SP	copy shop	2
SP	dairy	1
SP	deli	4
SP	dry cleaner	1
SP	electronics	3
SP	eyeglasses	2
SP	fish	6
SP	florist	2
SP	food	6
SP	fruit/veg stand	6
SP	gelateria	1
SP	hair dresser	7
SP	hardware store	4
SP	homegoods	8

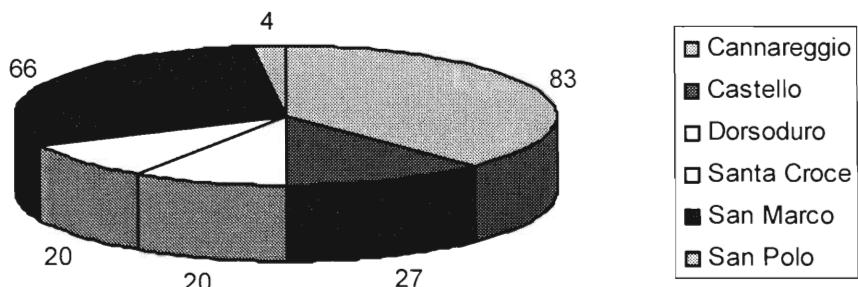
StoreTypesbySestieri

Area	Description 2	SumOfValue
SP	hotel	4
SP	jewelry	22
SP	mail	2
SP	misc	22
SP	non-store	1
SP	pasta	1
SP	pasticceria	3
SP	perfume	1
SP	pharmacy	3
SP	photo	2
SP	PO Box	5
SP	real estate	9
SP	restaurant	46
SP	shoe repair	1
SP	shoes	12
SP	souvenirs	78
SP	stationary	2
SP	storage	2
SP	sunglasses	1
SP	supermarket	3
SP	tabacchi	6
SP	unknown	13
SP	wine	5
SP	woodwork	1
SP	workshop	1

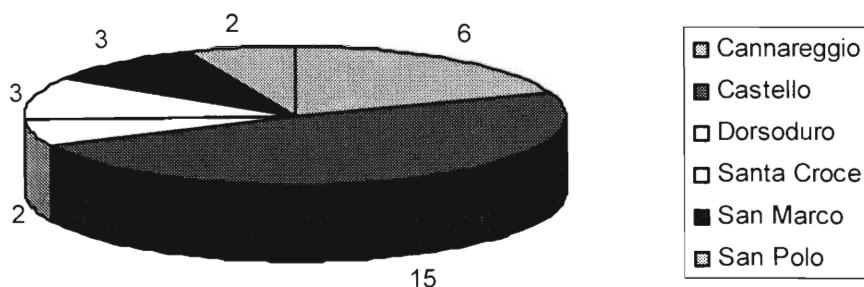
Appendix G: Charts of Each Commodity



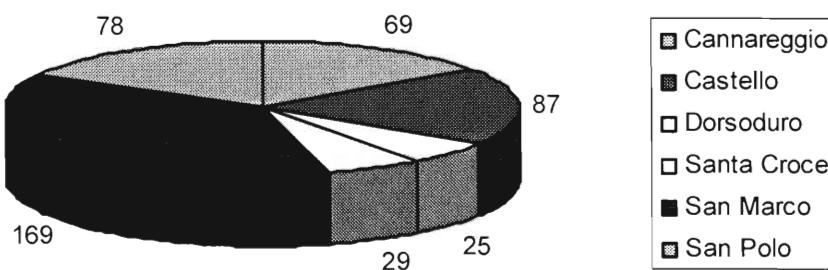
Hotels by Sestieri



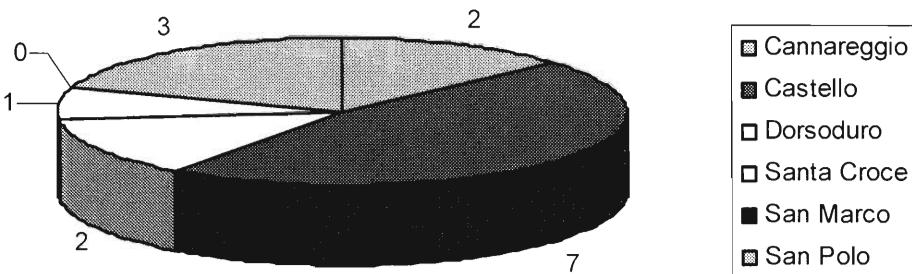
Macellerie by Sestieri



Souvenirs by Sestieri



Supermercati by Sestieri



Appendix H: Powerpoint Presentation

**Appendix not included
in original submission**

IQP/MQP SCANNING PROJECT



**George C. Gordon Library
WORCESTER POLYTECHNIC INSTITUTE**