

# The Merchants of Venice

A Look at the Changes in the Venetian Stores and Tourist Accommodations and Their Impact on the Local Population

AN INTERACTIVE QUALIFYING PROJECT REPORT

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# Authorship

All the members of this team contributed to the creation this report.

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# Abstract

The demand in Venice is created by those who occupy its streets. The demographics and number of visitors in Venice have been changing drastically over the past years, with its population steadily declining and the number of tourists constantly increasing. To understand how these changes correlate to the type, number, and location of the stores in Venice, this project noted and compiled the changes in stores within five out of the six *sestieri* of the historic center of Venice when compared to the database of the stores made by WPI students in the years 2004, 2005, 2007, 2009, 2010, and 2011. The project compiled a single comprehensive database, including pictures of all of the stores of Venice, both extant and closed, in the fall of 2012. The project created web pages for each type of Venetian store and templates for every store in Venice for the new online encyclopedia: Venipedia, modeled after Wikipedia. Finally, the project analyzed the trends in the stores and accommodations of Venice in relation to the trends in the residents and tourists.

# Executive Summary

Commerce and trade have always been central to Venice's economy and culture. However, since the 1970s, the numbers, types, and locations of stores and tourist accommodations have been changing. The number of souvenir stores in the city has increased by over 229%, while the number of grocery stores has decreased by at least 61%. In addition, from 1999 to 2008, the number of tourist accommodations such as hotels, bed and breakfast, and apartment rentals increased by over 793%. These drastic changes in the stores and accommodations reflect fundamental changes that have been occurring in the resident and tourist populations of the city.

For the past several decades, the population of Venice has decreased considerably while the number of tourists has increased exponentially. As shown in Figure 1, the population decreased by 50,000, or 45%, from 1971 to 2011, while the number of residential tourists visiting Venice for more than a day annually increased by at least 153%, or by over 10,000,000 people. Change does not happen in isolation, and these trends have had a widely impacted the retail sector of Venice, since the stores and accommodations change to meet the demand of the area. By looking at how the population, tourism, and stores and accommodations have evolved over the years, it is possible to understand how they interact with and affect each other.

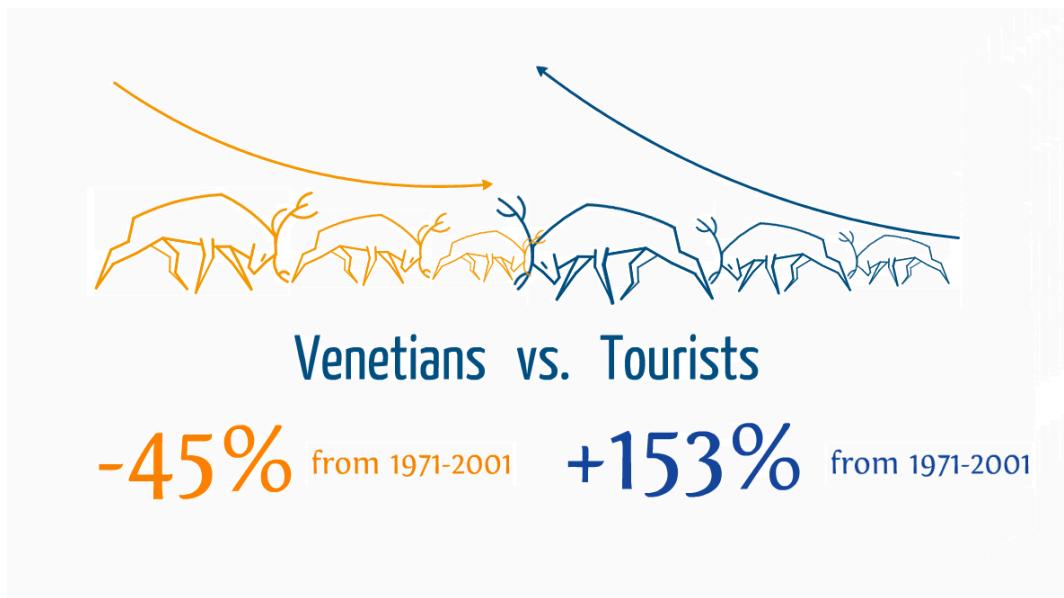


Figure 1: Trends in Population and Tourism

The ultimate goal of this project was to catalogue the stores of the historic center of Venice, analyze the changes occurring in the retail sector, and to analyze and compare them with the trends occurring with the population and tourism. This goal was accomplished by updating and reformatting all of the past data collected by other WPI students since 2004, collecting current data on the stores and accommodations, and using data on the population and tourism to understand how Venice is evolving.

The group collected data from five of the six *sestieri* in Venice, focusing on the districts of Cannaregio, Dorsoduro, San Marco, San Polo, and Santa Croce (shown in Figure 2). Castello was not covered because it was covered previously in 2011 and, due to technical difficulties in the functionality of the mobile phone app to be used for data collection. The group assumed that any changes that occurred in one year would not be substantial and that Castello should be the district to be left uncovered.

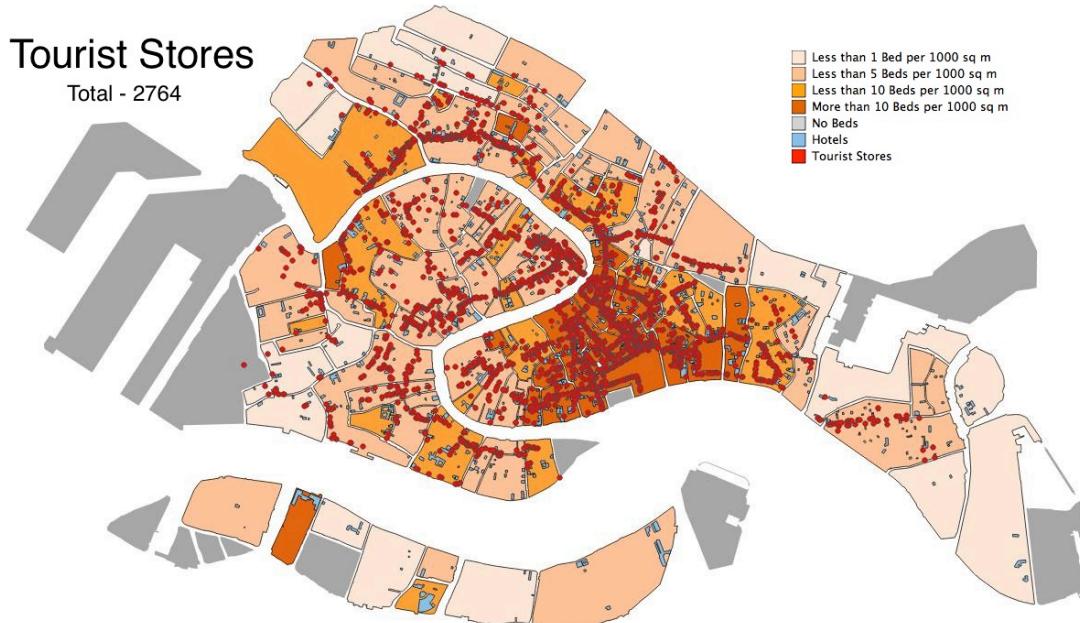


**Figure 2: Total stores covered in 2012**

Through the data collection, the group found that there are a total of 4114 stores in the five districts that were covered. These stores fall under three categories based on the retail customer base: tourist stores, resident stores, and mixed stores that cater to both tourists and

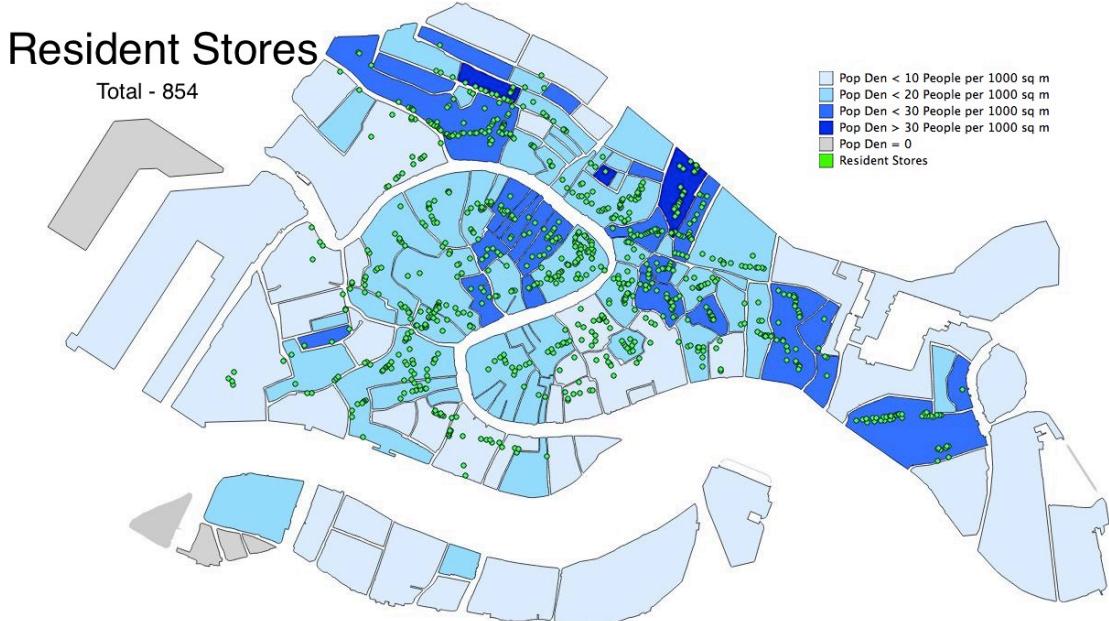
residents. There are a total of 2764 tourist stores, 864 resident stores, and 486 mixed stores in the five districts covered. However, the stores cataloged in Castello in 2011 were used to conduct the analysis of this project. This classification of stores allowed us to take a snapshot of the current retail sector, to see how it is divided to serve residents and tourists, and to analyze how it has been changing to adapt to the changes in demographics and tourism.

Two main methods were used to analyze the data. First, the total number and locations of tourist stores were overlaid over a map of the density of tourist beds by island, as shown in Figure 3.



**Figure 3: Tourist stores by tourist bed density**

The reason the tourist stores and the density of tourist beds were analyzed together is that the tourist beds are a good indicator of where most tourists are concentrated. The group found that the concentration of tourist stores is directly related to the density of tourist beds in an area as well as the number of tourist attractions in the area. In addition to analyzing the tourist stores with the density of tourist beds by island, the team also analyzed the concentration of resident stores by population density, as shown below in Figure 4.



**Figure 4: Resident stores by population density**

The reason the resident stores and population density of the islands were analyzed together is that the population density shows where most residents of Venice live. The group found that the concentration of resident stores is also directly related to the density of the population in an area as well as the location of traditional marketplaces throughout Venice.

With the analysis obtained, we were able to understand that changes in the population and tourism in Venice do in fact strongly impact the retail sector. A main goal of this project was also to make our findings available to general public, and Venipedia pages were created to display all of the data and analysis obtained. Although the trends in the local resident population and tourism cause the trends in stores and accommodations to continue changing from catering to residents to catering to tourists, it is our hope that this project will show that the resident population is declining but still significant and needs to remain a priority in Venice.

# Chapter 1: Introduction

Stores and tourist accommodations reflect the changes that occur in the demographics, economy, and living standards of the community they are in. Stores sell goods and services to the local population while tourist accommodations provide a place for people to stay temporarily. The shifts that occur in a community can be exhibited through stores and tourist accommodations because, as the demographics and economy change, the demand for goods and services shifts to meet the changing needs. For example, before the California Gold Rush in 1848, San Francisco was “an insignificant village, almost unknown to commerce and geography” (Paul 1982, 2-3). By 1853, however, “San Francisco had acquired perhaps 35,000 people...[and] warehouses, stores and shops, hotels, business and professional offices, banks, [etc.] covered the hilly, sandy site” (Paul 1982, 2-3). These stores, hotels, and businesses arose to meet the needs of the new population and reflect the vast shift that occurred both economically and socially. Without the stores and tourist accommodations as a reference point, it would be more difficult to perceive the shifts that occur in cities and communities and their possible causes.

The stores and tourist accommodations in the historic city of Venice tell the story of its changing society. There have always been numerous local specialty stores and marketplaces such as butcher shops, bakeries, and flower shops, but these stores have been gradually disappearing over the past several decades (Zannini 2008, 7). This decline in local stores reflects the issues that the city has been facing. First, the population is swiftly declining, sliding from 108,281 in 1971 to 58,666 in 2011 (Comune di Venezia 2012). In addition, tourist levels are rapidly rising. In 1971, the number of tourists spending the night in Venice was 929,112; while in 2011, the number of tourists increased to 2,500,882 (Comune di Venezia 2012). Also, the number of tourists visiting Venice annually, increased from about 2.3 million tourists in 1951 to about 16.9 million tourists in 2011 (Comune di Venezia 2012). The cost of living is also becoming too high for many Venetians (Povoledo 2006). According to *The Venice Report*, “there have been annual price increases of 11.21 per cent for residential property, 5.84 per cent for offices and 6.70 per cent for shops since 2000” (Mosto 2010). These are not the only issues affecting the city, but they are important factors that are interacting with each other and contributing to the changes in Venice. A closer look at the changes in the number and types of stores and tourist

accommodations provides insight into how these issues developed and how the city has changed. Since 1976, the number of tourist shops has increased at least 229%, while the number of grocery shops has decreased 61% (Zannini 2008, 7). From 1999 to 2008, the number of tourist accommodations in Venice has gone from 191 to 1516, an increase of 793% (Carrera 2009). In fact, the only sectors of the local economy showing increases are hotels and restaurants, banking, insurance, and construction work (Mosto et al. 2010, 54). These changes reflect the current issues in Venice and indicate that more focus is being placed on tourists than on the residents. This shift in focus is a major concern for Venice, since fewer stores are serving the residents who live and work there.

Different groups have addressed the problems occurring in Venice. The WPI Venice Project Center has sponsored several projects focused on the stores of Venice, starting with the project *The Evolution of Stores and Decline of Residential Comfort* in 2004 (Singh et al. 2005). Several studies have focused on the correlation between changes in the stores and changes in demographics, tourism and cost of living (Bahlatzis et al. 2008). Others have investigated how the residents' comfort level has been affected by the changes that have been occurring (Modeste et al. 2005). These groups have gathered a lot of data and created databases that contain census and population information, list stores that have opened and closed, and display interactive maps of the city's stores and accommodations. The local population and city authorities are well aware of what has been happening in Venice; however, "after the great flood of 1966 until early this century, Venice became a city where the authorities seemed to prefer to do nothing, or even oppose action, rather than do the wrong thing" (Mosto et al. 2010, 7).

Though research has been done and data has been gathered in the past, much of it is not adequately specific or extensive. Previously, tourist accommodations were categorized as a type of store and were never analyzed separately. Without an analysis on these accommodations, it is hard to portray the development of the tourist industry in Venice. Also, past groups have only analyzed some of the districts in Venice and the data they collected has not been formatted in a way that is conducive to further study. Without data on all of the districts in Venice, it is impossible to see how the city as a whole has been changing. Finally, the data is no longer up-to-date. Because there are always stores and accommodations opening and closing, new data needs to be collected and analyzed. New research needs to be done in order to understand how the local population has been affected by the changes occurring in Venice and to help policy

makers solve the problems Venice is facing. Since there is no complete picture of how the city has changed and no basis for future comparisons, it is hard to see how the changes in population, tourism, stores, and accommodations affect and interact with each other and the local population. Without an understanding of how Venice's issues developed and behave, it will be hard for the government to address them.

The goal of the project is to help the city of Venice to understand how its changing economy, population, and living standards are impacting the local population and are interacting and affecting each other through an investigation of the stores and tourist accommodations in the past and in the present. By accomplishing this goal, the team will provide a clear picture of how the issues affecting Venice have developed, provide a baseline for future study, and analyze how the local population is being impacted by social and economic changes. The team will reconstruct the evolution of the population and tourism in Venice by analyzing census and tourism data released by *Commune di Venezia* and ISTAT. The team will also reconstruct the evolution of the stores and accommodations by cataloguing the stores and tourist accommodations in Venice and comparing the new data with data collected by past projects. It will then standardize how data is collected and classified and compare the trends in population and tourism to the trends in the retail sector in order to understand how they interact with each other.

# Chapter 2: Background

This chapter is intended to give the reader insight into topics needed to understand this project fully. The topics covered in the background are as follows:

- Relevant history and general information about Venice
- The population of Venice
- Tourism in Venice
- The development of stores and marketplaces in Venice
- The development of tourist accommodations in Venice

The city of Venice consists of three regions: the Mainland (Mestre and Porto Marghera), the Estuary (Lido and the islands around it), and the main islands. The main islands are divided into six districts, or *sestieri*. These districts, shown in Figure 5, are Castello, Cannaregio, Dorsoduro, Santa Croce, San Marco, and San Polo and will be the main focus of this project. Venice also has a unique address system. The addresses in each *sestieri* start at “1” and increase sequentially. This system is standard throughout the entire city except for the islands in Giudecca and Sant’Elena, where the addresses are differentiated by street instead of district.

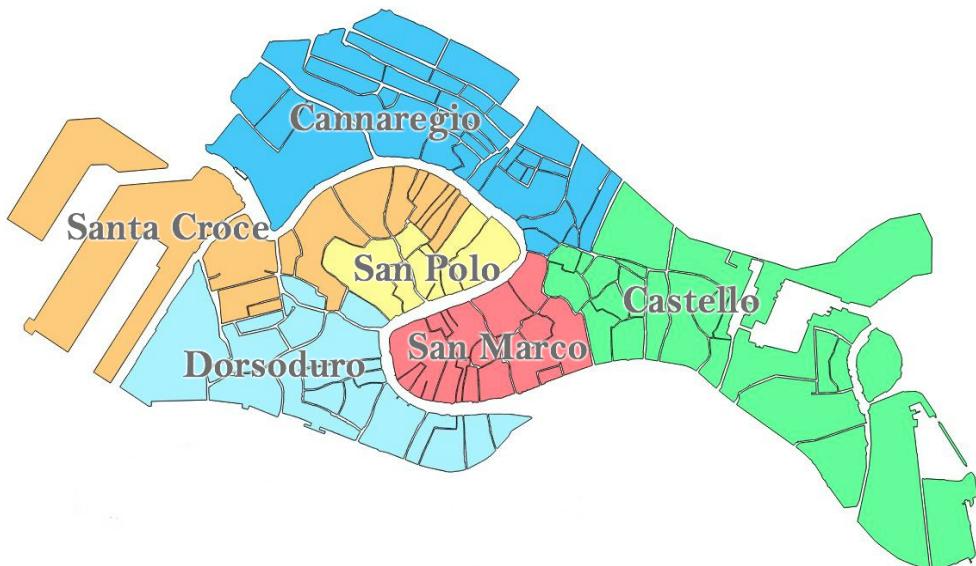


Figure 5: Map of Venice by *sestieri*

Since its foundation, Venice has played major roles in different industries, from selling salt to building ships to making glass. Because Venice was a center of trade and “the private enterprise of citizens was in every way protected and encouraged by the State,” Venice’s economy flourished and its population grew (Howells 1971, 244). The growth is exhibited not only by all of the churches and palaces built throughout Venice’s history, but also by all of the stores and marketplaces found in the city. As its industry developed, “almost every kind of manufacturing was carried on at first within the home of a craftsman...Working at home or in an adjoining shop had so many advantages that it endured for a long time” (Lane 1973, 155). By the sixteenth century, “together with shopkeepers of similar economic status, Venice’s lower middle class of master craftsmen numbered in the tens of thousands” (Lane 1973, 333). Venice’s economy was doing so well that visitors such as Thomas Coryat wrote, “For I have seen their shambles and market places (whereof they have a great multitude) exceedingly well furnished with all manner of necessaries...All the marketplaces of the cities were super-abundantly furnished with them” (Marqusee 1989, 52). Pietro Arentino, another visitor, also remarked on the flurry of commercial activity, saying,

Whenever I look out of my windows at that time when the merchants foregather I see a thousand persons in as many gondolas. The squares to my right are those of the butchers’ and fishmonger’s markets. To my left I behold the much-frequented Bridge and the warehouses of the German traders...I can marvel at dawn over waters covered with an endless variety of merchandise, each article in its season.

(Marqusee 1989, 31)

Unfortunately, Venice started declining in the 18th century and is no longer the center of trade and commerce in the Mediterranean. In 1869, Mark Twain commented on its decline, saying, “Today her piers are deserted, her warehouses are empty, her merchant fleets are vanished, her armies and her navies are but memories” (Marqusee 1989, 167). W.D. Howells said that in 1895, “Her commerce has not only wasted to the shadow of its former magnitude, but it has also almost entirely lost its distinctive character...In this industry, as in nearly all others of the lagoons, there is an annual decline” (Howells 1971, 248).

## 2.1 Venice Demographics

Venice's declining population is one of the issues reflected by the stores and accommodations of Venice. Since the economy is driven by residents and the demand the residents create, the population has an important effect on the stores of Venice. We will introduce changes and the current demographic structure of Venice in this section.

### 2.1.1 Census Tracts

Italy conducts a national census every decade through the *Istituto Nazionale di Statistica*, or ISTAT. ISTAT is a public research organization founded in 1926 and is the official source of demographic statistics for all of Italy, including Venice (ISTAT 2012). In order to gather census data in an efficient way, Italy is divided by territory, province, zone, municipality, and district. Currently, the latest accessible census data is the 2001 census tract data because the 2011 data has not yet been released.

In order to gather census data more efficiently, the city of Venice is split into thirteen districts, or *quartieri*, as shown below in Figure 6. These districts are areas in which the characteristics, economic status, and living conditions of the population are mostly similar. The six districts of Venice that will be studied in this project are included in two of these *quartieri*. Each *sestieri* also has its own census data and is divided into hundreds of areas called census tracts. These tracts contain information like the ages and professions of the local population. Appendix B compares the census tracts that correspond to the district of San Polo in 1991 and in 2001.

1	Venezia-Murano-Burano (Venezia Insulare)	1	San Marco - Castello - Sant'Elena - Cannaregio	VENEZIA Centro Storico
		2	Dorsoduro - S. Polo - S. Croce - Giudecca - Sacca Fisola	
		5	Murano	
2	Lido-Pellestrina (Venezia Litorale)	6	Burano	ESTUARIO
		3	Lido - Malamocco - Alberoni	
3	Favaro-Veneto	4	Pellestrina - San Pietro in Volta	TERRAFERMA
		8	Favaro - Campalto	
		9	Carpenedo - Bissuola	
4	Mestre-Carpenedo (Mestre Centro)	10	Mestre Centro	TERRAFERMA
		11	Cipressina - Zelarino - Trivignano	
5	Chirignago-Zelarino (Mestre Ovest)	12	Chirignago - Gazzera	TERRAFERMA
		13	Marghera - Catene - Malcontenta	

Figure 6: Different census districts of Venice

### 2.1.2 Changes in Population Since 1971

Since 1971, there has been a drastic change in the population of Venice. According to the census data from ISTAT, Venice had a population of 108,281 in 1971 (Comune di Venezia 2010). The population then dropped down to 92,215 in 1981, 74,674 in 1991, and 64,059 in 2001. As of 2011, the number of residents in Venice is 58,991. As shown in Figure 7, the population in Venice has been declining every year since 1971. There are many reasons behind these changes in the population, including high cost of living and lack of job opportunities.

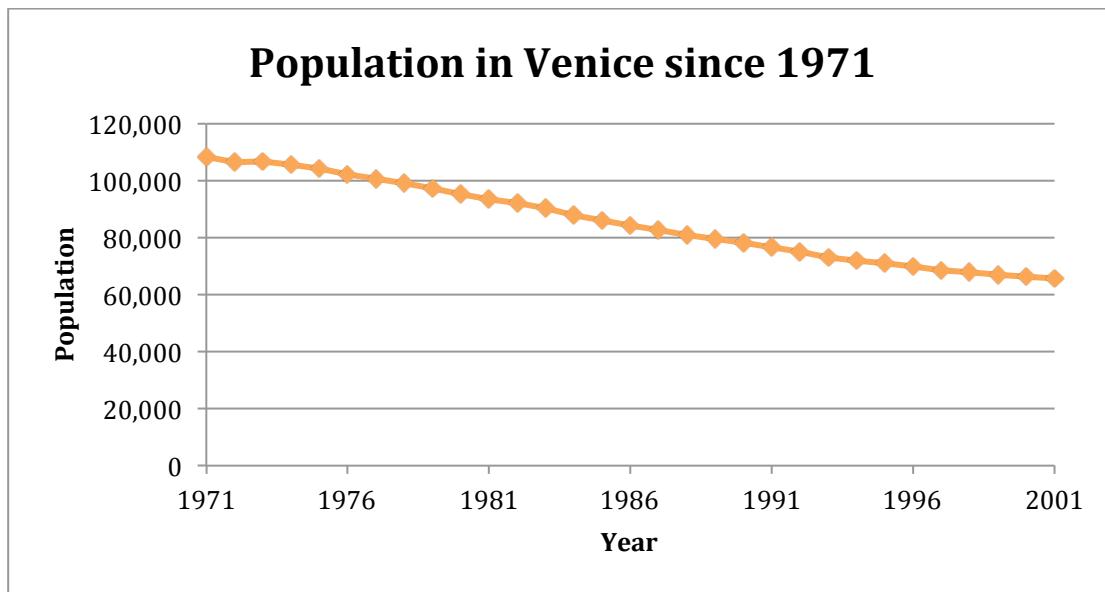


Figure 7: Population change in Venice from 1971 to 2011

Venice's population is also aging. As shown in Figure 8, the average age of a Venetian resident has increased from 40.6 years in 1971 to 48.3 in 2001 (Comune di Venezia 2010). The average age of Venetians is much higher than both Italy's average of 43.1 years and the European Union's average of 40.9 years (Eurostat 2011). One of the reasons for the increase in the average age is that the younger portion of the population has been declining. The proportion of ages ranging from 0 to 13 was 16% in 1971 while in 2001 it decreased to 9.1% (Comune di Venezia 2010). The declining youth levels, along with the dwindling population, are big issues that Venice is currently facing.

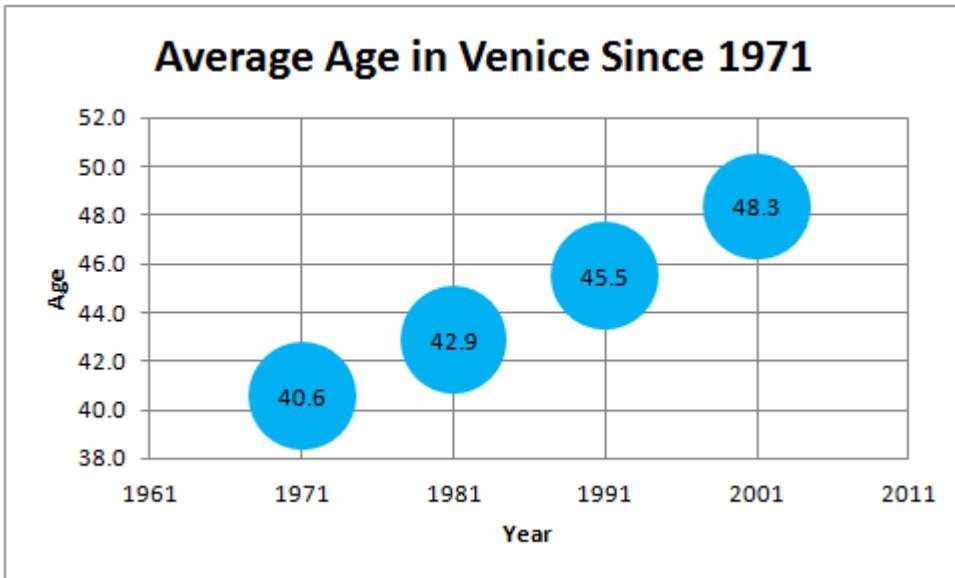


Figure 8: Average age in Venice from 1971 to 2001

## 2.2 Tourism in Venice

Venice's unique position on the lagoon has always attracted people to visit and admire it. Venice has catered to tourists "from the days of medieval pilgrims flocking to the Holy Land down to modern mass tours" (Lane 1973, 431). Tourism has thrived in Venice for hundreds of years, with Venice receiving a large and varied group of tourists every year. Even in the 1700s, people noticed Venice's catering to tourists, saying, "Our gondoliers... rowed smoothly by the side of a broad pavement, covered with people in all dresses and of all nations" (Marqusee 1989, 15). For centuries, Venice has drawn foreign visitors and their money to itself.

There are two main types of tourists in Venice. The first kind is a residential tourist, or tourist that spends at least one night in Venice in a hotel, boarding house, bed and breakfast, etc. The second kind is an excursionist tourist, or tourist that spends the day in Venice, but does not stay overnight. Data on residential tourists is available through ISTAT, but data on excursionist tourists is much harder to gather, so our team will estimate the number of these tourists based on reasonable assumptions that relate them to residential tourists.

### 2.2.1 Problems Caused by Tourism

The problems with tourism in Venice started when tourists began arriving in overwhelming numbers. Since the 1970s, the number of tourists visiting Venice has increased by leaps and bounds. In 1971, the number of tourists spending at least one night in Venice was 929,112, spending a total of 1,901,208 nights in Venice. In 2011, the number of tourists increased to 2,500,882, spending a total of 6,227,276 nights in Venice (Comune di Venezia 2012). The number of tourist arrivals (number of tourists) in Venice has increased 269% while the number of tourist presences (number of nights spent in Venice) has increased 328% in 40 years. These numbers have been steadily increasing every year, as shown in Figure 9.

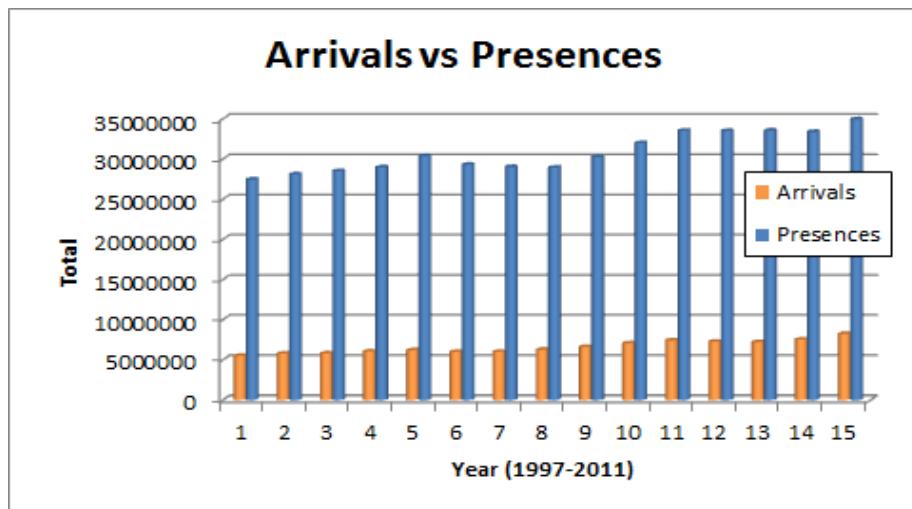


Figure 9: Tourist arrivals vs. presences

In a city with a population of less than 60,000, these numbers are unsustainable. In 1991, Paolo Costa, the rector of the University of Venice, determined that the socio-economic carrying capacity of Venice was 25,000 tourists per day (Coccossis et al. 2002, 16). With the number of tourists visiting Venice greatly surpassing this limit, some residents have become very unhappy. Some residents have even compared the tourists to animals, saying, “The tourists are the pigeons in St. Mark's Square...They come, look around, leave and don't even know where they've been” and “[My] 84-year-old mother cannot leave the house after 8:30 a.m. Why? That's when the cows start coming” (Feuer 2004). The sheer number of tourists arriving in the city is strongly affecting the people and the economy of Venice.

As a result of the increasing numbers of tourists, the economy of Venice has become geared towards supplying the tourists' needs and desires (Pinola et al. 2012). Numerous souvenir shops and accommodations catering to tourists have been appearing throughout the entire city. The problem "is that Venice is addicted to tourism, which accounts for over 70 percent of its economy. As with any drug, however, the chance of overdose exists" (Feuer 2004). As shown in Figure 10, the number of tourists has been rising drastically compared to the local population.

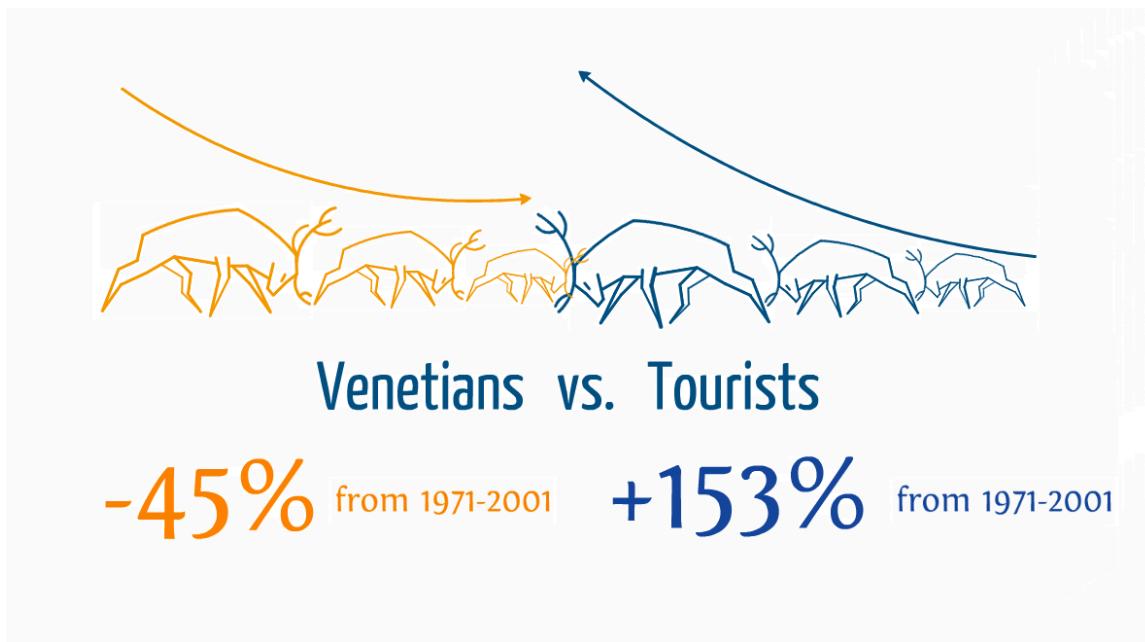


Figure 10: Graphic showing great increase of tourists

## 2.3 Evolution of Stores and Marketplaces

Venice has always depended on trade and commerce. In *Venice from the Ground Up*, James McGregor says, "Venice not only welcomed economic activity but recognized that the city's strength and well-being rested on a foundation of trade and the profits trade produced" (McGregor 2006, 80). In *Discourses*, Niccolo Machiavelli states, "their [Venetian] wealth is based on merchandise and movable goods" (Marqusee 1989, 71). Since the stores in Venice are an indicator of the situation the city is in today, trends in the stores and their characteristics can promote understanding of how the city has changed.

### 2.3.1 Changing Venetian Stores and Marketplaces

The traditional stores and marketplaces in Venice reflect changes in the economic and political history of the city. As a result, there have been drastic changes in the ways that traditional marketplaces in Venice operate. For example, the Rialto marketplace, the most famous market in Venice, has changed a lot since it was created. James McGregor says, “For most of its history the Rialto was the main market where the necessities of daily life were sold, though not the only one...The biggest change in the Rialto market came about in the twentieth century, when the retail and wholesale markets –originally combined on this site –were split,” causing a large shift in types of the people shopping in there (McGregor 2006, 272-273). Big changes have also occurred in other marketplaces, including the old fish market and the old produce and cheese markets.

### 2.3.2 Recent Decline in Stores Catering to Residents

Certain studies have found that the number of stores serving the residents of Venice has been declining steadily. The reasons for this decline, which include changing demographics and rising levels of tourism, are varied. As shown in Figure 11, the number and types of stores in Venice has changed significantly since 1976, with huge rises in the number of tourist shops in Venice.

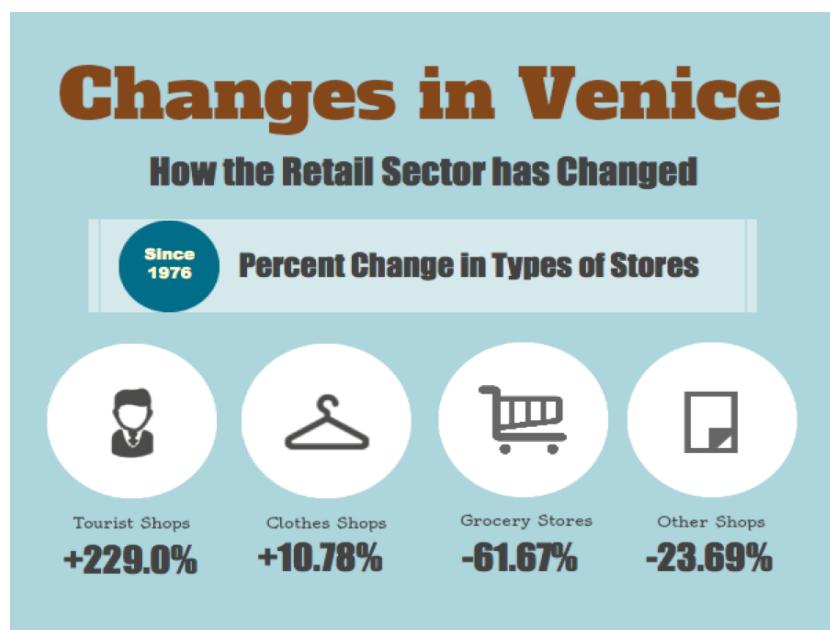


Figure 11: Percent changes in types of Venetian stores

The number of tourists spending at least one night in Venice has increased 49% since 1997, while the number of residents has steadily declined. Although the increasing levels of tourism and decreasing levels of population are not the only factors contributing to the decline in stores serving residents, they are major factors.

### 2.3.3 Implications of Changes in Stores and Marketplaces

These changes greatly affect the comfort level of residents living in Venice. As more tourists come to Venice, “stores catering to daily needs like supermarkets, shoe-repair shops and even cinemas have been steadily muscled out by shops selling Murano glass, of varying qualities, and gaudy ceramic masks that capitalize on the city's storied Carnevale festival” (Povoledo 2006). Because of these problems, “more people move to the mainland, many [protesting] a decline in services in Venice proper, including medical offices, child care facilities, food shops, and even cobblers” (Donadio 2009). As more locals move away, there are fewer customers for the store and stall owners in Venice. Massimo Zane, a Venetian local, has commented on this decline, saying that when his father opened a fish stand forty years ago, “we had rows of people lined up two deep...[Now] there are just a few retired people here. I'm sorry for them. Life is expensive” (Donadio 2009). Cases like Zane's father have been occurring all over Venice.

### 2.3.4 Supermarkets in Venice

Supermarkets are also contributing to the changes occurring with Venetian stores. The first supermarket in Italy opened in 1957 in Milan, setting off a wave of supermarkets that would soon spread throughout all of Italy. In 2010, a group of students from Worcester Polytechnic Institute found that there were thirteen supermarkets, throughout the different *sestieri* in Venice (see Figure 12).



Figure 12: Map of supermarkets in Venice in 2010

Although supermarkets offer goods at lower prices with greater convenience, they have contributed to the decline of local shops and stalls. In 2006, a different group of students “interviewed locals and many locals had concluded that ninety-three percent of residents shop at supermarkets either always or often and only about twenty-five percent of residents shop at small stores regularly” (Pinola et al. 2012). Supermarkets are able to provide a variety of goods at low prices and are very convenient places to shop. By providing an alternate model of shopping that is cheaper and more convenient than smaller shops, they have taken away demand for smaller, more expensive shops.

## 2.4 Tourist Accommodations in Venice

Tourist accommodations, establishments for short-term overnight residence such as hotels and bed and breakfasts, are another indicator of changes occurring in the city of Venice. The rise and expansion of the tourist accommodations throughout the historic center provides insight into the increase of tourism and helps explain how the economy has shifted from providing for the residents’ needs to attending to the tourists’ desires.

### 2.4.1 Rising Levels of Tourism

As previously stated, Venice has experienced a steep increase in tourism over the past few decades. As a result, it has taken measures to ensure it has the necessary infrastructure to cope with the flood of people. The effects of tourism can be observed through the spread of tourist accommodations in Venice. As Venice's appeal to tourists around the world increased, the need for new tourist accommodations grew. In fact, "without the swell of tourism, Venice – devastated by the French two centuries ago – might very well have vanished. The buildings along the Grand Canal that survived that cataclysm did so in large part because they were readily convertible to hotels and vacation rentals" (McGregor 2006, 332). Slowly and steadily, Venice started to transform and take new form through the development of the accommodation sector.

The high demand for tourist accommodations led to the rise of many hotels and bed and breakfasts. However, since Venice has seen its tourist levels increase from year to year, some residents have taken the opportunity to rent part of their houses to tourists in order to make a profit. In 1999 a new legislation, "Le Leggi Sul Bed and Breakfast Come Aprire un B&B in Veneto," was created to regulate and also facilitate the creation of new bed and breakfasts and similar establishments (Reg. Veneto 1999). The city of Venice used this legislation to create more incentive to support tourism. By making it easier for these establishments to be created, the legislation stimulated competition in the market and promoted lower lodging prices. As a result of this new law, the number of accommodations in Venice increased a total of 793%, going from 191 to 1516 in nine years (Carrera 2009). The number of B&Bs and rooms to rent alone have risen 1008% (Mosto et al. 2010, 65). This growth in tourist accommodations has led to a rise in tourist arrivals (number of tourists) and presences (number of nights spent in the city), as shown in Figures 13 and 14. Based on data gathered in 2008, the COSES Report concluded that Venice had the capacity to accommodate 26,000 visitors comfortably and predicted that the city would not be able to function if it hosted 86,000 tourists a day (Carrera 2009). Currently, the average influx of tourists is set around 59,000 people. The high number of tourists is strongly affecting the city by decreasing the comfort level and mobility of its residents.

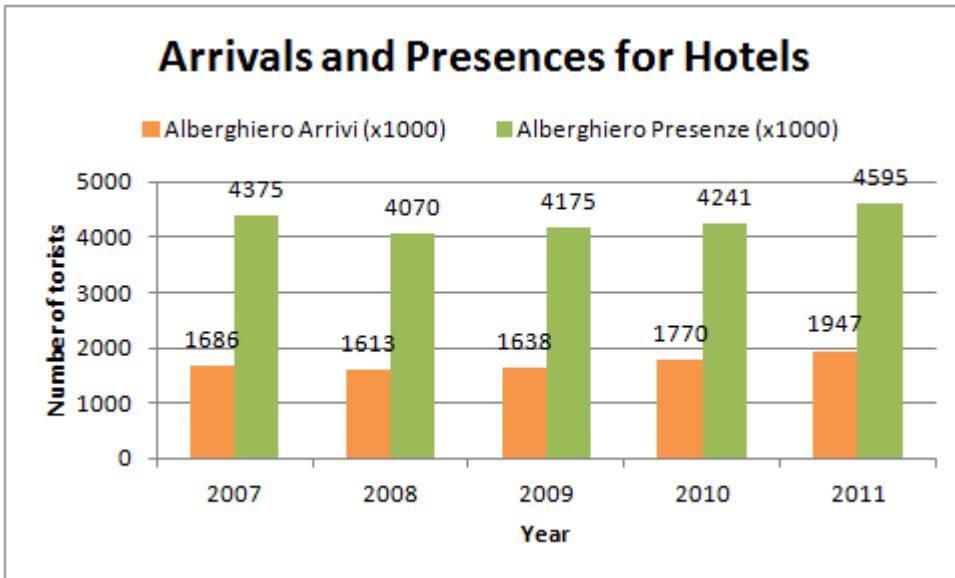


Figure 13: Tourist arrivals and presences in hotels in Venice

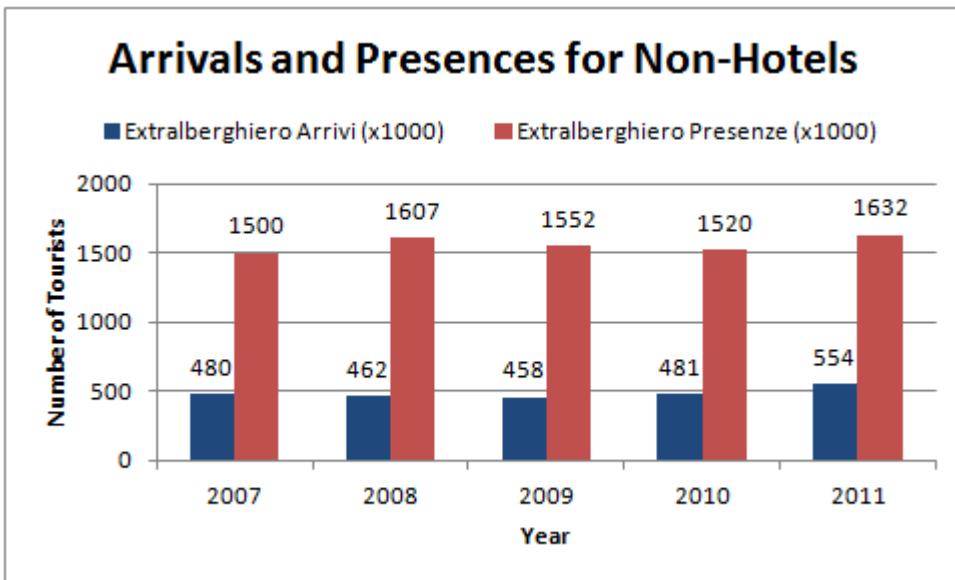
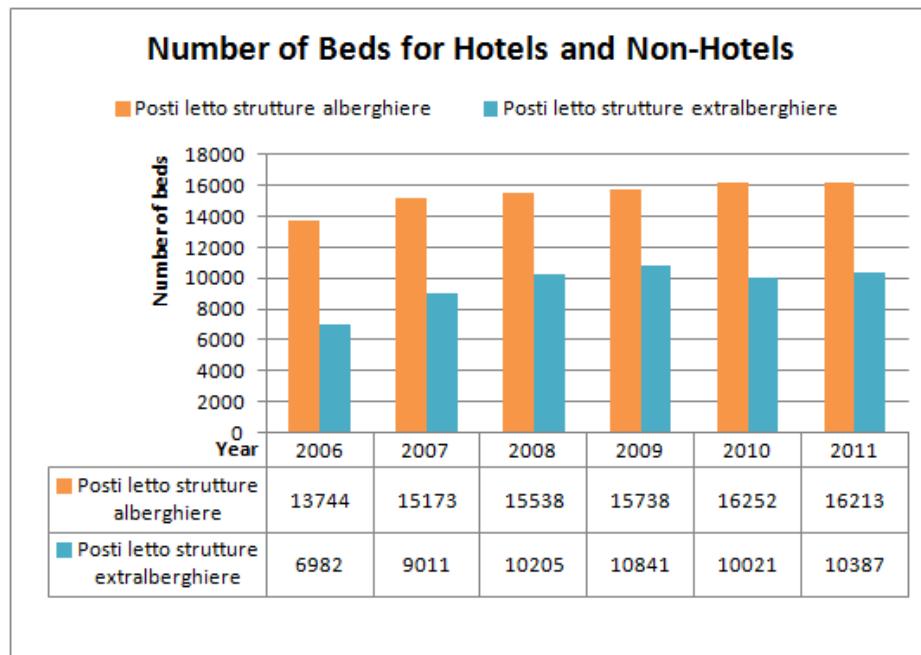


Figure 14: Tourist arrivals and presences in non-hotels in Venice

#### 2.4.2 Trends in Tourist Accommodations

According to the Venice Report and the Comune di Venezia, the number of beds has increased a total of 18% for hotels and 49% for other accommodation establishments over the past 6 years (see Figure 15). The expansion of tourist accommodations other than hotels is much more significant than the expansion of hotels. The types and numbers of hotels and non-hotels

for the historic center can be found in Appendix F. “Indisputably this has deducted accommodation from the residential stock; the Assessorato alle Politiche della Residenza of the Comune says that 44% of the 952 B&Bs opened 2001 – 2007 – 420 habitants – have been restructured internally so that they are no longer suitable for private occupancy” (Moso 2010). The arrival of tourists has been increasing for both hotels and non-hotels, but the average number of nights spent by tourists is consistently higher for non-hotels, as seen in [Appendix E](#).



**Figure 15: Number of beds for tourist accommodations in Venice**

#### 2.4.3 Consequences of the Increase in the Number of Tourist Accommodations

The number of tourist accommodations in Venice has been consistently and rapidly increasing and, along with stores, reflects the transformation of the city of Venice. This increase is directly related to the rise of tourism and the boost tourism has created in the local economy, as shown in Figure 16.

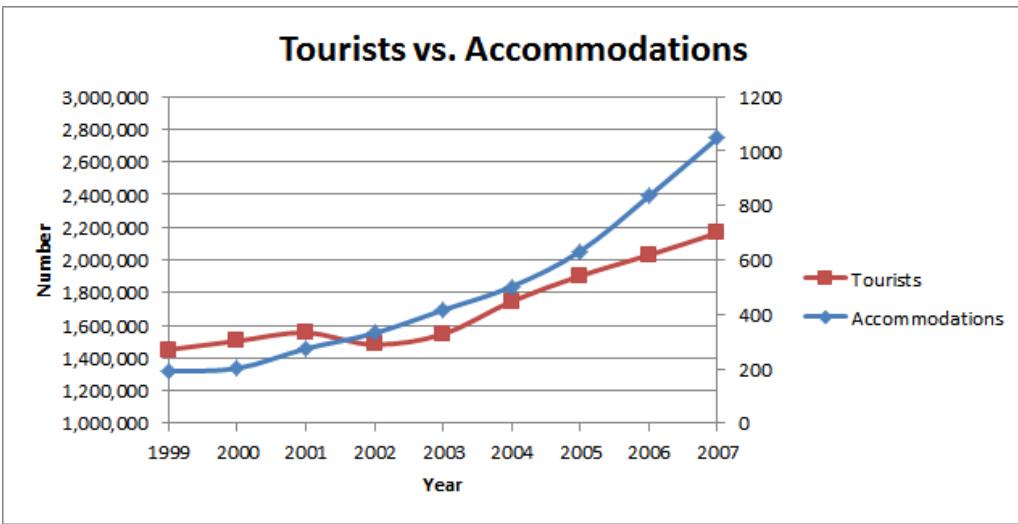


Figure 16: Rises in the numbers of tourists and tourist accommodations

However, it has also had a negative effect in the city. According to the Venice Report, “planning laws have been liberalized to allow private homes to be turned into B&Bs and rooms to rent. On the one hand, this has ensured the maintenance of these buildings, on the other it has reduced the number of habitations available to residents by about 420 units and has contributed to the doubling of property prices since 2000, further encouraging residents to leave” (Mosto et al. 2010, 47). Although there has been a significant decrease in the population and more properties have become available, real estate prices have been rising. Currently, “property is exceptionally expensive in Venice, with a 1,000-square-foot apartment going for up to \$1.3 million in the historic center, and more on the Grand Canal, but half or a quarter of that on the terra firma across the lagoon” (Povoledo 2006). Property prices, both for private and public properties, have steadily increased over the past decade, as shown in Figure 17. Since 2000, “there have been annual price increases of 11.21 per cent for residential property, 5.84 per cent for offices premises and 6.70 per cent for commercial premises such as shops” (Mosto et al. 2010, 59). Since housing is cheaper across the lagoon, many residents have been leaving the city center to live on the mainland (McGregor 2006, 316). People have become concerned about the spiral effect that is attracting more tourists and driving away more residents. In order to alleviate this problem, the city of Venice has made efforts “to bolster the population by building 500 to 600 apartments in three far-flung areas — Santa Marta, Cannaregio and Castello — for rent to

middle-class families, the group at the greatest risk of vanishing" (Povoledo 2006). By doing so, the city hopes to keep residents in the city and stop the spiral.

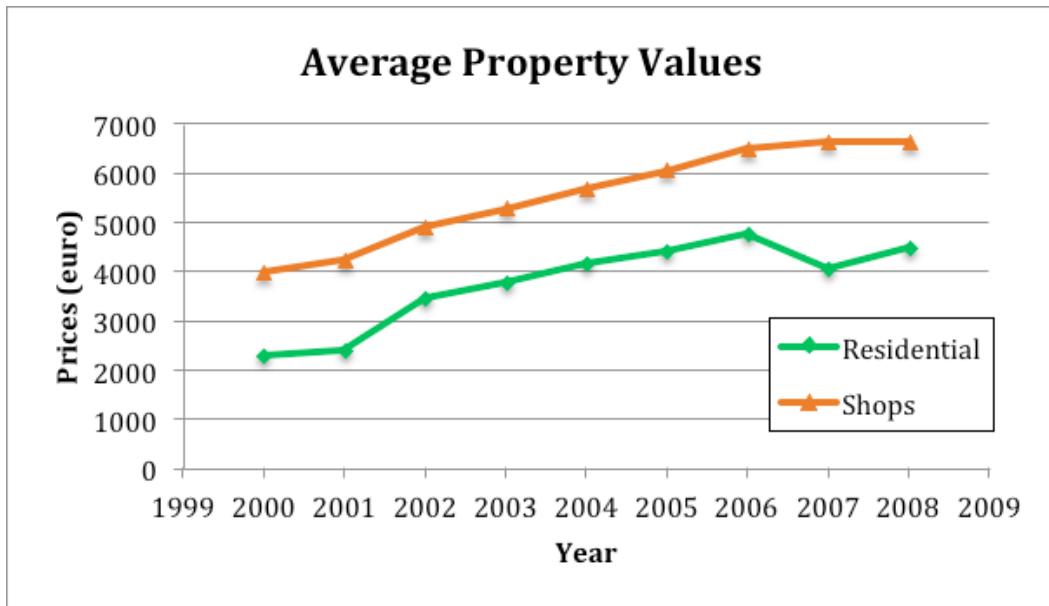


Figure 17: Average property prices in Venice

# Chapter 3: Methodology

Through the study of the development of the stores and tourist accommodations, including trends in the type, number, and location over the years, we aimed to gain a better understanding of the social and economic issues that play a role in the lives of locals and in the community as a whole. The goal of the project was to help the city of Venice to understand how its changing economy, population, and living standards are impacting the local population and are interacting and affecting each other through an investigation of the stores and tourist accommodations, in the past and in the present.

The objectives of this project were as follows:

- To reconstruct the evolution of the population and tourism in Venice since 1971.
- To reconstruct the evolution of the stores and tourist accommodations of Venice since 1971.
- To create a baseline for future analysis of trends in the stores and tourist accommodations.
- To understand how the population, tourism, and retail sector interact with and affect each other.

This project will be based on data gathered by other IQP projects completed in 2004, 2005, 2009, 2010, and 2011, as well as data gathered by our team on the stores and tourist accommodations in the historic center of Venice. The historic center includes six *sestieri*: Cannaregio, Castello, Dorsoduro, San Marco, San Polo, and Santa Croce (as shown in Figure 18). Making use of previous IQP project data, we have compared past and present data and analyzed the social and economic changes in Venice. This chapter describes the methods adopted to achieve the project objectives listed above.

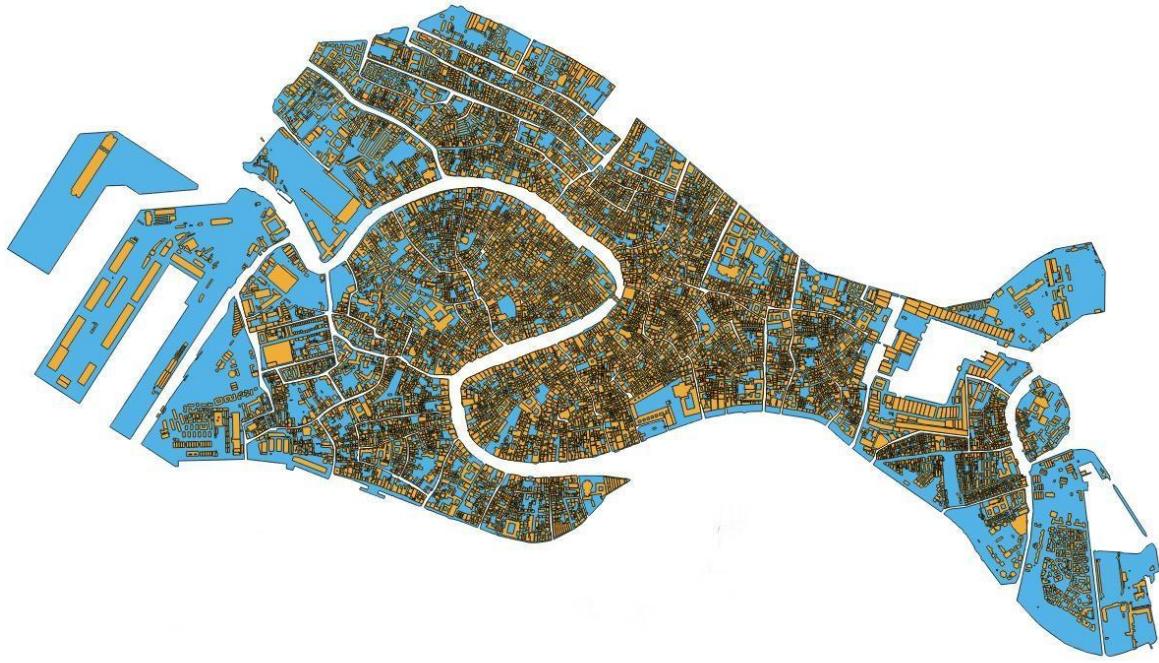


Figure 18: Map of study area

### 3.1 Studying the Evolution of Population and Tourism

The trends in the local and the tourist populations of Venice have changed greatly over the past several decades. In order to understand how these changes have occurred and, more specifically, what changes have occurred, we will take a close look at Venice's census and tourism data. This section explains how the data was compiled and analyzed.

### 3.1.1 Studying Population Data

It is a fact that Venice's population has been steadily declining, but a thorough quantitative analysis of the decline was necessary in order for us to understand how the city has been transforming overall. We used the census data released by the Italian National Institute of Statistics (ISTAT) to obtain the population density of each island and we also tracked the overall population patterns from 1971 to 2011 and the average age of the population. The data provided valuable information on the characteristics of the residents of Venice and some insight on how the changes in the demographics can be linked to changes in the retail sector. The censuses are organized into census tracts and the areas they cover change over time. Since the boundaries of the islands do not change, we combined the tracts by island and used the islands as a basis for analyzing the population density. Around the time when the 1971 census was gathered was when the economic patterns in Venice started to change and it would have been interesting to start with the data from that year, however, it was not available to us. The next available census data was from the 1981, but it could not be analyzed in a way that would be comparable to the subsequent censuses because the corresponding census tracts of that year often covered more than one island. This overlapping of census boundaries would make the population distribution inaccurate, since our basis of analysis was the islands of Venice. Our actual analysis was composed of the population densities from the censuses taken in 1991 and 2001. We were able to study both censuses by island and find the population density changes between the two decades. This allowed us to find the percentage resident loss by island. Unfortunately, the 2011 census data was not released by the time we completed our analysis, so we could not study the most recent population distribution and the changes.

Each census tract is assigned a unique number that allows it to be identified. One difficulty we faced while assigning the census tracts to their corresponding islands was that the area covered by each tract changed every time a census was performed. An example of this change can be found in Appendix A for San Polo, containing the census tracts of the *sestiere* in 1991 and 2001. The data of the overall number of residents from 1971 to 2011 can be found in Appendix B and the population by age group for the 2001 census can be found in Appendix C. The census data obtained from ISTAT contains the number of residents living in each census tract. In order to find the population of each island, we joined the data from the tracts to the

QGIS layer containing the census tracts for 1991 and 2001. This allowed us to find the population density for each census tract in both 1991 and 2001. We then grouped the census tracts by island, the basis of our analysis of the population. We found the population density of each island by adding all the population densities of each census tract within each island. In order to understand how the population has been changing, we subtracted the population densities and found the percentage loss of residents by island.

### 3.1.2 Studying Tourism Data

For analyzing the changes in tourism, we obtained the data from this year's Transportation team, who used data released by the Comune di Venezia. We took into account two types of tourists: residential and excursionist. The changes that found encompassed data on the tourist arrivals, which correspond to the number of residential tourists that check into hotels and other tourist accommodations, the data on arrivals from cruise ships, and an estimation of the number of excursionist tourists (Appendix D). Since it is hard to keep track of the number of excursionist tourists and there is no database containing that information, the estimation was based on the assumption that the residential tourists only represent a quarter of the total number of tourists that visit Venice. This assumption was based on the project done by WPI students in 1999, which involved sample counts on the number of tourists arriving in Venice. We have also analyzed the average number of nights residential tourists spend in Venice (Appendix E). The analysis of the growth of tourism over the years was used as a comparison to the changes in the stores and accommodations of Venice and can be found in the Analysis section of this report. In addition, data on the number of tourist accommodations and the number of beds in Venice was gathered from 1999 to 2008. The data was studied to understand the rapid increase in the number of tourists in Venice and its resulting influence on the city's economy. The findings can be found in section 4.2 of this report.

## 3.2 Tracking the Evolution of Stores and Tourist Accommodations

Extensive research on the stores and tourist accommodations of Venice has been done and past IQP projects collectively have gathered data on all of the historic center of Venice. Our team used data previously collected in order to compare the number, type, and location of stores in the years the projects were completed to the data on the stores collected this year. Data collection and classification were standardized to serve as a basis for future studies. A reliable baseline will allow the WPI Venice Project Center to continue tracking the changes in the retail sector and build an understanding of how the city is evolving. This portion of our project involved standardizing store classification, organizing and reformatting the data previously collected by other WPI students, and gathering current data. This section explains how each of the components of this section was accomplished.

### 3.2.1 Defining Stores and Tourist Accommodations

The subjects of our project were the storefronts and tourist accommodations of the six *sestieri* of the historic center of Venice. For the purposes of this project, we defined a store as any retail establishment that sells goods or services, with the exception of hospitality services. This definition includes bakeries, supermarkets, clothing stores, restaurants, dry cleaners, etc. In addition, stores were classified as stores catering to the residents of Venice, to tourists, or to both. We defined a tourist accommodation as any establishment that provides short-term residence for tourists in Venice in exchange for money. This includes hotels, bed and breakfasts, and parts of privately owned properties. Similar definitions have been used in past IQP projects, but our project categorized tourist accommodations apart from stores and analyzed them separately in order to reconstruct the development of tourism and understand its increasingly prominent role in the Venetian economy.

Our team categorized the stores in Venice based on the type of product or service that they sold. We defined several classifications for some of the less clear categories because some stores fit under more than one category. A souvenir store is defined as any store that sells general souvenirs such as postcards, magnets, and mugs, as well as masks, glass, and glass jewelry. A

leather goods store is defined as any store that only sells leather products, including bags, purses, boots, and belts. If a store sells leather boots and shoes along with shoes made out of other materials, then the store is considered a shoe store. A restaurant is defined as any establishment whose main focus is serving food. A bar is defined as any establishment whose main focus is serving drinks. Although restaurants may include bars and bars may serve food, they will be classified according to their main focus. A bakery is defined as any store that mainly bakes and sells bread and pastries. Although many bakeries in Venice also sell confections like *meringa* and *cannoli*, they will be categorized as bakeries if they sell bread.

### 3.2.2 Classifying Stores and Accommodations

In order to standardize how the data is categorized and to simplify the analysis of the trends in the stores and tourist accommodations in Venice, our project adopted a system to categorize retail stores by type of establishment and type of product or service sold. The European Classification of Economic Activity (NACE) coding system is a standard system used by the European Union and was used for our project. Although this coding system is useful and has been used by previous IQP projects, the official codes are not specific enough, since they do not provide unique codes for each type of store found in Venice.

Our team reviewed each section of the NACE codes and their corresponding categories, selecting only the categories that were relevant to the retail sector of Venice. We modified the codes so that each store and tourist accommodation would fall under a specific category and be assigned a unique code based on the products sold. The official codes are composed of up to 4 components which indicate what a store sells, starting with a major category that has several finer categories that branch under it, as illustrated in Figure 19.

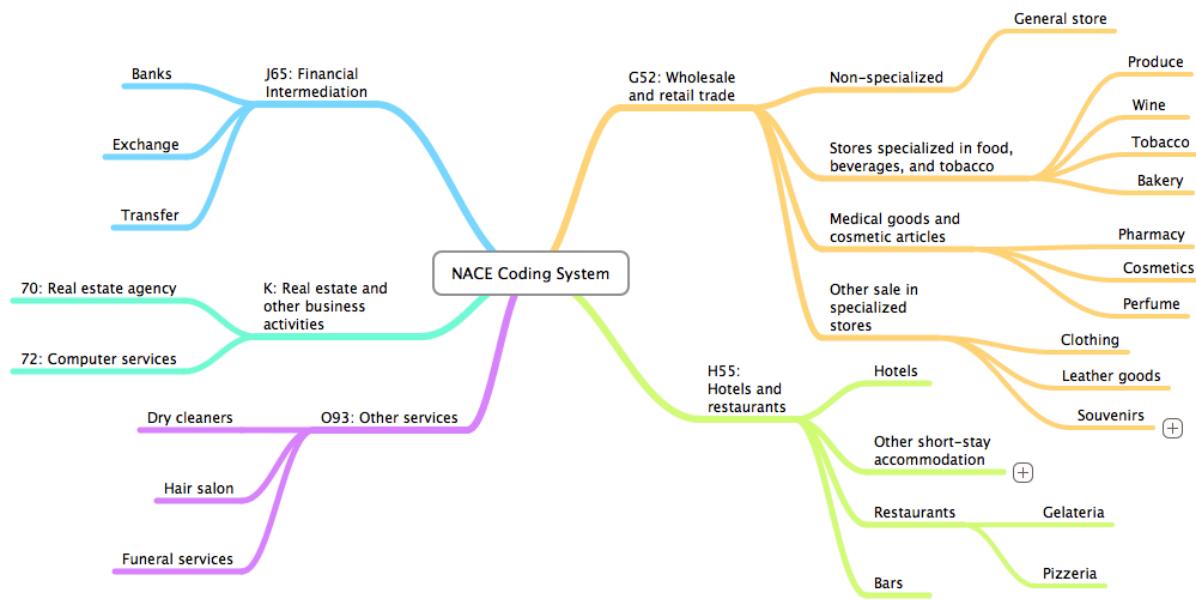


Figure 19: Diagram showing branches of NACE codes

The modified version that we created adopted a fifth component to differentiate stores that sell different products but would otherwise be assigned the same code. For example, shoe stores and leather good stores sell different products, but under the official NACE coding system they would be assigned the same code. In order to differentiate these two stores, we added one more component to create two unique codes and differentiate the two stores (Figure 20). By refining the codes, we standardized a coding system that will be able to be used in the future and allow for a fine analysis. The NACE codes being used for our project can be found in Appendix G.

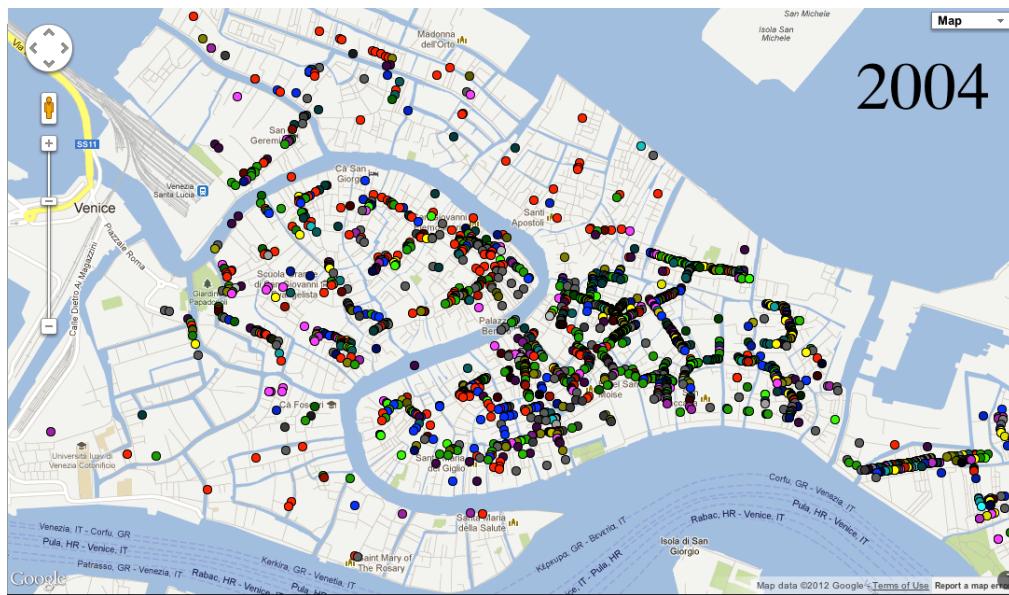


**Figure 20: Illustration of extended NACE codes**

### 3.2.3 Reformatting and Classifying Previously Collected Data

Several IQP groups dating back to 2004 have collected data on the stores of Venice. This data includes the store names, addresses, pictures, opening and closing dates, and the type of product or service offered. However, most of these projects did not focus on the same districts, so there was never a great need for all of the data to be standardized and updated annually. The project done in 2004 was the first project done on stores. In order to create a foundation for future projects, the 2004 team collected data on stores from all six *sestieri*, but they did not cover any single *sestiere* in its entirety (see Figure 21). The project done in 2005 covered Cannaregio and Dorsoduro; the 2009 project covered Cannaregio and San Marco; the 2010 project covered Dorsoduro, San Polo, and Santa Croce; the 2011 project covered Castello (Figure 22). Each project only covered one to three districts because the data collection process was very slow. The reason it was slow is that it involved collecting or recollecting all of the data for each store using paper forms. Different databases such as Microsoft Access and MySQL were used to compile the data and different methods were used to organize it. The IQP project done in 2011 entitled *A Detailed Look at the Changing Venetian Retail Sector* compiled all of the data collected by past IQP groups for WPI's Venice Project Center. The data was used to create an

interactive map, shown in Figure 23, which organized it by the year the data was collected and by the type of store. On the interactive map, any number of store types can be selected at a time, with dots in different colors showing up on the map. When clicking on any of the dots, an info box appears with the data collected on the selected store. The data that was used to create this map includes the store names, addresses, classification, and pictures, but it was separated into different files, making it hard to visualize and manipulate it. Our team worked with Chris Pinola, one of the members of the team that created the map, to merge the data sets and reformat it to meet the needs of our project. In addition, any type of tourist accommodation had been categorized as a hotel under the classification of store in the past. Our team reclassified the accommodations to be analyzed separately from those on the stores in order to get a more complete picture of how Venice is changing.



**Figure 21: Area covered by 2004 IQP project**

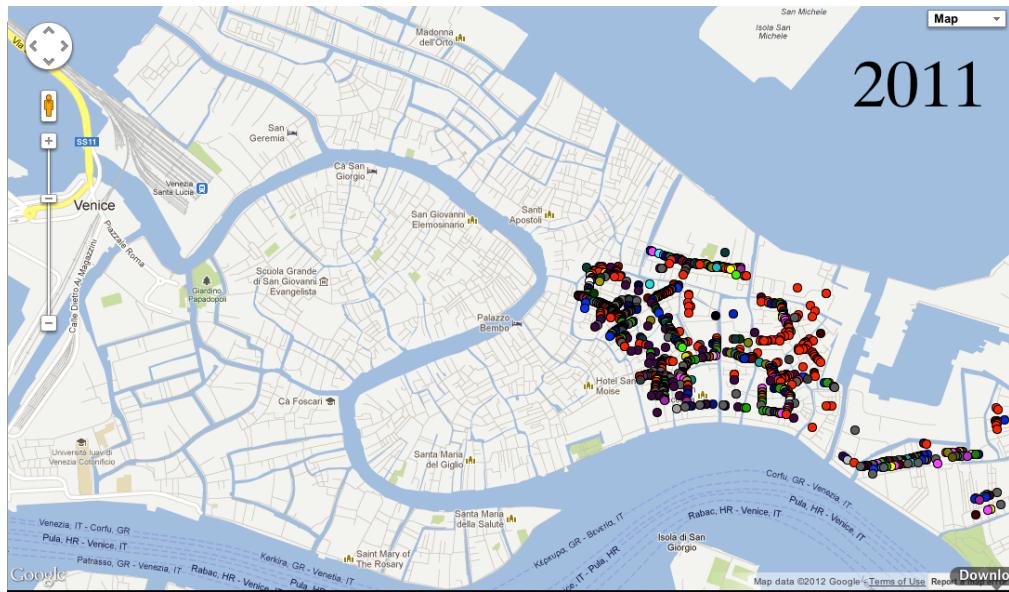


Figure 22: Area covered by 2011 IQP project

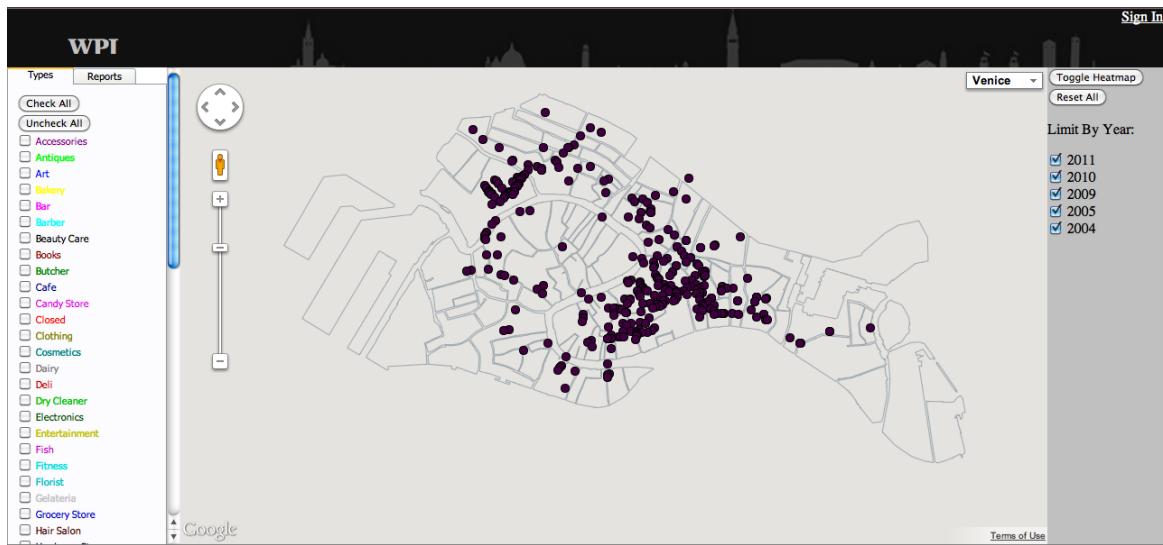


Figure 23: Map of stores in Venice by type and year

In order for us to complete an analysis on the stores and accommodations of, all of the past data had to be standardized and clearly organized. One of the main objectives of our project was to create a baseline that can be easily revisited and allow for easy comparison with data collected in the future. Our team used a comma separated values (.csv format) file to store and manipulate the data. We went over the past data and fixed inconsistencies in product type, matched addresses to their corresponding civico ID, and inserted codes for each type of store for

categorization. The civico ID is a unique code assigned to each address and is composed of a code for the *sestieri* and a code for each address number. Each store was assigned a “Store ID” in the past, but it was confusing, with records for same addresses being assigned different IDs. In order to simplify the identification of stores, we assigned each store location with its own ID. We compiled the work of students over a span of 7 years in order to create a new, complete database. As we compiled the data, we carefully reviewed each entry and fixed any incorrect or missing data. We highlighted all duplicate entries for each address, allowing us to quickly separate the stores that had changed in product type throughout the years. The team has also reassessed the coding system to make sure that it is consistent in the data collected over the years and specific enough for accomplishing a detailed analysis and baseline.

### 3.2.4 Collecting New Data on Stores and Accommodations

Our team planned on collecting data on all of the storefronts of the historic center of Venice, however, we were only able to cover five of the six *sestieri*. Unfortunately, due to technical difficulties in creating a mobile phone application meant to facilitate data collection, we spent the first two weeks of the term formatting previously collected data and standardizing data categorization. Because we did not have these two weeks to collect data, we were not able to cover the *sestiere* of Castello. Since it was recently covered by the project done in 2011, we relied on the data available to conduct the analysis of our project and finalize the baseline we created. We prioritized the other five *sestieri*, expecting to find more changes in number and type of stores than we would have found in Castello. In total, we covered Cannaregio, Dorsoduro, San Marco, San Polo, and Santa Croce. The map of the stores we covered in these *sestieri* is shown in Figure 24. The data we collected included the stores and tourist accommodations that are currently open and also ones that have closed. Since one of our goals was to analyze the trends in product type over time, we used the database containing the data collected by previous IQP groups as our base for data collection. We printed out the database by *sestieri* in order to go through every address and compare the stores and accommodations currently open to the records matching those same addresses in the database. If a store still had the same name and sold the same type of product or service, we update the field “Last Known Open Year” to “2012” and added any other information like notes about the establishment. If a store had closed, changed

the type of product or service sold, or changed its name, we created a new record for the same address and inputted the updated information. This allowed us to gather all of the data we needed in an efficient way and to cover each of the *sestieri* in a much faster way. The data we collected included the name, primary and accessory addresses, product type, whether or not it had continuous hours (whether or not it stayed open for lunch), the day of the week that it closes, a picture, and any other information that was necessary, like specific products sold. For restaurants, we also included the operating hours and whether outdoor seating was available.



**Figure 24: Stores covered in 2012**

In order to keep track of the areas that we covered, our team took advantage of Venice's address system. The addresses in each district start at "1" and increase sequentially. We divided into two groups and each group was assigned a different *sestieri* to catalogue. The two members in the group went through the *sestieri* together, collecting data and taking pictures of the stores. Each group found a different method for collecting data. Ben and Hongling collected data on Cannaregio, most of San Marco, and part of Santa Croce. They found that following the address numbers sequentially was the most efficient way for them to collect the data. Amanda and Iliana collected data in Dorsoduro, San Polo, part of San Marco, and part of Santa Croce. The addresses

in Dorsoduro did not follow a straight path, so the team found that it was better cover one island at a time, going through each street and crossing the street off on a map once it was completed. Each of the two collected data on one side of the street so that the addresses they were working with were sequential and so that they would not have to walk through the same street twice.

It was beneficial for the team members to stick together because it was harder to miss stores or accommodations and it was easy to discuss questions about certain stores and accommodations. We also found that some store owners, when seeing us with clipboards in hand and taking pictures, were curious to know what we were doing and would come up to us to ask. However, some storeowners were not pleased with having a picture of their store taken, but we explained to them what the nature of our project was and would go back later if they did not want to talk to us. We did the fieldwork in the mornings, around 9:00AM to 12:30PM, and in the afternoons, from 3:00PM to 7:30PM, which are the business hours of most establishments. We collected data from November 8<sup>th</sup> to the 30<sup>th</sup>, for a total of 14 days.

Our team also had to consider how we would collect data from large stores and accommodations. The reason for this is that large stores and tourist accommodations often occupy more than one property and have more than one address. We accounted for these multiple addresses by assigning the store's address as the address corresponding to the main entrance of each establishment. We also applied the same principle if a store was located on the corner of a street and had two different addresses. However, if a store had more than one entrance that could be considered a main entrance, we considered the lowest address number as the primary address. In addition, we also made note of all the accessory addresses. If a store had expanded since it was last visited, we made a note that the two addresses had combined into one.

### 3.3 Analyzing the Impact of Demographics and Tourism on the Retail Sector

The demands of the residents are very different from those of the tourists and, since the two groups have been changing over the years, the retail sector has had to adapt to those changes. The trends in the population and tourism impact the retail sector by causing a change in the demand in Venice. This section explains how we analyzed the types of stores present in Venice in 2004, when the first IQP project on stores was conducted, and in the present to understand how the population, tourism, and the retail sector interact.

#### 3.3.1 Classification According to Retail Customer Base

Since population and tourism impact the retail sector of Venice, the changes can be investigated based on the change in the retail customer base. We classified stores based on product type into the following categories: predominantly tourist, somewhat tourist, mixed, somewhat resident, and predominantly resident. The store types assigned to each classification can be found in Appendix H. We included data on Castello and obtained the percentage of stores in each classification, but, in order to simplify the analysis, we combined the “predominantly” and “somewhat” classifications. This resulted in the classifications of tourist, mixed, and resident stores. We classified souvenir stores, restaurants, and hotels as tourist stores, banks, optical stores, and real estate agencies as mixed stores, and bakeries, grocery stores, and household goods as resident stores. This classification of stores created by our team was used to complete the analysis of our project.

We obtained the number and location of stores by product type by looking at the data collected by our team and from last year’s team in Castello. We found the number of stores in the categories we created and in the classifications, giving us a snapshot of the retail sector in the present. A crucial part of the analysis was to analyze the changes in the retail customer base over time and track what classification stores have changed to and from. Since the population is decreasing and tourism is increasing, this data allowed us to see if the trends in the stores are following that pattern and shifting towards catering to tourists. Because we had highlighted all the duplicate entries for each address, addresses that had been visited more than once and experienced a change in product type over time were easy to find. We filtered our database in

order to analyze these records alone. The database was extremely extensive, so we analyzed one *sestieri* at a time and color coordinated the classifications of stores in the past and present. All the stores defined as tourist stores were assigned red for this process and consistently throughout the analysis. The resident stores were assigned the color green and mixed stores the color yellow. In order to count how many stores experienced like changes, we color-coordinated only the records corresponding to the 2012 data. We used two columns to assign the color corresponding to the store classification in the earliest year data was gathered and one to assign the color corresponding to the classification of the store in the present. We were then able to easily filter the database to show the changes in color. For the analysis we focused on the changes of stores from resident to tourist, from tourist to resident, from mixed to tourist, and from mixed to resident. The breakdown of these store classifications is shown in Appendix J. Another important change that we analyzed was which stores have closed and what type of store they used to be. We used the same method of color coordinating the changes, assigning black for the closed stores.

## 3.4 Publishing Collected Data

The reason for compiling and organizing all of the data, past and present, was to provide insight into the changes occurring in the retail sector of Venice. Since the stores and accommodations were used as lens to see the core issues of the city, we needed to make the data and our findings available to the general public and to present it in a persuasive and intuitive way. To accomplish this goal, we created three types of web pages for Venipedia: primary plural pages for the stores and tourist accommodations, secondary plural pages for the stores categories by product type, and individual pages for all of the establishments throughout the six *sestieri*. We created two primary plural pages for the stores and tourist accommodations containing a brief history of the development and evolution of the retail sector in Venice, the changing patterns in the number, type and locations of stores, the NACE coding system employed by our project, and links to the secondary plural pages for each type of store. The secondary plural pages contain a brief description of each type of store or accommodation, patterns in changes, and a map showing all of the individual stores or accommodations found within that category, and links to the individual store pages. The individual pages contain all of the data collected for each storefront since 2004, including name, product type, NACE code, operating hours, additional notes, and the picture. The pages are organized by store location and show the history of the stores at that location. In order to create the individual pages, the data and pictures we collected were uploaded to City Knowledge (CK) Console, which allowed us to store and manage the data. We were then able to link the pictures to the data file and create a template for the individual pages of the stores and tourist accommodations. We edited the layout of the template and CK Console automatically generated the web pages for Venipedia. Examples of these pages can be found in Appendix K.

# Chapter 4: Trends in Population and Tourism

In order to understand how the population, tourism, and the retail sector in Venice interact with each other, we gathered all of the data on population and tourism available and organized it.

## 4.1 Population

In order to understand how the population is changing, we joined the census data obtained from ISTAT to the QGIS layer containing the census tracts for 1991 and 2001, grouped the census tracts by island, and found the population density of each island. In 1991 we found the total population to be 74,514 residents and the population density to be the highest in Cannaregio, Dorsoduro, and parts of San Polo and Santa Croce. In 2001, the population had decreased to 64,046 residents and the highest population density was also found in the same areas of the city, but was limited to a smaller number of islands. The QGIS maps created to illustrate this trend can be found in Appendix I. We then looked at the change in population between 1991 and 2001 and the resulting percent population loss, as shown in Figure 25. The net population loss was found to be 10,468 residents. The islands with the darker shades of red represent the islands that experienced the highest population percent loss, while the lighter shades represent the lowest population percentage loss. The areas found to have the highest population density had the lowest population percent loss, with the exception of a few islands in Castello and Santa Croce. Also, three islands in Cannaregio and Castello were found to have an increase in population, shown in green on the map below.

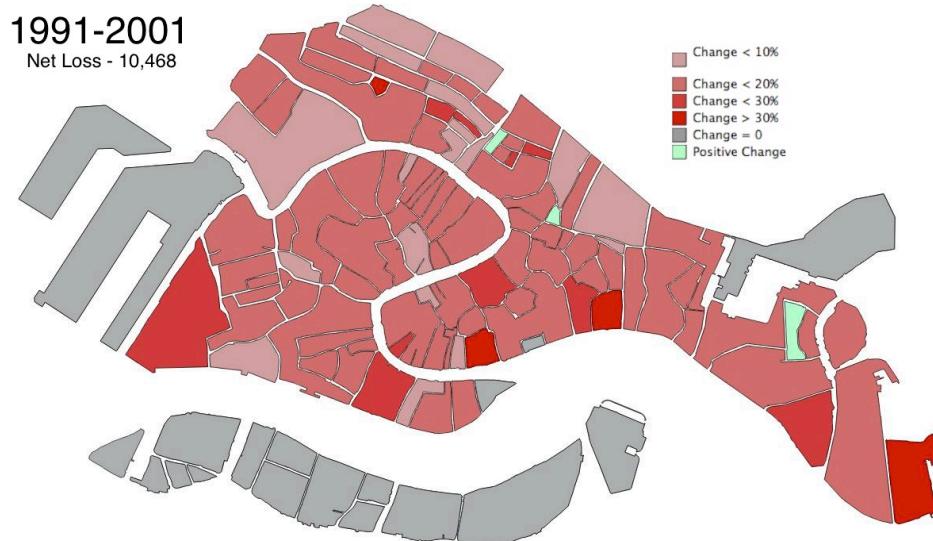


Figure 25: Percent population change between 1991 and 2001

## 4.2 Tourism

Unlike the population, the total number of tourists visiting Venice each year is very hard to track due to the high influx of excursionist tourists each day. Tourists arrive in Venice using different types of transportation and cruise ships also bring in a large portion of the tourists. ISTAT releases data on the number of residential tourists staying in Venice annually and the number of tourists coming in on cruise ships. However, the numbers of excursionist tourists are an estimation based on the percent difference between resident and excursionist tourists present in Venice at any given day. The IQP project conducted in 1999 estimated that the residential tourists made up a quarter of the total tourist population. Based on that estimation and on the assumption that the percent difference between residential and excursionist tourists has remained the same, we were able to estimate the total number of tourists in Venice from 1971 to 2010, shown in Figure 26. Based on the graph below, the total number of tourists arriving annually has increased from 6.6 million in 1971 to 16.9 million in 2010, an increase of over 250,000 tourists a year.

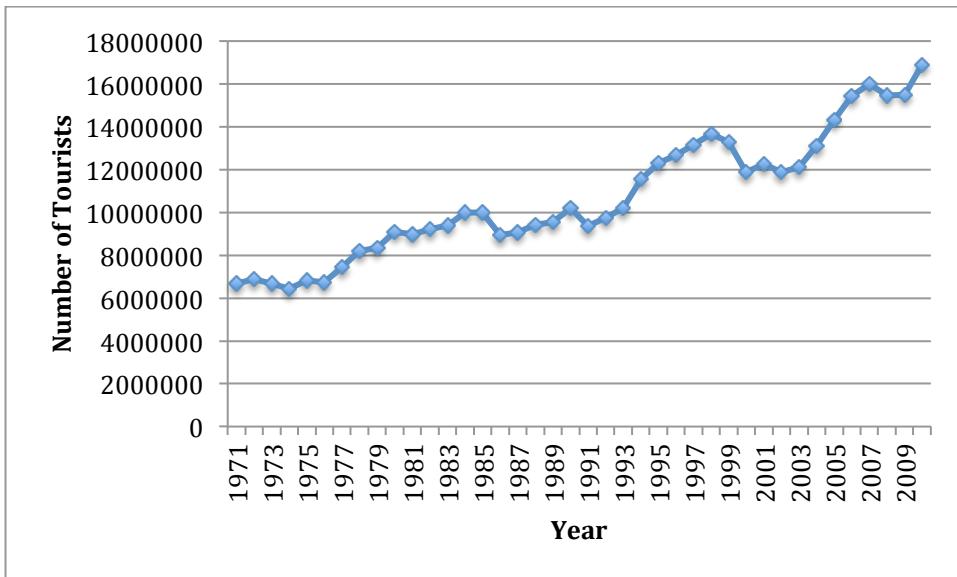


Figure 26: Total number of tourists visiting Venice 1971 to 2010

The drastic increase in the tourist population in Venice has resulted in the growth of the tourist accommodation sector. As shown in Figure 27, there were only 191 tourist accommodations and a total of 11,208 beds in Venice in 1999.

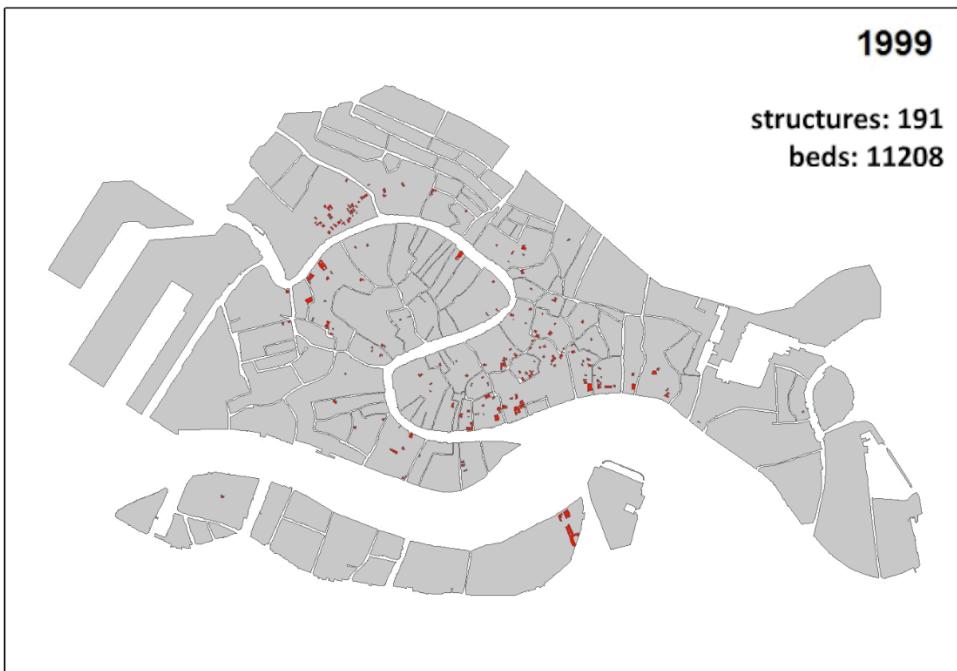


Figure 27: Total number of hotels and beds in 1999

However, only 9 years later, the number of tourist accommodations was 1,516 with a total of 22,935 beds throughout the city, as shown in Figure 28. This increase represents an increase of over 694% in the number of accommodations and over a 50% increase in the number of beds.



Figure 28: Total number of hotels and beds in 2008

# Chapter 5: Trends in Stores and Tourist Accommodations

After gathering data by following the methods discussed in the previous section, we were left with a large database on the stores and tourist accommodations of Venice.

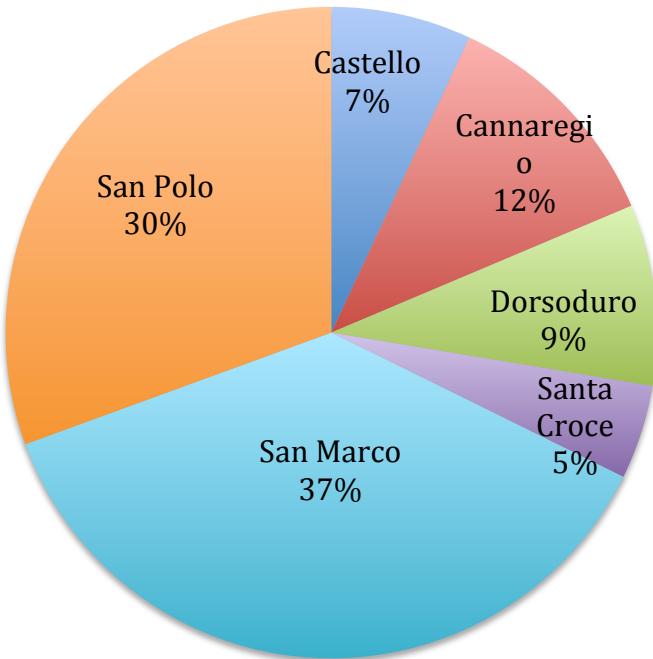
## 5.1 Defining and Analyzing Area of Study

Our team was able to cover Cannaregio, Dorsoduro, San Marco, San Polo, and Santa Croce in the amount of time we had for data collection. We cataloged a total of 4114 stores in these five *sestieri*. Because we wanted to get analyze the entire city, we decided to include the stores cataloged in Castello in 2011. In 2011, 866 stores were cataloged in Castello, increasing the total number of stores found in the historic center of Venice to 4980 stores. The map in figure 29 illustrates the location of the stores used for the analysis, showing the stores covered by our group in black and the stores covered in 2011 in yellow.



Figure 29: Stores used for project analysis covered in 2012 (black) and 2011 (yellow)

The data was collected by *sestieri* and each *sestiere* displays unique characteristics. Most of the stores are found in the areas of the city that are heavily visited by tourists, since tourists have the most demand in the retail sector of Venice. Figure 30 shows the store density by *sestieri*, obtained by dividing the total number of stores by the surface area. San Marco and San Polo are the smallest *sestieri*, but they have the highest store density with 37% and 30% of the stores respectively. Castello is largest *sestieri*, but the Arsenale and the hospital occupy a large portion of its area, so its store density represents only 7% of the total store density in Venice. The store density in Cannaregio, Dorsoduro, and Santa Croce represents 12%, 9%, and 5% of the total density respectively.



**Figure 30: Store density by *sestieri***

## 5.2 Analyzing the Present State of the Retail Sector

While studying the data collected both in 2011 and 2012, we looked at the stores that maintained the same store type or that changed store type but maintained their customer base since 2004. If a store did change its product type or focus at one point within that period, but both in 2004 and in the present sell the same type of product or are geared to the same group they were considered as having had “No Change.” These stores made up 66% of the stores in Venice. The stores that closed or opened since 2004 represented 8% and 3% of all of the stores respectively. The remaining 23% of stores experienced a change in product type that resulted in a change in its customer base. Figure 31 illustrates these trends.

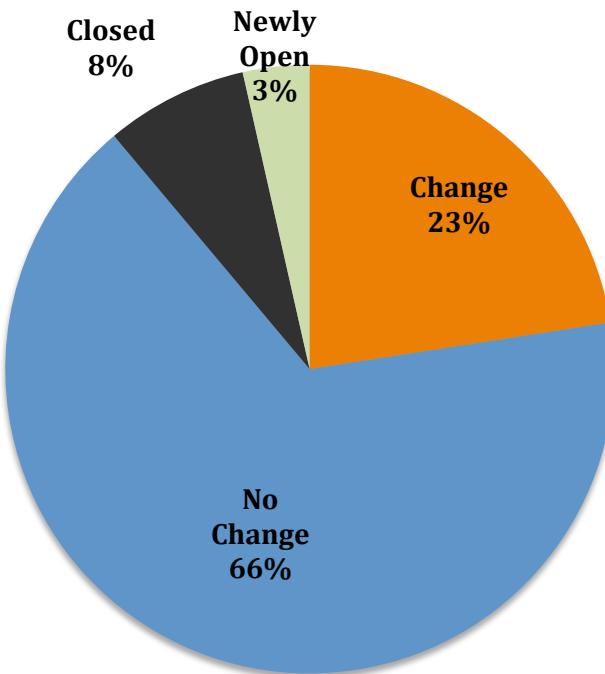


Figure 31: Store trends (including Castello)

### 5.3 Analyzing Stores by Product Type

With unique NACE codes assigned to each type of product sold in Venice, we were able to obtain data on the number and location of the stores offering each type of product. This allowed us to map stores by product type, and Figure 32 shows an example of that mapping only the restaurants. A complete table with the data on the number of stores by product type is shown in Appendix J.



Figure 32: Restaurants in Venice

## 5.4 Analyzing Stores by Retail Customer Base

Looking at the stores separately according to the categories we have defined based on customer base our results are illustrated in Figure 33. This is based on the 4980 stores catalogued in 2011 and 2012. 61% of these stores catered predominantly to tourists, and 11% catered somewhat to tourists. 6% of the stores were found to be a “mix,” serving both tourists and residents. 7% of the stores were geared somewhat to tourists and the remaining 15% catered predominantly to residents. However, the criteria that categorized stores as catering “predominantly” or “somewhat” to a specific group were set by our team and can be argued with to a certain extent. In order to avoid focusing too much on what made one type of store serve tourists “predominantly” or “somewhat,” for example, and to facilitate data analysis we grouped the two tourist store types and the two resident store types together. This results in 72% of the stores serving mainly residents, 6% serving both tourists and residents, and 22% serving mainly tourists.

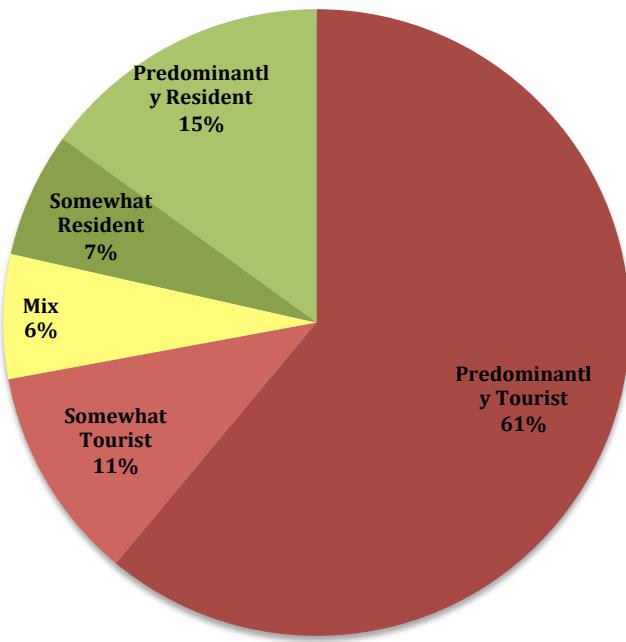


Figure 33: Percent of stores per customer base (including Castello)

Of the 23% of all the stores that were found to have experienced change between 2004 and 2012, we found the percent of stores that closed, newly opened, or that changed in retail customer base. Figure 34 illustrates these changes for tourist, mix, and resident stores. The slices that show a pattern indicate the classification that the stores changed from and to. The predominant color corresponds to the current store type and the color of the pattern represents the store type in the past. For example, 20% of the stores changed from catering to residents to catering to tourists.

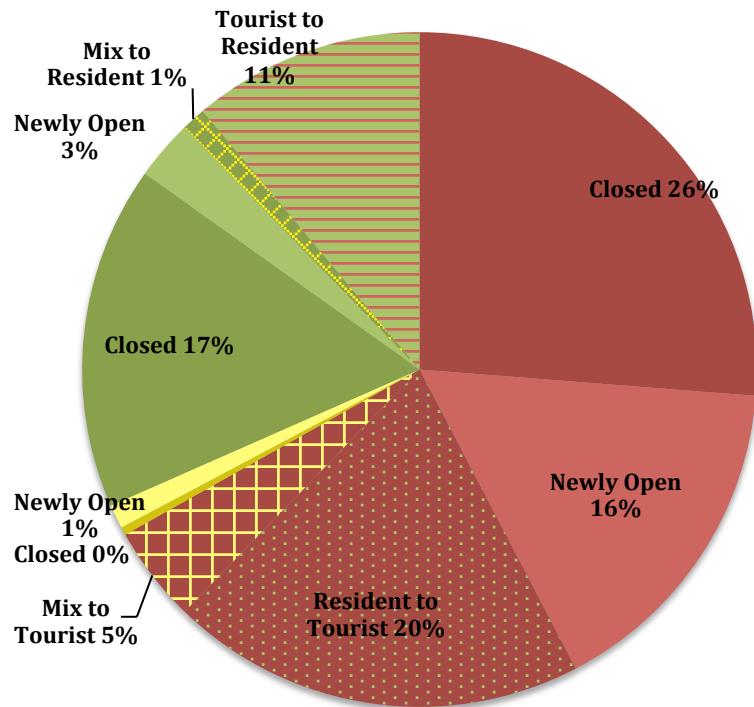


Figure 34: Changes in stores from 2004 to 2012

# Chapter 6: Analysis

One of the main goals of this project was to understand how trends in the population, tourists, and stores and accommodations of Venice are interacting with each other. In order to accomplish this goal, our team compared the population density of each island in Venice, the density of hotel beds on each island, and the changes in these densities over the years with the data on the stores that we collected.

## 6.1 Stores Catering to Tourists

The first type of store that our team analyzed was the type that mainly caters and somewhat caters to tourists. The reason we decided to analyze tourist stores is that they reflect the demand of the tourist population in Venice. Since there are increasing numbers of tourists visiting Venice every year, it would be useful to understand which areas of the city are most affected by mass tourism. In order to visualize the tourist stores, we created a layer in QGIS of all of the tourist stores catalogued by our team and by last year's team and overlaid it on a map showing density of tourist beds in Venice, shown below in Figure 35.

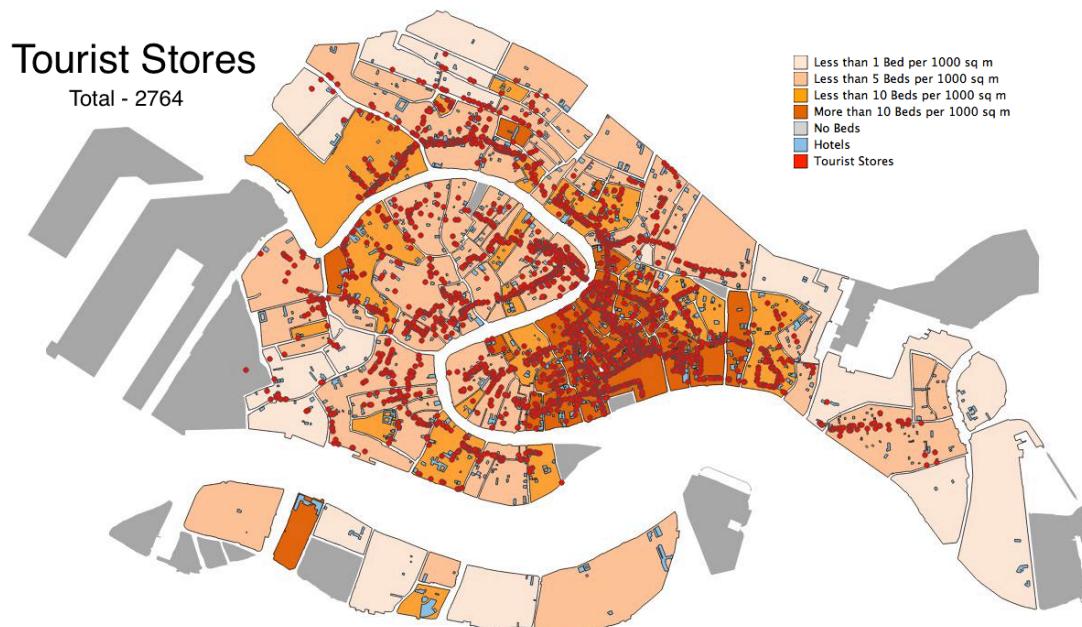


Figure 35: Total tourist stores with tourist bed density

The reason we decided to analyze the concentration of tourist stores and the density of tourist beds together is that the density of tourist beds is a good indicator of where most residential tourists are concentrated. Since the tourist stores cater to the needs and desires of the tourist population, we assumed that the highest concentration of tourist stores would be located in areas with a high concentration of tourist beds. Conversely, we assumed that the lowest concentration of tourist stores would be in areas with the lowest concentration of tourist beds. While the sheer number of tourists visiting Venice during the day does have an effect on the distribution of tourist stores, we decided that the residential tourists would be more influential on the distribution of the stores. With these assumptions in mind, we looked at the highest and lowest concentrations of tourist stores.

#### 6.1.1 High Concentrations of Tourist Stores

We discovered that nine of the eleven islands with the highest density of tourist beds are located in San Marco and also have the highest concentration of tourist stores, as shown in Figure 36.

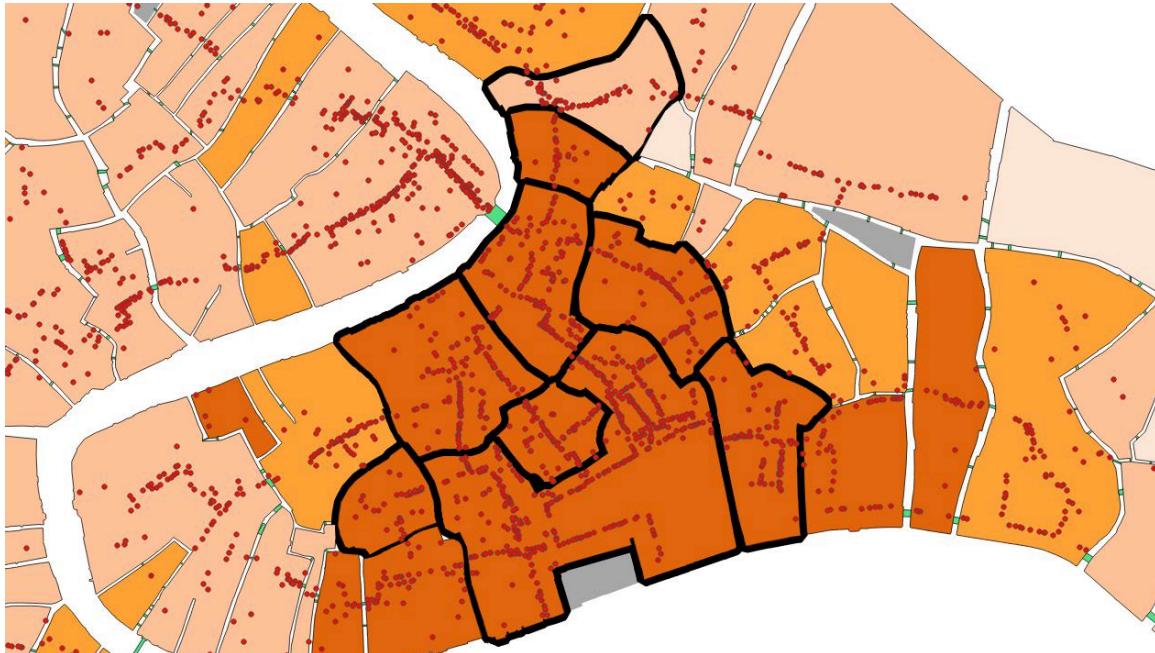


Figure 36: Islands with highest tourist store concentration outlined in black

This result supports our assumptions, since the district and islands that contain the most tourist beds also contain the highest concentration of tourist stores. However, although this result supports our assumption, there are still a few islands with a low density of tourist beds and a high density of tourist stores. Two islands with a low tourist bed density have the fourth and eighth highest concentrations of tourist stores in Venice. These two islands are located in the *sestiere* of San Polo, as shown in Figure 37 below.



Figure 37: Islands with the fourth and highest tourist store concentration

After looking at the data that we collected and the information that we had on these islands, we determined that the reason these two islands have some of the highest concentrations of stores is that they are in areas that are visited by many tourists. The first island, on the right of the figure, is the island of San Silvestro, which is directly linked to San Marco by the Rialto Bridge. The second island, Nomboli, contains a major road that links the Rialto Bridge to the Frari, a major church in Venice. Both the Rialto Bridge and the Frari are major tourist attractions in Venice and, as a result, the areas around the two contain many stores catering to tourists. Thus, we concluded that high concentrations of tourist stores are located not only in areas with high densities of tourist beds but also areas with major tourist attractions.

### 6.1.2 Low Concentrations of Tourist Stores

Besides looking at islands with the highest concentrations of tourist stores in Venice, our team also looked at the islands with the lowest concentrations of tourist stores. In general, we found that the islands with the lowest concentrations of tourist stores are located in the eastern section of Castello and also in the northern section of Cannaregio, as shown in Figure 38.

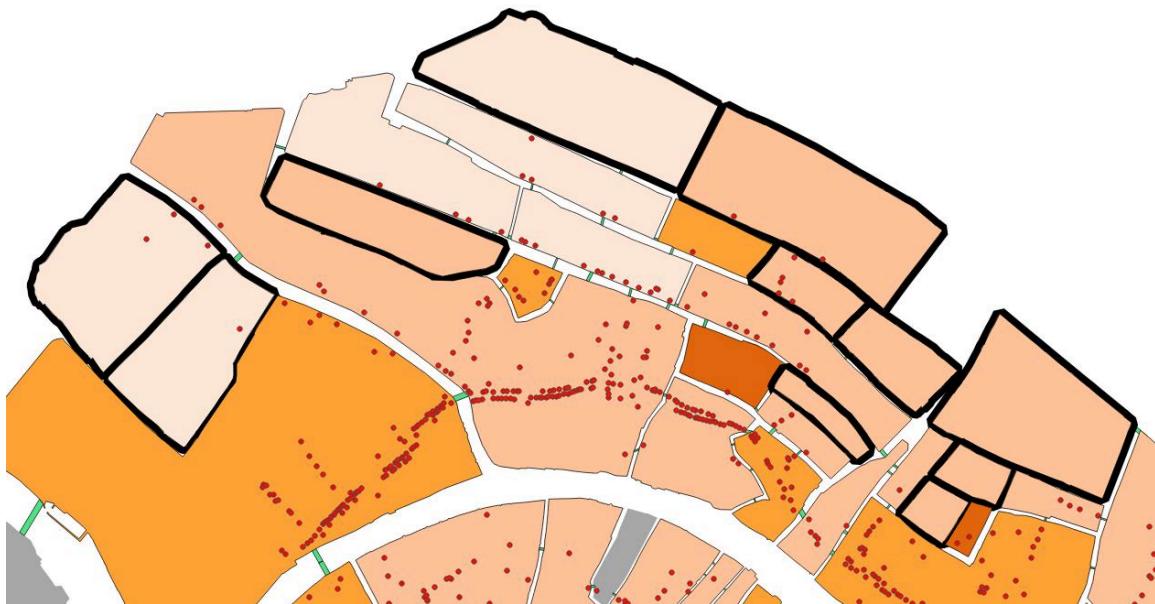


Figure 38: Islands with the lowest tourist store concentration

The reason these sections of the city have so few stores catering to tourists is that these islands have a very large residential population and a very small tourist base. Because there are more residents than tourists in the area, there is less of a demand for stores that sell souvenirs, luxury goods, and art. However, like in our previous analysis, we also found a couple of inconsistencies in our original assumptions. As shown in Figure 39, there are islands in Cannaregio and Santa Croce that have a high density of tourist beds but a low concentration of tourist stores.



**Figure 39: Islands with high tourist bed density but low tourist store concentration**

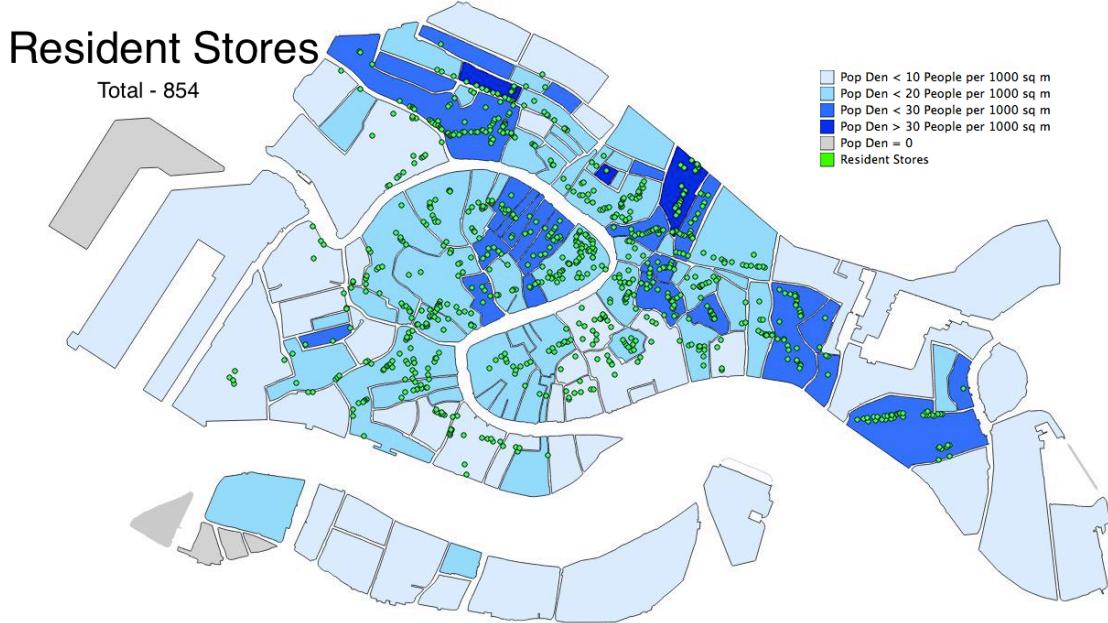
We determined that the reason these islands do not match our original assumptions is not that there is a flaw in our assumptions, but that there are geographical factors that prevent either island from containing many tourist stores. Since large parks occupy sections of both islands, there is no way there could be a high concentration of stores catering to tourists.

Based on our results and analysis, we determined that the highest concentrations of tourist stores are based in areas that either have a high density of tourist beds and accommodations, have a major tourist attraction, or both. On the other hand, areas with the lowest concentrations of tourist stores are generally residential areas with a low density of tourist beds and few to no tourist attractions. We also determined that the geography and features of an area also limit the concentration of tourist stores in an area.

## 6.2 Stores Catering to Residents

The second type of store that we analyzed was the type that mainly caters and somewhat caters to residents. It is important to analyze the resident stores in Venice in order to understand whether or not the needs of the residents are being met. Like the tourist stores, we created a layer of the resident stores in QGIS from stores we catalogued and the stores that last year's team

catalogued. We then overlaid the map of resident stores over a map of the population density of the islands of Venice in 2001, as shown in Figure 40.



**Figure 40: Resident stores with 2001 population density**

The reason we compared the total resident stores with the population density of each island is that the resident stores cater to the population of Venice. Similar to the tourist stores, we assumed that higher population density is directly related to higher concentrations of resident stores and that lower population density is directly related to lower concentrations. We assumed this because an area with a high population density has more demand for products than an area with a low population density. Keeping these assumptions in mind, we analyzed the data in several different ways.

### 6.2.1 High Concentrations of Resident Stores

The first way in which we analyzed the data was by the highest concentration of resident stores on an island. Of the fifteen islands with the highest concentration of residential stores, more than half of them have the highest population density in Venice, as shown in Figure 41.

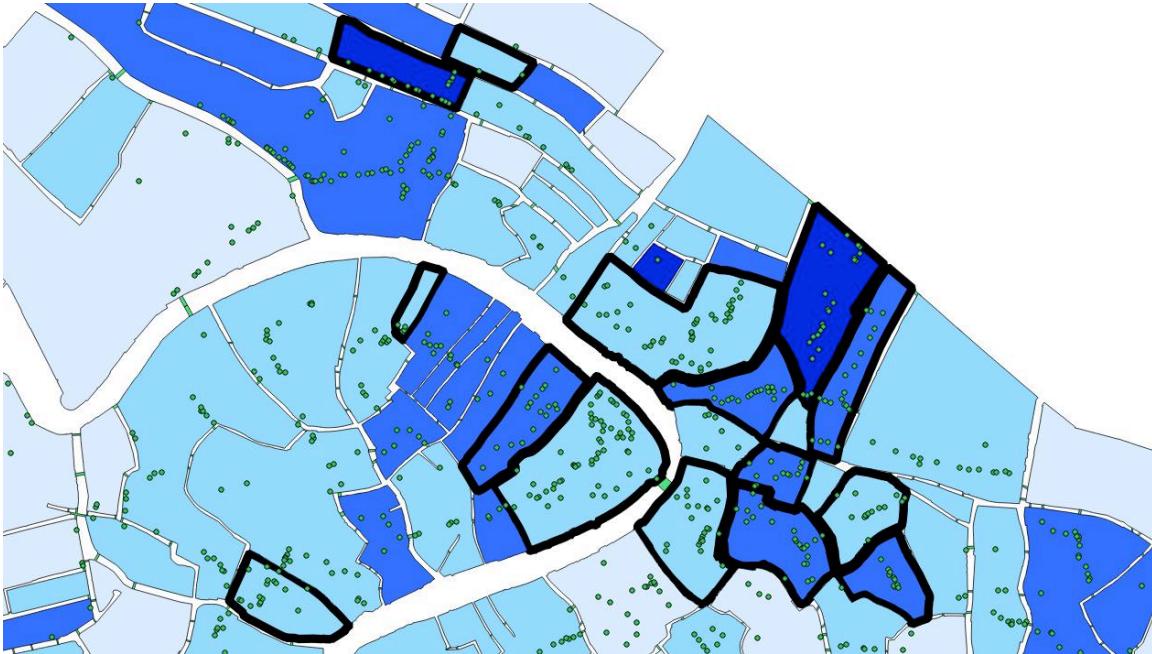
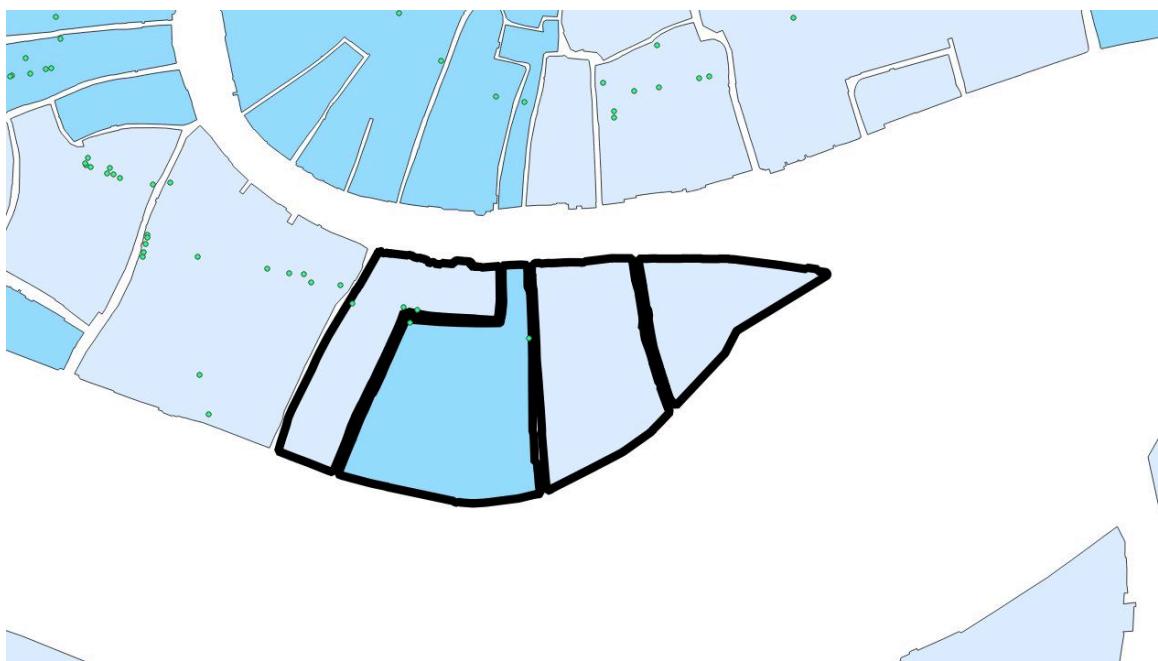


Figure 41: Islands with highest concentration of resident stores

Because these islands support a large population, a high concentration of resident stores is needed to supply all of the demand in the area. However, like the discrepancies in the assumptions about tourist stores, there are several islands that have a low population density with a high concentration of resident stores. One of the major reasons for this is that these islands, like San Silvestro, have traditionally been home to marketplaces such as the Rialto marketplace and fish market. While these islands may not have a high residential population, their central location and historical use contribute to a higher concentration of residential stores.

### 6.2.2 Low Concentrations of Resident Stores

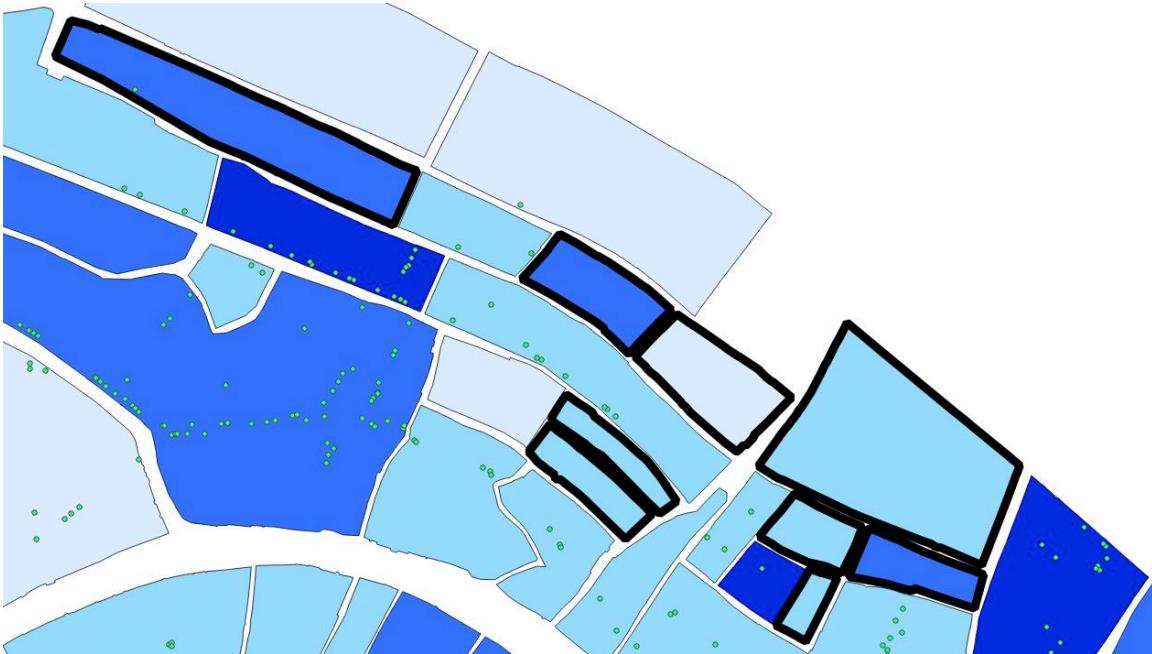
There are several areas in Venice that have low concentrations of resident stores. These areas are mainly located in the *sestieri* of Dorsoduro and Castello and also contain the lowest density of population by island. One area, shown in Figure 42, is located near Salute, with a very low concentration of stores and a low population density.



**Figure 42: Islands with the lowest concentration of resident stores**

The reason that there are no resident stores in the area is that there are few residents living there. Without any demand for goods or services, there is no need for a supply.

In our analysis, we also came across areas of Venice that have a high population density with a low concentration of resident stores (shown in Figure 43). While the same situation is not a problem with tourist stores, this situation is problematic and inconvenient for residents. It is problematic because it means that residents have to travel long distances in order to get basic necessities such as food, household items, and medical supplies. With Venice's aging population, it becomes not only inconvenient, but also unmanageable.



**Figure 43: Islands with high population density but low resident store concentration**

Through our analysis, we determined that high concentrations of resident stores are located in areas that contain high population densities. We also determined that, unless there is a marketplace, areas with low population densities also have a low concentration of resident stores. The most pressing issues concerning the resident stores are related to areas with a high population density and low concentration of stores. Without stores to supply the basic necessities of the population, there is a sharp decrease in the comfort level of the residents. These problems need to be addressed in order to benefit the residents and the areas they live in.

### 6.3 Food Stores

A good example of an area that has a high number of residents and a low number of stores providing basic necessities like food is on the island of Santa Marta in the *sestiere* of Dorsoduro. As shown in Figure 44, the island itself is home to over a thousand residents while another thousand people live on the surrounding islands.

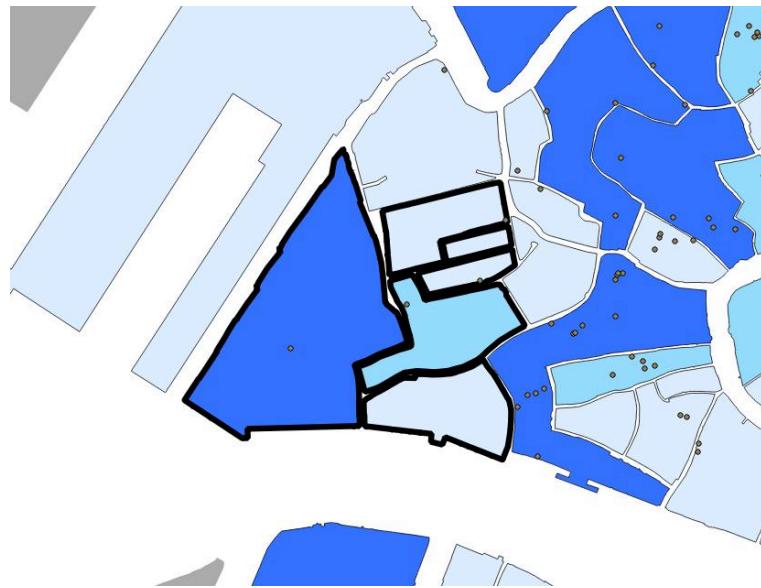


Figure 44: Islands with a large number of residents but few food stores

To serve this population of over two thousand people, there are only two food stores: a bakery and a small grocery store. A closer look at the area reveals that there is also a large number of closed stores grouped together in the same building, as shown in Figure 45.



Figure 45: Large group of closed stores in the same building

A solution to the low level of food stores in the area would be to build a supermarket in this location. With the high level of residents and the low level of food stores, it would be a great location to build a supermarket. Not only, is there space, but there is an entire building full of closed stores that can be converted into a large, convenient supermarket.

## 6.4 Closed Stores

Closed stores are an important segment of stores to analyze. The reason it is important to analyze them is that, unlike every other type of store, closed stores reflect the lack of demand in certain areas. Our team took the data available on closed stores in 2012 and in 2011 and used QGIS to overlay it over a map showing the population loss of Venice by island from 1991 to 2001 (shown in Figure 46).

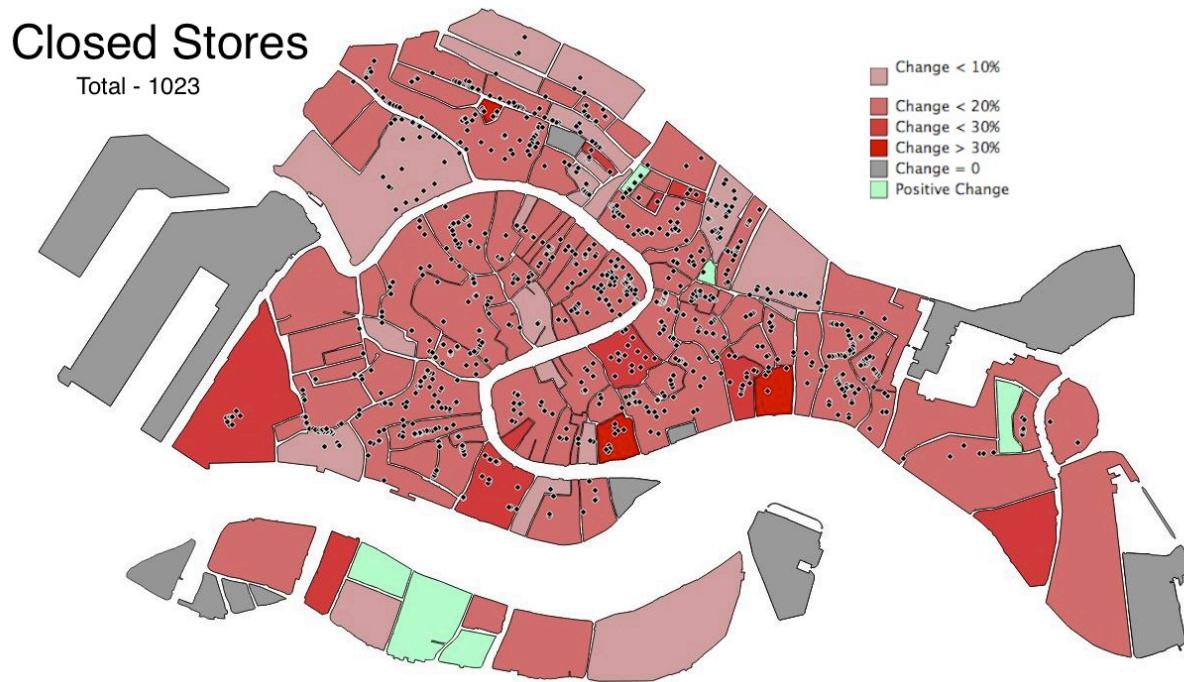


Figure 46: Closed stores in 2011 and 2012 with population loss from 1991 to 2001

Our team looked at the highest and lowest concentrations of closed stores by island and compared them to the population loss by island. The reason we compared the concentrations of closed stores to the population loss was to see if there is any relation between the two. We

originally assumed that the concentration of closed stores would be the highest where there is the highest loss of population. We assumed this because a large loss in population in an area should lead to a smaller demand, taking away the need for there to be many stores in that area. When looking at the highest concentration of closed stores in Venice, most stores seemed to be located in the islands with a population loss of ten percent or more, shown in Figure 47.

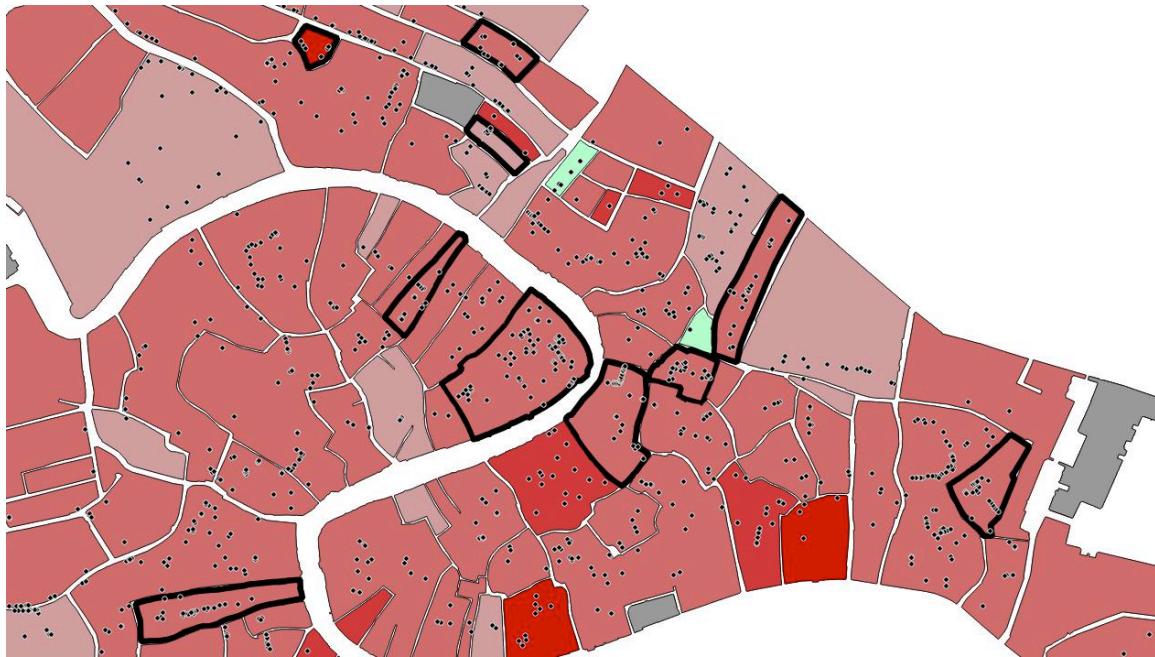


Figure 47: Islands with highest concentration of closed stores

The spread and frequency of the islands with the highest concentration of closed stores does not reveal very much besides a general trend of stores closing where there is population loss. Surprisingly, the islands with the highest population loss are not the islands with the most closed stores. Focusing on the islands with the lowest concentration of closed stores reveals a little more information. This focus shows that almost all of the islands with the lowest concentration of closed stores are islands that have the lowest change in population. While there are islands with low population change that have many closed stores, the lowest concentrations of closed stores generally appear on islands with the lowest population loss, as shown in Figure 48.

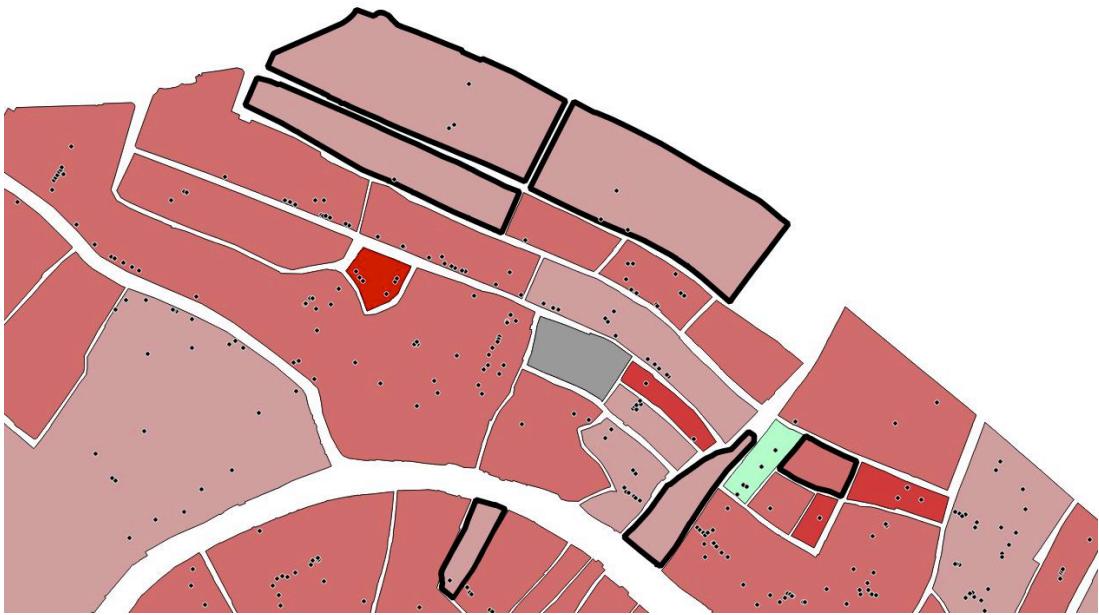


Figure 48: Islands with the lowest concentration of closed stores

Putting these two pieces of information together points toward a trend of low population change with low concentrations of closed stores. The reason why this trend does not completely follow our original assumptions is probably because of the growth of tourism in the area. A map of the islands with the change in population compared to a map of the islands with the change in tourist beds reveals that growth in the number of tourist beds offsets the loss in population, shown in Figure 49.



Figure 49: Population loss on the left vs. growth of tourism beds on the right

The figure above reveals that the reason that the concentration of closed stores is not very high in the islands that have lost the most population is probably that the population loss is offset by the growth of tourists in the area. Although the population is declining, the number of tourists keeps the demand for products high.

## 6.5 Evolving Tourist Stores

In order to understand how the stores and accommodations of Venice have been evolving, our team reviewed all of the data that we had and found all of the stores that had changed from a residential or mixed store to a tourist store. We then overlaid the stores that had changed on a map of the changes in the density of tourist beds (shown in Figure 50) and also on a map of the changes in population density in order to see how the changing population, the growing tourism, and evolving tourist stores interacted with each other.



Figure 50: Stores that became tourist stores with change in tourist bed density

Our original assumptions were that islands with the highest growth in the density of tourist beds and with the highest loss of population density would also have the highest concentration of stores that became tourist stores since 2004. We assumed this because the

combination of lower numbers of residents and higher numbers of tourists would mean a much higher demand for stores catering tourists. When we analyzed the data that we collected, we found that the islands with the highest concentration of these types of stores are also islands that are in areas or are close to areas that experienced a large growth in the number of tourist accommodations, as shown in Figure 51.

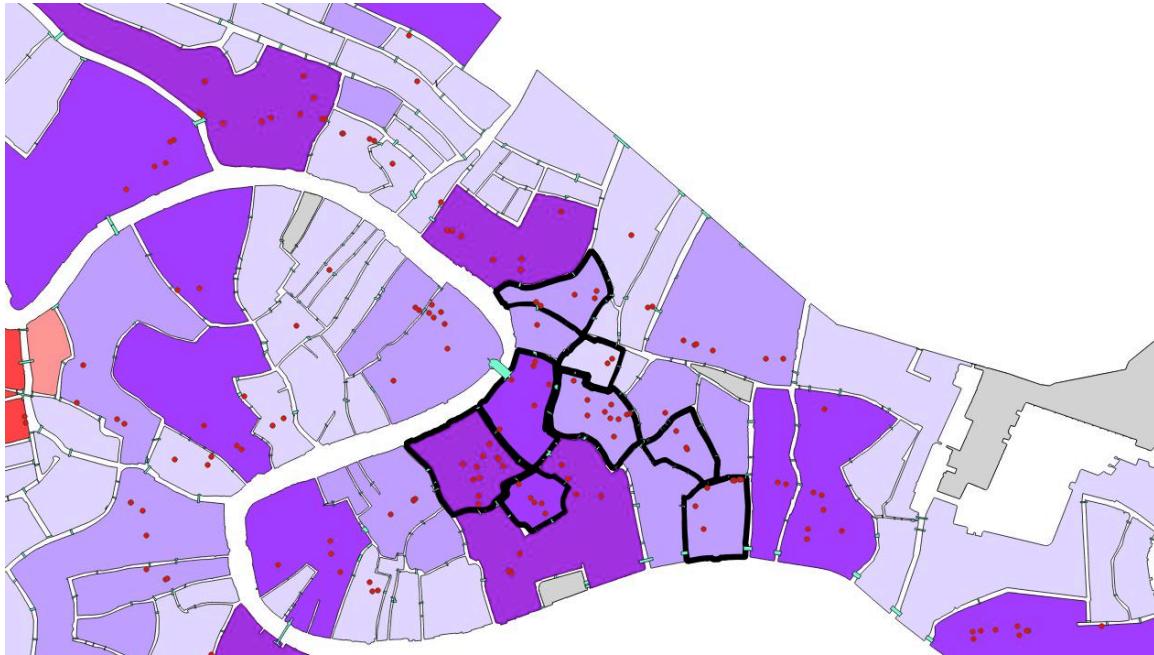
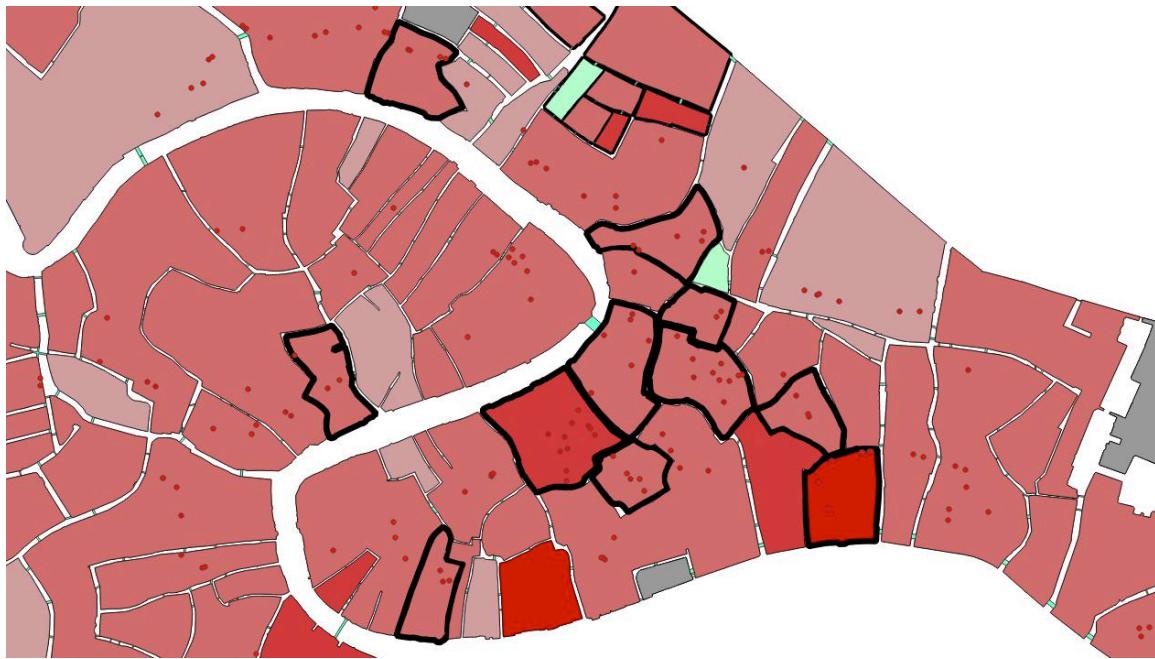


Figure 51: Islands with the highest concentrations of changes tourist stores

We then looked at the change in population density for each island and found that all of the islands with the highest concentration of stores that became tourist stores also have a population loss of ten percent or greater, shown in Figure 52.



**Figure 52: Population change of the islands with the highest concentration of changed tourist stores**

These results support our initial assumptions that resident and mixed stores change into tourist stores if there is a high population loss and a large increase in the density of tourist beds.

We also found that the islands with the lowest concentrations of stores that changed from resident or mixed stores to tourist stores are located in highly residential areas, with little growth in the density of tourist beds, as shown in Figure 53.

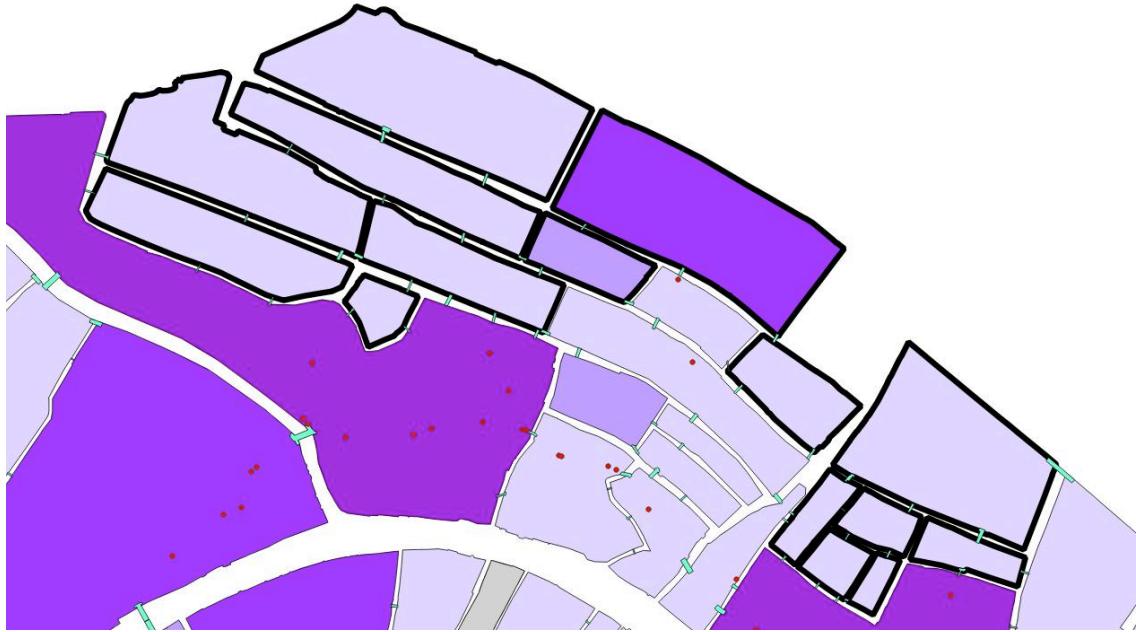


Figure 53: Islands with low density of changed tourist stores

Although these islands also have a ten percent loss in population (shown in Figure 54), they did not see a large change in the number of tourist stores. The reason there is no change is that there was no large increase in the number of tourist beds and no large increase in the total tourist population in this area.

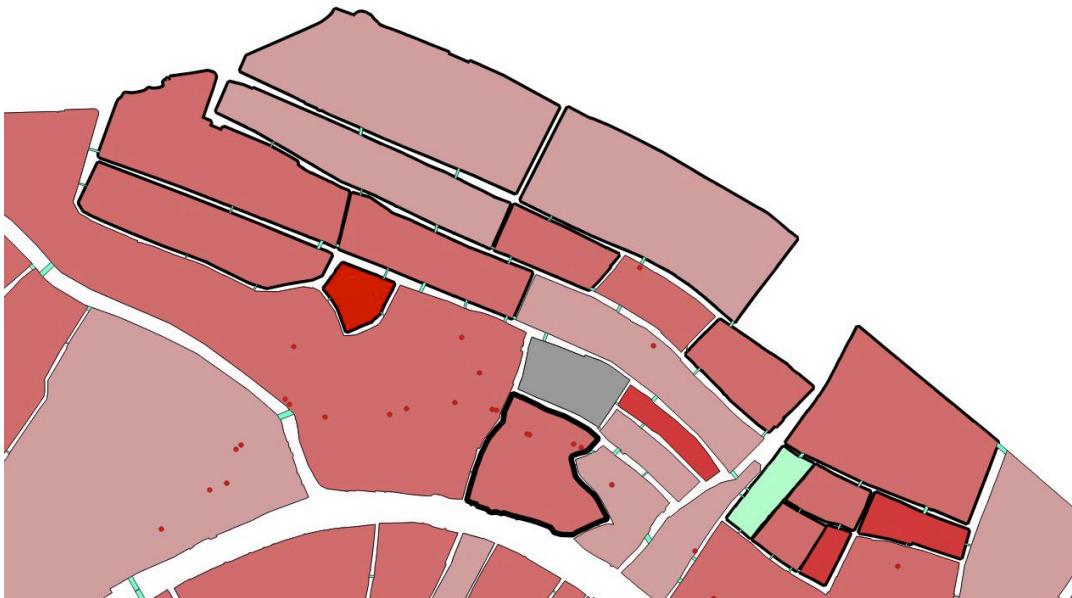


Figure 54: Population change of islands with lowest concentration of changed tourist stores

Finally, we found that there are several islands in Venice that experienced both a large increase in the density of tourist beds and a large decrease in population, but not a large increase in the number of stores that changed to tourist stores. These islands, Santi Apostoli and San Leonardo, contain the street of Strada Nova and its subsequent streets, which continue down to Fondamenta Cannaregio. The reason there is no large number of stores that changed from residents and mixed to tourists is that there is already a large density of tourist stores there, as shown in Figure 55. Strada Nova and its subsequent streets already cater to large numbers of tourists, so there is no need for there to be more tourist stores.

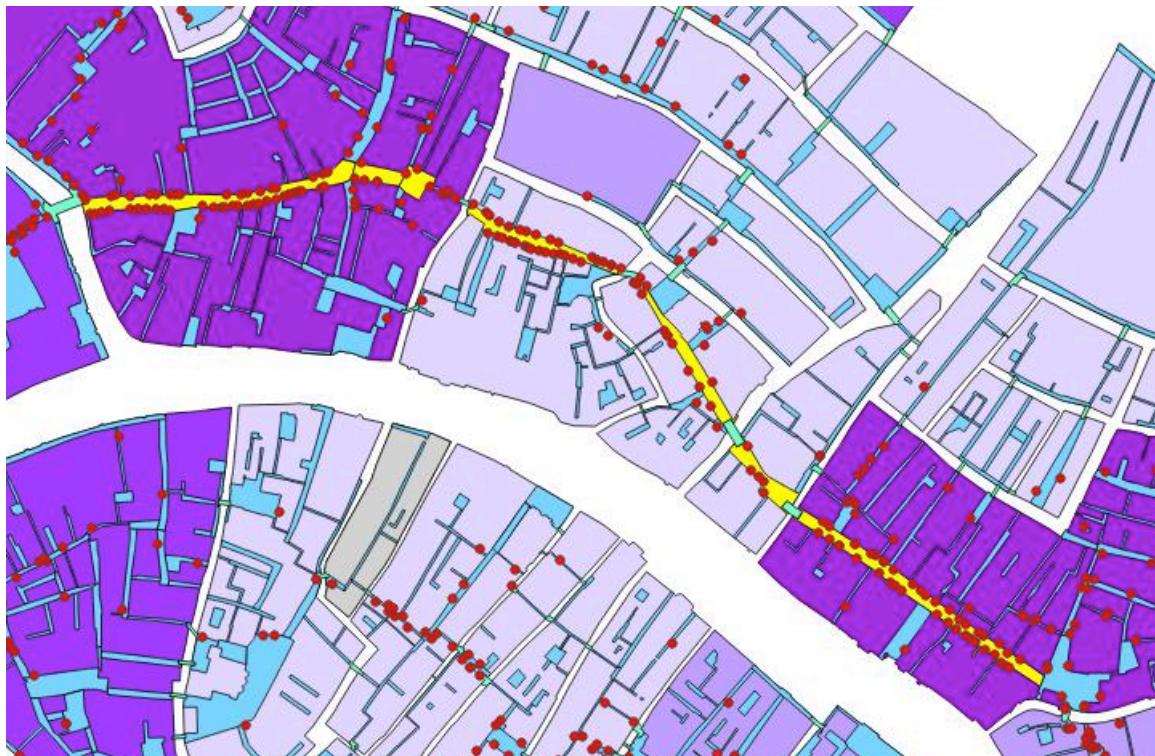


Figure 55: Strada Nova and its subsequent streets highlighted in yellow

Based on this analysis, we determined that if there were a high population loss in an area along with an increase in the density of tourist beds, there would be a trend in stores changing from serving the local population to serving the tourist population. The exception to this is that if the area already has many tourist stores, there will not be a large increase in the number of stores changing to tourist stores.

## 6.7 Evolving Residential Stores

In addition to analyzing the evolution of tourist stores in Venice, our team also analyzed the evolution of resident stores. Similar to the tourist stores, we reviewed all of the data that we had on stores in Venice and found all of the ones that changed from mixed or tourist stores to resident stores. We then overlaid a map of the change in population from 1991 to 2001 with the stores that changed, as shown in Figure 56.

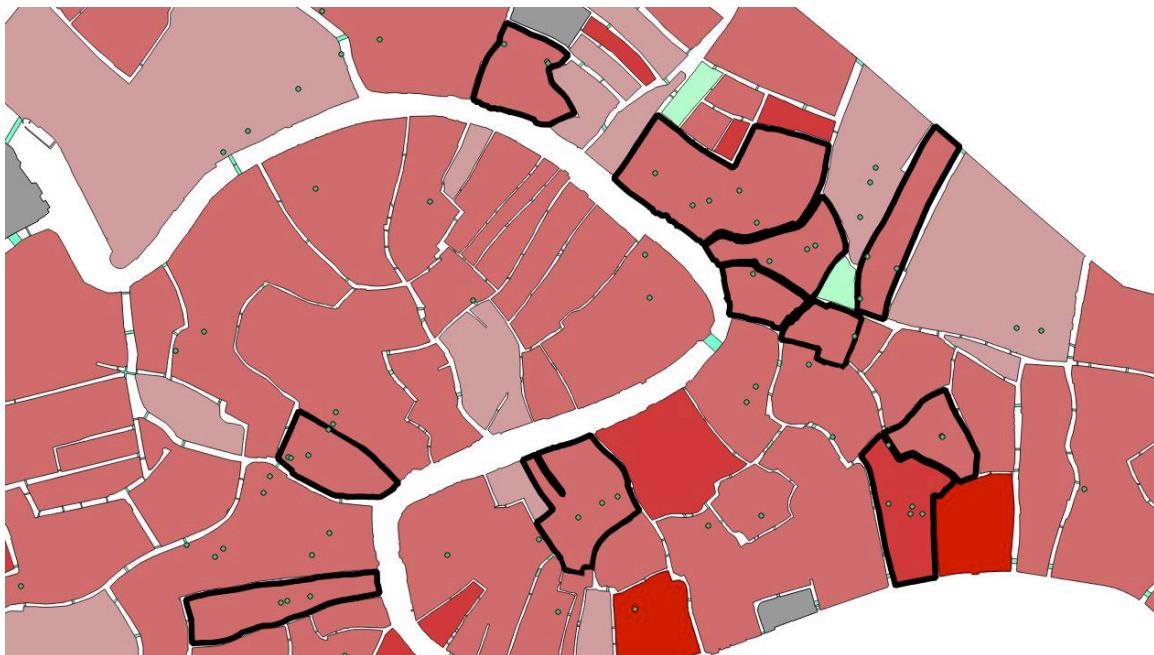


Figure 56: Stores that became resident stores with change in population density

For the evolution of resident stores, we assumed that areas with an increase in population density would be the only areas with stores that changed from tourist or mixed to resident. We assumed that the needs of residents in every part of the city were sufficiently met and the only changes would be to meet the increasing demand in areas where there was an increase in population.

After analyzing the islands in Venice with the highest and lowest concentrations of these types of stores, we determined that our assumptions were incorrect. The islands with the highest density of stores that changed from tourist or mixed to resident stores do not seem to form any pattern. They actually seem to go against the assumptions that we made. As shown in Figure 57,

the islands with the highest concentration of changed stores are not islands with an increase of population.



**Figure 57: Islands with the highest concentrations of changed resident stores**

The reason our assumptions were incorrect is most likely that we assumed that the needs of residents are being met in every part of the city. Although the demand from tourists in Venice is now very great, the residents still have buying power in Venice. These trends in the changing stores point toward some of the stores shifting in order to meet the demand coming from the residents of Venice.

Based on this analysis, our team determined that the trends in resident stores are affected by many more factors than just population loss. While population loss may be a good area to start the analysis, there are more varied reasons as to why tourist or mixed stores would change into resident stores.

# Chapter 7: General Conclusions and Recommendations

## 7.1 Conclusions

After a comprehensive analysis of all of the data our team collected on the stores and accommodations of Venice with the data compiled on the population and tourism, we have concluded that the way in which the population, tourism, and retail sector interact is very dynamic and fluid. Although there is no set formula to determine how all of these factors influence each other, we have found definite ways in which the stores and accommodations of Venice reflect the changes in the population and tourism.

We have determined that tourist stores are mainly located in areas that contain a dense tourist population, while resident stores are mainly located in areas with high population density. There are exceptions to these trends, for which we have determined the causes, but they are generally highly accurate. We have also analyzed the evolution of resident stores and tourist stores in relation to the changing densities of tourist and resident populations. We have determined that the way in which the changes in these densities affect the stores and accommodations of Venice is very interdependent.

Overall, our team has contributed a huge amount of work to help the city of Venice understand how its retail sector has evolved and how it reflects the direction in which the city is heading in the future. The different ways in which each area of the population, tourism, and stores and accommodations interact with each other warrants much more investigation in the future.

## 7.2 Recommendations

This project provided us with the unique opportunity to see all parts of Venice, from the crowded tourist areas to the quiet residential islands. It gave us valuable insight into how the declining population and expanding tourism interact with the retail sector. The analysis of our project is based on the assumptions made by our team on how to classify stores into tourist, mixed, and resident stores. Venice is a unique city, and one needs to trust that our assumptions

are generally true for Venice in particular. However, it does introduce some error to our analysis because not all restaurants and bars are predominantly tourist stores and not all bakeries are predominantly geared towards residents. In any event, this is a valuable project that should be repeated every few years so that WPI Venice Project Center can compile and understand the correlation between changes in the demographics and tourism with the stores and tourist accommodations. We suggest that in the future the classification of stores be assigned as the data is collected, evaluating one by one, rather than basing it on product type. However, all members of the team will have to make sure their classification is accurate and consistent. The methodology for this project can be tested by collecting a sample data set and assigning a classification by judging the location, product type, and the types people going in and out of the store. A count would then be performed to analyze the number of tourists and Venetians that enter and exit the store for some period of time. The team would then be able to evaluate if their own original assumptions were correct or not, and agree on a set of criteria to be used by all team members in classifying stores when actually collecting data.

In addition to improving the methodology of the stores and tourist accommodations project in the future, we also think that it would be of great value for the WPI Venice Project Center to create projects to investigate the comfort level of the resident population of Venice and to focus solely on the tourist accommodations. As we have found after concluding this project, the population of Venice is declining but it is still significant. However, it is an aging population and, with the general trends of the stores to continue shifting to cater to tourists, the residents experience more and more discomfort in their daily lives. Many are forced to travel further to find basic necessity stores. A great way to investigate possible solutions that would be viable in Venice would be to explore putting in place a delivery system for basic necessity goods. We recommend the delivery system be accessible over the phone, since it would target the older population of Venice and would probably be the easiest method that would reach most of them. The second project we suggest to be conducted in the future would be to analyze the tourist accommodations. The latest data available is from 2008, so it would be extremely beneficial to continue tracking the growth of tourist in Venice through the trends in accommodations. Hopefully, through the continuation of our project and others, we can help improve Venice and keep it on the right track.

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# Appendix

## Appendix A: San Polo's Census Tracts in 1991 and in 2001

San Polo	
SEZ_1991	ID Sez 2001
759	840
761	843
762	844
763	845
764	846
765	847
766	848
767	849
773	852
814	891
768	850
784	862
785	863
786	864
787	865
788	866
789	867
790	868
791	869

792	870
793	871
757	838
758	839
806	884
807	885
808	886
809	887
811	888
812	889
813	890
794	872
795	873
796	874
736	814
797	875
736	815
804	882
737	816
742	824
149	3799

716	777
777	855
718	778
778	856
725	784
780	858
725	786
781	859
725	788
782	860
726	791
798	876
726	793
799	877
727	795
800	878
727	796
801	879
728	801
802	880
735	811

803	881
719	779
805	883
722	780
723	781
723	782
725	785
725	787
726	789
726	790
726	792
726	794
727	797
727	798
727	799
727	800
729	802
730	803
734	809

735	812
735	813
738	817
738	818
739	819
739	820
740	821
741	822
741	823
724	783
731	804
731	805
732	806
732	807
733	808
734	810
744	826
746	827
752	833

753	834
743	825
747	828
748	829
749	830
750	831
751	832
754	835
755	836
756	837
760	841
760	842
771	851
774	853
775	854
779	857
783	861

## Appendix B: Population Trends from 1971 to 2011

POPOLAZIONE RESIDENTE NEL COMUNE DI VENEZIA (1951 = 100)	
Anni	C. STORICO residenti
<b>1971</b>	108,426
<b>1972</b>	106,516
<b>1973</b>	106,806
<b>1974</b>	105,656
<b>1975</b>	104,206
<b>1976</b>	102,269
<b>1977</b>	100,608
<b>1978</b>	99,189
<b>1979</b>	97,280
<b>1980</b>	95,222
<b>1981</b> (2)	93,598
<b>1982</b> (2)	92,118
<b>1983</b> (2)	90,414
<b>1984</b> (2)	87,936
<b>1985</b> (2)	86,072
<b>1986</b> (2)	84,355
<b>1987</b> (2)	82,703
<b>1988</b> (2)	80,988
<b>1989</b> (2)	79,487
<b>1990</b> (2)	78,165
<b>1991</b> (2)	76,644
<b>1992</b> (2)	75,159
<b>1993</b> (2)	73,149
<b>1994</b> (2)	72,037
<b>1995</b> (2)	71,053
<b>1996</b> (2)	69,906
<b>1997</b> (2)	68,600
<b>1998</b>	67,838
<b>1999</b> (3)	66,945
<b>2000</b> (3)	66,386
<b>2001</b> (3)	65,695
<b>2002</b> (3)	64,076
<b>2003</b> (3)	63,947
<b>2004</b> (3)	63,353
<b>2005</b> (3)	62,296
<b>2006</b> (3)	61,611
<b>2007</b> (3)	60,755
<b>2008</b> (3)	60,311
<b>2009</b> (3)	59,942
<b>2010</b> (3)	59,621
<b>2011</b> (3)	58,991

## Appendix C: Population by Age Group and *Sestieri* from 2001 Census Data

Source: Comune di Venezia

Looking at the 2001 census data, we found that the most significant age range for the citizens of Venice between 55 and 64 (15%) and 35 and 39 (8%). Looking at the unemployed population, 11% are students and 47% are retired (illustrates age range).

	Age 0-19	Age 20-64	Age 65+	Total
Cannaregio	2446	10820	4841	18107
Castello	2083	9618	4644	16345
Dorsoduro	839	4460	2144	7443
San Marco	544	2740	1178	4462
San Polo	734	3278	1346	5358
Santa Croce	764	3567	1511	5842

## Appendix D: Tourist shops by Census Tract Data

This database was too large to include, so here is a piece of what information is on the table, along with the totals of the data.

area of buildings	area of tract	POPULATION	HOTEL BEDS	TOURIST SHOPS	local shops
2795828	33432867	65737	20157	1566	917

## Appendix E: Hotels and Non-Hotels of the Historic Center in 2011

Source: Comune di Venezia

- Number of Beds

Anni	Posti letto strutture alberghiere	Var %	Posti letto strutture extralberghiere	Var %	Posti letto totalli	Var %
2006	13744		6982		20726	
2007	15173	10.4	9011	29.1	24184	16.7
2008	15538	2.4	10205	13.3	25743	6.4
2009	15738	1.3	10841	6.2	26579	3.2
2010	16252	3.3	10021	-7.6	26273	-1.2
2011	16213	-0.2	10387	3.7	26600	1.2

- Arrivals and Presences in Hotels and Non-Hotels

Anni	Alberghiero	Extralberghiero			Presenze (x1000)	Perm. Media
		Arrivi (x1000)	Presenze (x1000)	Perm. Media		
2007	1686	4375	2.6		480	1500
2008	1613	4070	2.52		462	1607
2009	1638	4175	2.55		458	1552
2010	1770	4241	2.4		481	1520
2011	1947	4595	2.36		554	1632

## Appendix F: Type and Number of Hotels and Non-Hotels

Source: Comune di Venezia

- Type and Number of Hotels

Categorie e tipi di strutture	Alberghi	Letti	Camere
Alberghi 5 stelle e 5 stelle lusso	18	3569	1805
Alberghi 4 stelle	63	5623	2813
Alberghi 3 stelle	107	4617	2531
Alberghi 2 stelle	46	1558	887
Alberghi 1 stelle	39	795	448
Residenze turistico-alberghiere	1	51	27
Totale strutture alberghiere	274	16213	8511

- Type and Number of Non-Hotels

Tipi di strutture (extralbergheri)	Strutture	Letti
Affittacamere	281	2688
Unita abitative	1225	3957
Bed&Breakfast	252	1310
Campaggi e Villaggi Turistici	0	0
Ostelli, Case	25	1814

Religiose de Ospitalita, Centri Soggiorno Studi; Case per Feri		
Country House	0	0
Foresterie	6	440
Residence	11	178
Agriturismi	0	0
Totale strutture extralberghiere	1800	10387

## Appendix G: NACE Coding System

NACE Codes					
<a href="http://ec.europa.eu/environment/emas/pdf/general/nacecodes_en.pdf">http://ec.europa.eu/environment/emas/pdf/general/nacecodes_en.pdf</a>					
Section	L1	L2	L3	L4	Description
Z					<b>Closed stores</b>
Z	00	00			Closed stores
G					<b>Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods</b>
G	52				<b>Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods</b>
G	52	1			Retail sale in non-specialized stores
G	52	1	1		Retail sale in non-specialized stores with food, beverages or tobacco predominating
G	52	1	2		Other retail sale in non-specialized stores
G	52	2			Retail sale of food, beverages and tobacco in specialized stores
G	52	2	1		Retail sale of fruit and vegetables
G	52	2	2		Retail sale of meat and meat products
G	52	2	3		Retail sale of fish, crustaceans and molluscs
G	52	2	4		Retail sale of bread, cakes, flour confectionery and sugar confectionery
G	52	2	4	1	Retail sale of bread, cakes, and flour confectionery
G	52	2	4	2	Retail sale of sugar confections
G	52	2	5		Retail sale of alcoholic and other beverages
G	52	2	5	1	Retail sale of alcoholic and other beverages
	52	2	5	2	Retail sale of wine
G	52	2	6		Retail sale of tobacco products
G	52	2	7		Other retail sale of food, beverages and tobacco in specialized stores
G	52	2	7	1	Retail sale of dairy and dairy products
G	52	2	7	2	Retail sale of coffee and coffee products
G	52	3			Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles
G	52	3	1		Dispensing chemists
G	52	3	2		Retail sale of medical and orthopaedic goods
G	52	3	3		Retail sale of cosmetic and toilet articles
G	52	3	3	1	Retail sale of perfume
G	52	4			Other retail sale of new goods in specialized stores
G	52	4	1		Retail sale of textiles
G	52	4	2		Retail sale of clothing
G	52	4	2	1	Retail sale of luxury items

G	52	4	2	2	Retail sale of undergarments
G	52	4	2	3	Retail sale of accessories
G	52	4	3		Retail sale of footwear and leather goods
G	52	4	3	1	Retail sale of footware
G	52	4	3	2	Retail sale of leather goods
G	52	4	3	3	Retail sale of gloves
G	52	4	4		Retail sale of furniture, lighting equipment and household articles n.e.c.
G	52	4	4	1	Retail sale of furniture
G	52	4	4	2	Retail sale of household articles/decoration
G	52	4	4	3	Retail sale of lighting equipment
G	52	4	4	4	Retail sale of assorted items
					Retail sale of electrical household appliances and radio and television goods
G	52	4	5		
G	52	4	5	1	Retail sale of radio and television goods
G	52	4	5	2	Retail sale of computer and computer goods
G	52	4	5	3	Retail sale of electronics
G	52	4	6		Retail sale of hardware, paints and glass
G	52	4	7		Retail sale of books, newspapers and stationery
G	52	4	7	1	Retail sale of books
G	52	4	7	2	Retail sale of newspapers
G	52	4	7	3	Retail sale of stationery
G	52	4	8		Other retail sale in specialized stores
G	52	4	8	1	Retail sale of animal care products
G	52	4	8	2	Retail sale of arts and crafts
G	52	4	8	3	Retail sale of boat supplies
G	52	4	8	4	Retail sale of coins and stamps
G	52	4	8	5	Retail sale of costumes
G	52	4	8	6	Retail sale of eyewear and eyecare
G	52	4	8	7	Retail sale of fishing supplies
G	52	4	8	8	Retail sale of frames
G	52	4	8	9	Retail sale of flowers
G	52	4	8	10	Retail sale of funeral goods
G	52	4	8	11	Retail sale of jewelry
G	52	4	8	12	Retail sale of knives
G	52	4	8	13.	Retail sale of media
G	52	4	8	14	Retail sale of metal work
G	52	4	8	15	Retail sale of musical instruments
G	52	4	8	16	Retail sale of office supplies
G	52	4	8	17	Retail sale of photographic goods
G	52	4	8	18	Retail sale of sporting goods
G	52	4	8	19	Retail sale of souvenirs

G	52	4	8	20	Retail sale of toys
G	52	4	8	21	Retail sale wedding decorations and related goods
G	52	4	8	22	Retail sale of wood work
G	52	5			Retail sale of second-hand goods in stores
G	52	5	0		Retail sale of second-hand goods in stores
G	52	5	0	1	Antiques
G	52	6			Retail sale not in stores
G	52	6	1		Retail sale via mail order houses
G	52	6	2		Retail sale via stalls and markets
G	52	6	3		Other non-store retail sale
G	52	7			Repair of personal and household goods
G	52	7	1		Repair of boots, shoes and other articles of leather
G	52	7	2		Repair of electrical household goods
G	52	7	3		Repair of watches, clocks and jewellery
G	52	7	4		Repair n.e.c.
<b>H</b>					<b>Hotels and restaurants</b>
<b>H</b>	<b>55</b>				<b>Hotels and restaurants</b>
H	55	1			Hotels
H	55	1	1		Hotels and motels, with restaurant
H	55	1	2		Hotels and motels, without restaurant
H	55	2			Camping sites and other provision of short-stay accommodation
H	55	2	1		Youth hostels and mountain refuges
H	55	2	2		Camping sites, including caravan sites
H	55	2	3		Other provision of lodgings n.e.c.
H	55	2	3	1	Bed and breakfasts
H	55	2	3	2	Renting of rooms of private homes and guest houses
H	55	2	3	3	Apartment rental
H	55	3			Restaurants
H	55	3	0		Restaurants
H	55	3	0	1	Gelateria
H	55	3	0	2	Pizzeria
H	55	4			Bars
H	55	4	0		Bars
H	55	5			Canteens and catering
H	55	5	1		Canteens
H	55	5	2		Catering
<b>I</b>					<b>Transport, Storage and Communication</b>
I	63				Supporting and auxiliary transport activities; activities of travel agencies

I	63	1			Cargo handling and storage
I	63	1	1		Cargo handling
I	63	1	2		Storage and warehousing
I	63	2			Other supporting transport activities
I	63	2	1		Other supporting land transport activities
I	63	2	2		Other supporting water transport activities
I	63	2	3		Other supporting air transport activities
I	63	3			Activities of travel agencies and tour operators; tourist assistance activities n.e.c.
I	63	3	0		Activities of travel agencies and tour operators; tourist assistance activities n.e.c.
I	63	4			Activities of other transport agencies
I	63	4	0		Activities of other transport agencies
I	63	4	0	1	Delivery and mail services
<b>J</b>					
<b>Financial intermediation</b>					
J	65				Financial intermediation, except insurance and pension funding
J	65	1			Monetary intermediation
J	65	1	1		Central banking
J	65	1	2		Other monetary intermediation
J	65	1	2	1	Cash Exchange
J	65	1	2	2	Money Transfer
J	65	2			Other financial intermediation
J	65	2	1		Financial leasing
J	65	2	2		Other credit granting
J	65	2	3		Other financial intermediation n.e.c.
J					
J	66				Insurance and pension funding, except compulsory social security
J	66	0			Insurance and pension funding, except compulsory social security
J	66	0	1		Life insurance
J	66	0	2		Pension funding
J	66	0	3		Non-life insurance
J					
J					
Activities auxiliary to financial intermediation					
J					
J	67	1			Activities auxiliary to financial intermediation, except insurance and pension funding
J	67	1	1		Administration of financial markets
J	67	1	2		Security broking and fund management
J	67	1	3		Activities auxiliary to financial intermediation n.e.c.
J	67	2			Activities auxiliary to insurance and pension funding
J	67	2	0		Activities auxiliary to insurance and pension funding

<b>K</b>					<b>Real estate, renting and business activities</b>
<b>K</b>	<b>70</b>				<b>Real estate activities</b>
K	70	1			Real estate activities with own property
K	70	1	1		Development and selling of real estate
K	70	1	2		Buying and selling of own real estate
K	70	2			Letting of own property
K	70	2	0		Letting of own property
K	70	3			Real estate activities on a fee or contract basis
K	70	3	1		Real estate agencies
K	70	3	2		Management of real estate on a fee or contract basis
<b>K</b>	<b>71</b>				<b>Renting of machinery and equipment without operator and of personal and household goods</b>
K	71	1			Renting of automobiles
K	71	1	0		Renting of automobiles
K	71	2			Renting of other transport equipment
K	71	2	1		Renting of other land transport equipment
K	71	2	2		Renting of water transport equipment
K	71	2	3		Renting of air transport equipment
K	71	3			Renting of other machinery and equipment
K	71	3	1		Renting of agricultural machinery and equipment
K	71	3	2		Renting of construction and civil engineering machinery and equipment
K	71	3	3		Renting of office machinery and equipment, including computers
K	71	3	4		Renting of other machinery and equipment n.e.c.
K	71	4			Renting of personal and household goods n.e.c.
K	71	4	0		Renting of personal and household goods n.e.c.
K	71	4	0	1	Renting of personal goods only
K	71	4	0	2	Renting of household goods only
K	71	4	0	3	Renting of both personal and household goods
<b>K</b>	<b>72</b>				<b>Computer and related activities</b>
K	72	1			Hardware consultancy
K	72	1	0		Hardware consultancy
K	72	2			Software consultancy and supply
K	72	2	0		Software consultancy and supply
K	72	3			Data processing
K	72	3	0		Data processing
K	72	4			Database activities
K	72	4	0		Database activities
K	72	5			Maintenance and repair of office, accounting and computing machinery

K	72	5	0	Maintenance and repair of office, accounting and computing machinery
K	72	6		Other computer related activities
K	72	6	0	Other computer related activities
<b>K</b>	<b>74</b>			<b>Other business activities</b>
K	74	1		Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings
K	74	1	1	Legal activities
K	74	1	2	Accounting, book-keeping and auditing activities; tax consultancy
K	74	1	3	Market research and public opinion polling
K	74	1	4	Business and management consultancy activities
K	74	1	5	Management activities of holding companies
K	74	2		Architectural and engineering activities and related technical consultancy
K	74	2	0	Architectural and engineering activities and related technical consultancy
K	74	3		Technical testing and analysis
K	74	3	0	Technical testing and analysis
K	74	4		Advertising
K	74	4	0	Advertising
K	74	5		Labour recruitment and provision of personnel
K	74	5	0	Labour recruitment and provision of personnel
K	74	6		Investigation and security activities
K	74	6	0	Investigation and security activities
K	74	7		Industrial cleaning
K	74	7	0	Industrial cleaning
K	74	8		Miscellaneous business activities n.e.c.
K	74	8	1	Photographic activities
K	74	8	2	Packaging activities
K	74	8	3	Secretarial and translation activities
K	74	8	4	Other business activities n.e.c.
K	74	8	5	Photocopy activities
K	74	8	6	Graphic design activities
<b>O</b>				<b>Other community, social and personal service activities</b>
<b>O</b>	<b>92</b>			<b>Recreational, cultural and sporting activities</b>
O	92	1		Motion picture and video activities
O	92	1	1	Motion picture and video production
O	92	1	2	Motion picture and video distribution
O	92	1	3	Motion picture projection
O	92	2		Radio and television activities
O	92	2	0	Radio and television activities

O	92	2	0	1	Radio activities
O	92	2	0	2	Television activities
O	92	3			Other entertainment activities
O	92	3	1		Artistic and literary creation and interpretation
O	92	3	1	1	Artistic creation and interpretation
O	92	3	1	2	Literary creation and interpretation
O	92	3	2		Operation of arts facilities
O	92	3	3		Fair and amusement park activities
O	92	3	4		Other entertainment activities n.e.c.
O	92	4			News agency activities
O	92	4	0		News agency activities
O	92	5			Library, archives, museums and other cultural activities
O	92	5	1		Library and archives activities
O	92	5	2		Museums activities and preservation of historical sites and buildings
O	92	5	2	1	Museums activities
O	92	5	2	2	Preservation of historical sites and buildings activities
O	92	5	3		Botanical and zoological gardens and nature reserves activities
O	92	6			Sporting activities
O	92	6	1		Operation of sports arenas and stadiums
O	92	6	2		Other sporting activities
O	92	7			Other recreational activities
O	92	7	1		Gambling and betting activities
O	92	7	2		Other recreational activities n.e.c.
<b>O</b>	<b>93</b>				<b>Other service activities</b>
O	93	0			Other service activities
O	93	0	1		Washing and dry-cleaning of textile and fur products
O	93	0	1	1	Dry-cleaners
O	93	0	1	2	Laundromat
O	93	0	2		Hairdressing and other beauty treatment
O	93	0	2	1	Hair Salon
O	93	0	2	2	Nail Salon
O	93	0	2	3	Spa
O	93	0	2	4	Masseuse
O	93	0	2	5	Tattoo and Piercing
O	93	0	3		Funeral and related activities
O	93	0	4		Physical well-being activities
O	93	0	5		Other service activities n.e.c.
O	93	0	5	1	Tailor

## Appendix H: Classification by Retail Customer Base

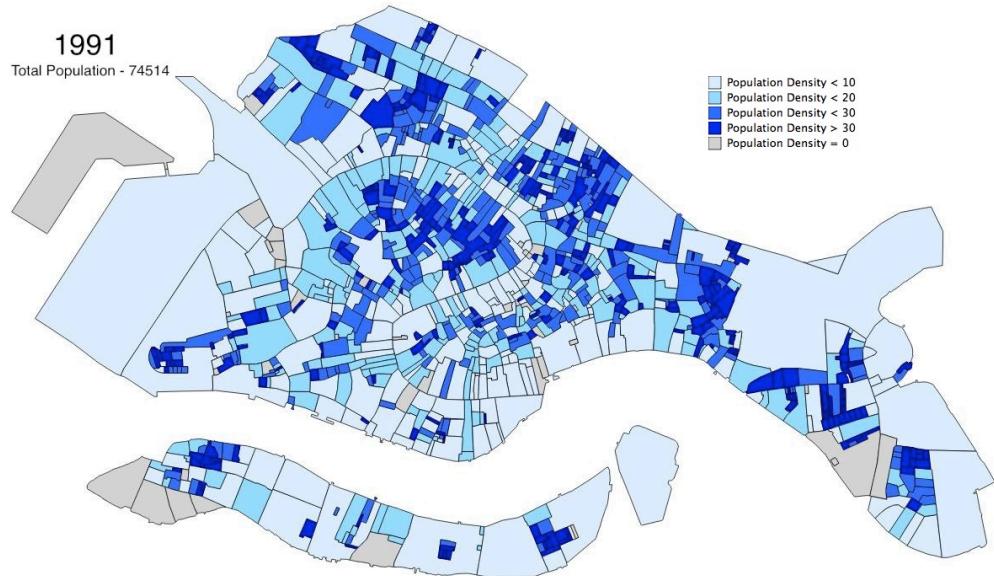
Class	Category	Store Type	NACE Code
Tourist	Predominantly Tourist	Accessories	G52.42.3
		Affitacamere	H55.23.2
		Apartment Rental	H55.23.3
		Art	G52.48.2
		Bars	H55.40
		Bed and breakfast	H55.23.1
		Candy	G52.24.2
		Car Rental	K71.10
		Coins and stamps	G52.48.4
		Costumes	G52.48.5
		Exchange	J65.12.1
		Gelateria	H55.30.1
		Gloves	G52.43.3
		Hostel	H55.21
		Hotel	H55.1
		Hotel with restaurant	H55.11
		Hotel without restaurant	H55.12
		Jewelry	G52.48.11
		Knives	G52.48.12
		Leather goods	G52.43.2
		Luxury	G52.42.1
		Perfume	G52.33.1
		Photo Store	G52.48.17
		Pizzeria	H55.30.2
		Restaurant	H55.30
		Souvenirs	G52.48.19
		Stationery	G52.47.3
Somewhat Tourist	Somewhat Tourist	Clothing	G52.42
		Metal work	G52.48.14
		Shoes	G52.43.1
		Textile	G52.41
		Undergarments	G52.42.2
		Wood work	G52.48.22
Mix	Mix	Antiques	G52.50.1
		Banks	J65.11
		Cosmetics	G52.33
		Frames	G52.48.8

		Optical store	G52.48.6
		Real estate	K70.31
		Travel agency	I63.30
Resident	Somewhat Resident	Bakery	G52.24.1
		Books	G52.47.1
		Electronics	G52.45.3
		Liquor	G52.25.1
		Pawn Shop	G52.50
		Tobacco Store	G52.26
		Wine	G52.25.2
Predominantly Resident	Predominantly Resident	Boat supplies	G52.48.3
		Butcher	G52.22
		Coffee	G52.27.2
		Computer services	K72.50
		Computers	G52.45.2
		Dairy	G52.27.1
		Delivery	I63.40.1
		Dry cleaner	O93.01.1
		Entertainment	G52.48.13
		Fish	G52.23
		Fishing	G52.48.7
		Fitness	O93.04
		Florist	G52.48.9
		Funeral goods	G52.48.10
		Funeral services	O93.03
		Furniture	G52.441
		General Store	G52.12
		Grocery Store	G52.11
		Hair salon	O93.02.1
		Hardware store	G52.46
		Household goods	G52.44.2
		Laundromat	O93.01.2
		Masseuse	O93.02.4
		Medical goods	G52.32
		Money transfer	J65.12.2
		Musical instruments	G52.48.15
		Nail salon	O93.02.2
		Office Supplies	G52.48.16
		Pet store	G52.48.1
		Pharmacy	G52.31
		Photocopy	K74.85

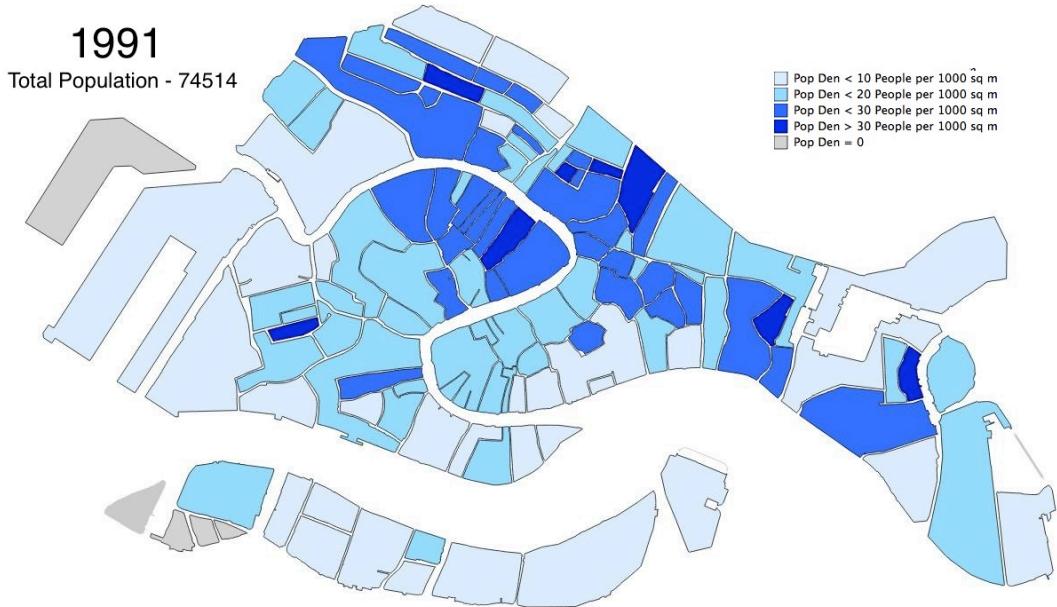
	Photographer	K74.81
	Produce	G52.21
	Radio and television	G52.45.1
	Recreational Activities	O92.72
	Repair	G52.7
	Spa	O93.02.3
	Sporting goods	G52.48.18
	Tailor	O93.05.1
	Tattoo and piercing	O93.02.4
	Toys	G52.48.20
	Transportation	I63.40
	Wedding	G52.48.21
Closed	Closed	Z00.00

## Appendix I: Census Tracts and Population Density Maps

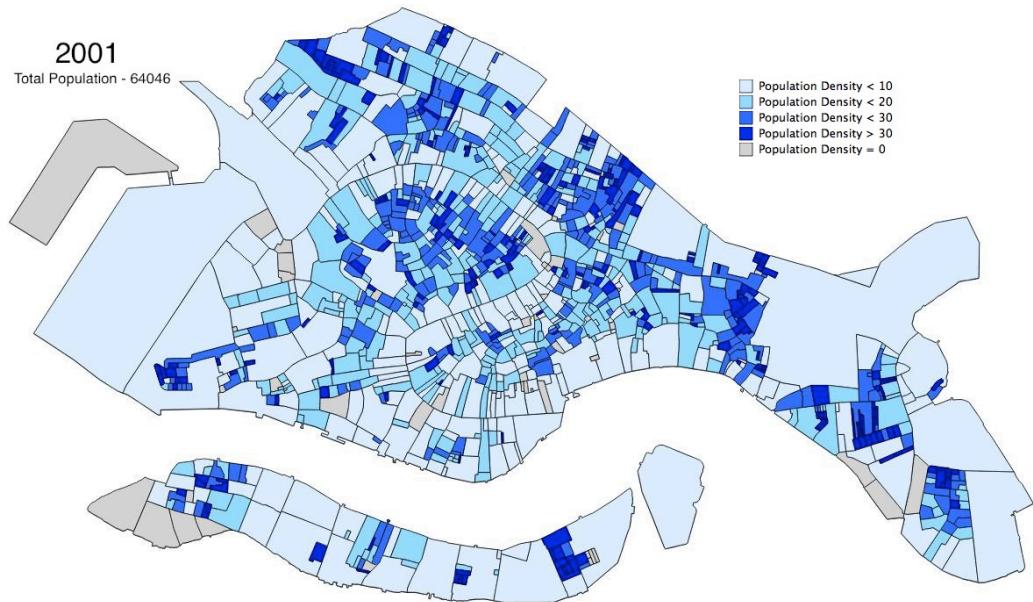
- Population density by census tract in 1991



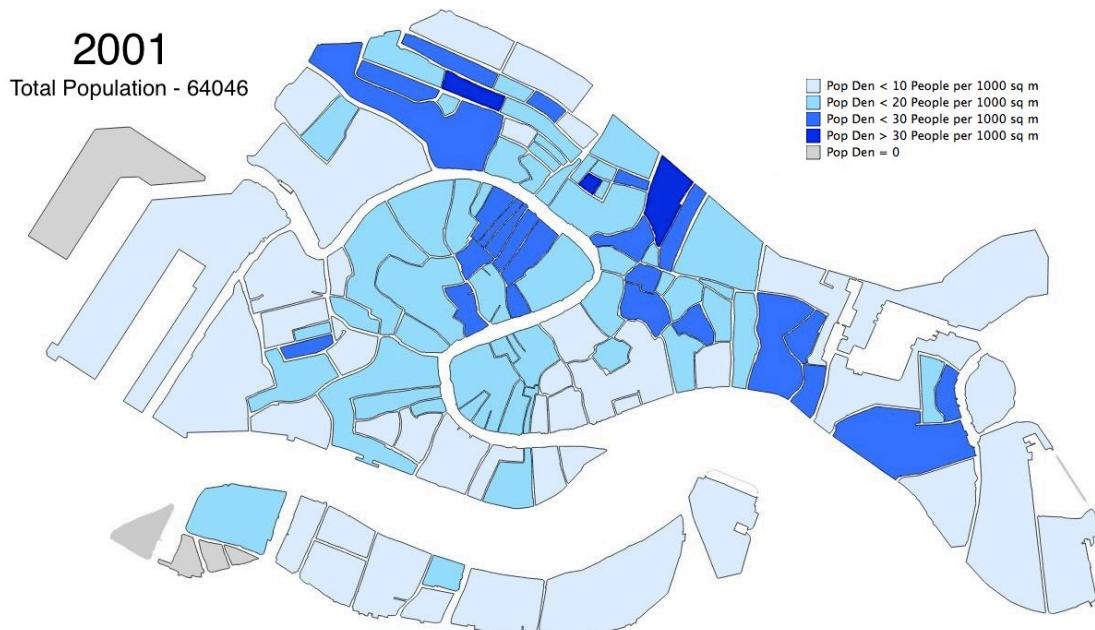
- Population density by island in 1991



- Population density by census tract in 2001



- Population density by island in 2001



# Appendix K: Venipedia Pages

- Example of primary plural pages

## Stores

Stores, known in Italian as *negozi*, have a long, important history in Venice.

**Contents** [hide]

- 1 History of Stores in Venice
- 2 Changing Patterns of Stores
- 3 NACE Coding System
- 4 Location
- 5 External Links
- 6 Notes
- 7 References
- 8 See Also

**History of Stores in Venice**

**Changing Patterns of Stores**

**NACE Coding System**

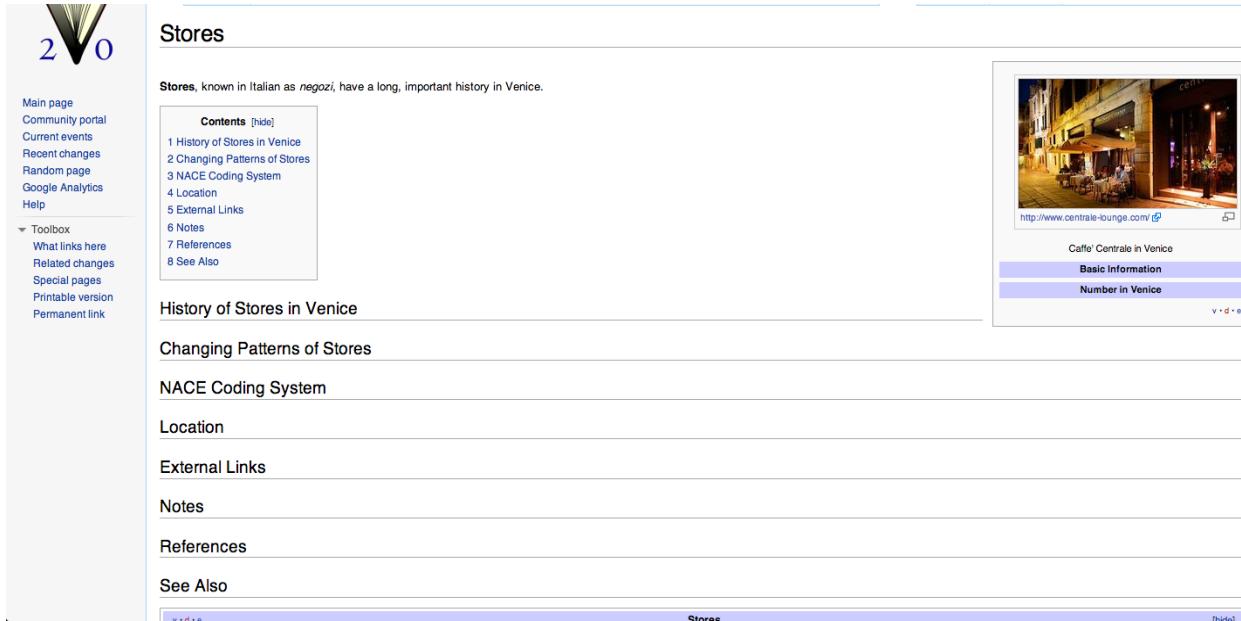
**Location**

**External Links**

**Notes**

**References**

**See Also**



- Example of secondary plural pages

## Restaurants

Restaurants, known in Italian as *ristoranti*, in Venice differ from most restaurants in other cities. Restaurant space is limited on this small island because the buildings themselves are small and the streets are narrower. If there is not enough room inside to hold the amount of guests, the restaurants place tables outside of their restaurants. These tables are often sheltered with huge umbrellas to protect guests from rain or sun. In the cold months, some restaurants place covers over the umbrellas, holding heat surrounding the tables, keeping the guests warm. The tables outside are called *plateau* and restaurants are more expensive if they have them.

**Contents** [hide]

- 1 Types of Restaurants
- 1.1 American Restaurants
- 2 Change Over Time
- 3 Location
- 4 See Also
- 5 External Links
- 6 References

**Types of Restaurants**

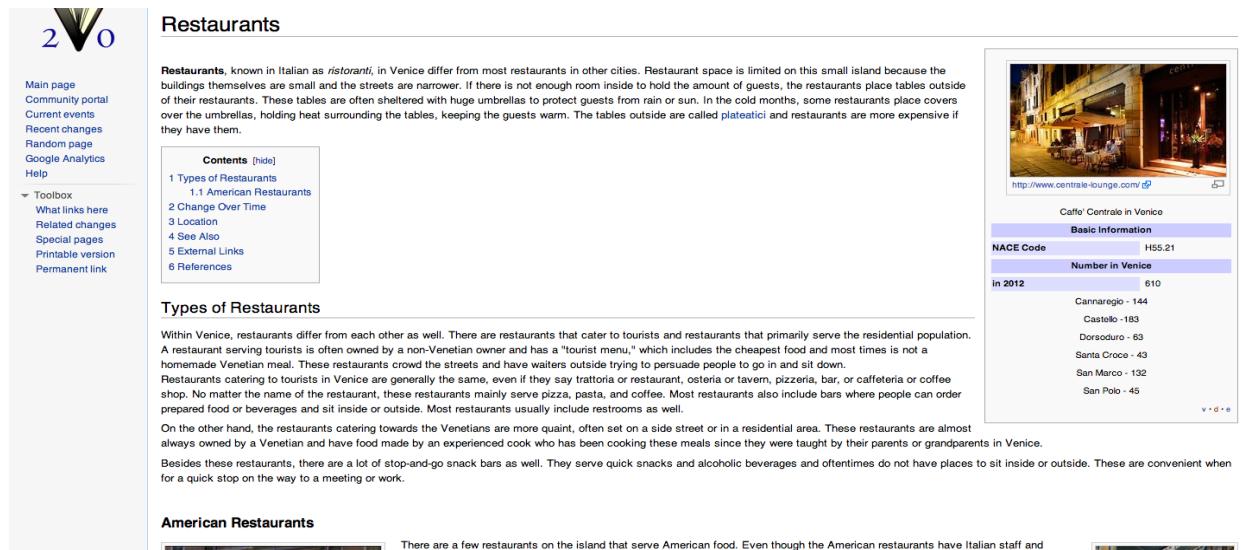
Within Venice, restaurants differ from each other as well. There are restaurants that cater to tourists and restaurants that primarily serve the residential population. A restaurant serving tourists is often owned by a non-Venetian owner and has a "tourist menu," which includes the cheapest food and most times is not a homemade Venetian meal. These restaurants crowd the streets and have waiters outside trying to persuade people to go in and sit down. Restaurants catering to tourists in Venice are generally the same, even if they say trattoria or restaurant, osteria or tavern, pizzeria, bar, or cafeteria or coffee shop. No matter the name of the restaurant, these restaurants mainly serve pizza, pasta, and coffee. Most restaurants also include bars where people can order prepared food or beverages and sit inside or outside. Most restaurants usually include restrooms as well.

On the other hand, the restaurants catering towards the Venetians are more quaint, often set on a side street or in a residential area. These restaurants are almost always owned by a Venetian and have food made by an experienced cook who has been cooking these meals since they were taught by their parents or grandparents in Venice.

Besides these restaurants, there are a lot of stop-and-go snack bars as well. They serve quick snacks and alcoholic beverages and oftentimes do not have places to sit inside or outside. These are convenient when for a quick stop on the way to a meeting or work.

**American Restaurants**

There are a few restaurants on the island that serve American food. Even though the American restaurants have Italian staff and



- Example of individual pages

**VENICE**

## RESTAURANT - Salizada del Pistor (CN4545)

[Main page](#)  
[Community portal](#)  
[Current events](#)  
[Recent changes](#)  
[Random page](#)  
[Google Analytics](#)  
[Help](#)

▼ Toolbox  
[What links here](#)  
[Related changes](#)  
[Special pages](#)  
[Printable version](#)  
[Permanent link](#)

**Contents [hide]**  
[1 2009-Present](#)  
[2 2005](#)  
[3 2004](#)  
[4 Location](#)  
[5 See Also](#)

**2009-Present**

Restaurant - H55.21  
Name: Blusbar  
Hours: 11:00 - 23:00  
Notes: Outdoor Seating. Also a bar.

**2005**

Butcher - G52.22  
No Name

[Visit the main page](#)



Basic Information	
Name	Blusbar
Address	Salizada del Pistor (CN4545)
Civico ID	0278004545
Coordinates	45.44067493, 12.3364651

[v · d · e](#)

[future.venipedia.org/index.php?title=Main\\_Page](http://future.venipedia.org/index.php?title=Main_Page)