A Detailed Look at the Changing Venetian Retail Sector

An Interactive Qualifying Project Report

Submitted to the faculty of

WORCESTER POLYTECHNIC INSTITUTE

In partial fulfillment on the requirements for the

Degree of Bachelor of Science

Submitted to:

Professor Fabio Carrera

Professor Fred Bianchi

Submitted by:

Laura Aurilio

Heather Lewis

Katherine Mattern

Christopher Pinola

Submitted on:

December 16th, 2011

Sponsors:

COSES

City of Venice

Venice Project Center

Worcester Polytechnic Institute

Email: ve11-super@wpi.edu

Project Website: https://sites.google.com/site/ve11supermarket

Authorship

This report was created with equal contributions from the team.

Acknowledgements

Thank you to the following people and organizations, without whom the completion of this project would not have been possible:

Professor Fabio Carrera

Professor Fred Bianchi

Professor Seth Tuler

Isabella Scaramuzzi

Assessore Carla Rey

Alberto Gallo

Venice Project Center Staff

The City of Venice

COSES

Abstract

Since World War II, the entire face of the Venetian retail sector has changed quite considerably. Since 2004, student teams from Worcester Polytechnic Institute have studied the evolution of stores in the whole city, revealing that there were at least 4506 shops in Venice of which 856 are now closed. Moreover, many stores that used to meet the needs of locals have since been converted to cater to tourists. There are multiple reasons for these transformations including the demographic decline, the huge increase in the number of visitors, and the advent of supermarkets. This project collected the current status of storefronts in the Castello area and created a solid baseline for future data collection and analysis, allowing for stronger conclusions to be made.

Executive Summary

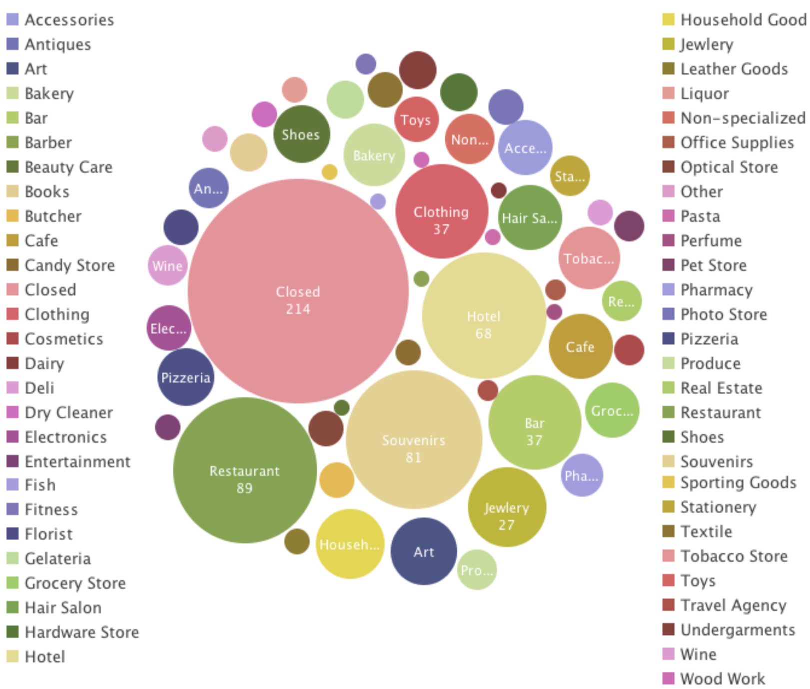
Since the end of World War II, the retail sector of Venice has evolved tremendously. With a decrease in population and increase in tourism in the past few decades, many stores have closed and a significant number have shifted to catering the needs of tourists. This issue is extremely important to the Venetians, however, they don't have any control of what stores open. Many of the stores that have closed are stores that have catered towards the needs of citizens of Venice. Population and tourist trends, the opening of supermarkets, and other factors have been analyzed by our project and by past Interactive Qualifying Projects in an attempt to determine why the Venetian retail sector is changing so rapidly.

Altro negozio di maschere «Comune impotente»

L'assessore Rey «Non possiamo incidere su questi cambi di attività»

A December 11, 2011 newspaper article about a florist shop changing into a mask store.

Since 2004, the WPI Venice Project Center has had an interest in the retail sector of Venice. The first project group to focus on this topic gathered much data to serve as a baseline for future projects. Since then, groups in 2005, 2007, 2009, 2010, and now 2011 have continued to collect data and speculate on why the retail sector is evolving so rapidly. The city of Venice and COSES, a research organization based in Venice, were the sponsors of the project this year.



This bubble chart represents the 879 stores collected this year and groups them by typology.

Our team decided to focus on the *sestiere* of Castello because data had not been updated on this neighborhood since 2004. According to all past project information, there are 4,506 stores in Venice, 866 of those stores are closed as of this year. This means that 19% of all stores in Venice remain vacant. Data was collected on 879 stores using a standard field form this year in Castello. Of these 879 stores, 214 stores were closed, which means 24% of all stores are empty. This percentage is slightly higher than that of Venice as a whole. Along with recording what stores were open or closed in Castello, any additional information about the store, such as name, items sold, hours, telephone number, or website address was also collected. Each store was classified with a specific typology using a list developed by the 2010 team, which is based off of the official NACE code for classifying store types.

Sestiere/ Address	Name	Hours/ Telephone / Owner	Interview Owner or Worker?	Classification	Items Sold	Description	Additional Information
			Y/N				
			Y/N				
			Y/N				

Standard field collection form used to collect data about stores this year.

The field data was then added to our database which is hosted on the website we created this year. This website not only hosts our database but is also connected to our interactive map. Our map allows the ability of viewing every storefront and includes all data collected from all past IQP groups. One of the many features of our interactive map is a density map that shows the density of stores in all areas of Venice. The ability to choose any or all stores is available.

Closed(red) and open(green) store locations as of 2011.

In addition to collecting data and creating our website, we organized all past IQP data and added it to our database. We have also created Venipedia pages for every specific typology. Each page lists store information for every store of that type in Castello as of this year. We have also looked into ways to better manage the retail sector with a distributive supermarket and explore if supermarkets have an effect on the store closings. We conclude that there needs to be more information about opening and closing dates in order to make appropriate analyses.

A density map representing the concentration of couvenir stores in Venice.

After spending seven weeks in Venice, we were able to successfully complete our objectives. We updated all the store locations, open and closed, for the *sestiere* of Castello and created a website including a database and interactive map to input past and present data. This data collection must be performed in order to show significant evidence of change in the retail sector.

In summary, the retail sector of Castello showed a decrease in service stores and an increase in closed stores. There was an increase of hotels and souvenir shops. This shows that there is an imbalance between resident need stores and tourist stores. Further studies must happen in the future in order to show that without help, the retail sector could evolve into a completely tourist oriented area. Limitations should be put into place in the future to stop this change from happening and preserve Venetian history and culture.

Table of Contents

List of Figures

List of Tables

1. Introduction

In recent years, small retail businesses are being forced to close, in part due to the introduction of major retailers such as supermarkets. Because big box retailers, such as Walmart, are able to offer lower prices and convenience, many people are choosing to shop at these supermarkets over smaller, more specialized stores. Recent economic downturns have also contributed to the closing of small businesses. As a result of this harsh economic climate, small business owners are finding it increasingly difficult to compete with lower prices offered by larger, corporate vendors. This trend is especially apparent in city of Venice, Italy. After careful analysis it could be said that certain stores throughout the city of Venice have been forced to close simply because they do not satisfy an important need for its citizens; whereas supermarkets cover a wide variety of goods and therefore are not at such high risk for under-performing compared to smaller, family-owned specialty stores.

Since the late 1940's, small businesses in Venice have been facing severe economic instability. For example, in August of 2007 a very popular toy store that had been open for many decades and was adored by citizens, Molin Giocattoli, was closed. There have been 62.5% closed hardware stores since then. On frequently traversed streets, stores that supplied sausages, breads, vegetables and other specialties for residents have been overtaken by shops catering to tourists by supplying souvenirs. This is a major concern to the native population of Venice, because it is becoming increasingly harder for residents to acquire basic necessities on the historic island[1]. There is also a high cost of living associated with these islands. Due to this, younger generations are being forced to move to the mainland, where it is much more affordable to live[2]. The majority of remaining residents are middle-aged or older. As residents age, it becomes much more difficult to travel further distances for basic necessities, such as food and household items. This rapid decline in population and older demographic is leaving not only small businesses but the entire retail sector of Venice in disarray.

---

[1] Cathy Newman, "Vanishing Venice: The World Tugs at the Lovely Hem of the City Thomas Mann Called," 08, 2009, 88+, http://go.galegroup.com/ps/i.do?&id=GALE%7CA213030824&v=2.1&u=mlin_c_worpoly&it=r&p=AONE&sw=w.

[2] Colleen Barry and LUIGI COSTANTINI Associated Press, "Venice , Italy : Venice Dwindles, but Locals Won't Say Die," *Tulsa World (Oklahoma)*, sec. News, November 15, 2009.

	1976	% of stores	2007	% of stores	Total	% increase
Tourist shops	303	8.17	997	25.85	694	229.04
Public shops	688	18.55	877	22.74	189	27.47
Clothes shops	529	14.26	586	15.19	57	10.78
Grocery shops	720	19.41	276	7.16	-444	-61.67
Other shops	1469	39.61	1121	29.06	-348	-23.69

Table 1: Change in Stores from 1976-2007[3]

Due to Venice's condensed size, another concern besides the closing of stores is that it is not geographically feasible to entirely renovate the island. Because of this, past Interactive Qualifying Projects (projects involving social sciences and technology that must be completed by an undergraduate at WPI and are not necessarily associated with the undergraduate's major), have mapped retail locations and examined many stores. They also have limited documentation of store openings and closings within the past decade. Maps of current stores and store information have been collected by 2009 and 2010 teams for the neighborhoods of Santa Croce, Dorsoduro, San Polo, San Marco, and Cannaregio. The 2004 team collected store location data in Castello. A 2010 team also created typologies to specifically categorize different retail stores[4].

---

[3] Andrew Carey, Bryan Lee, Rebecca Meissen, and Aikanysh Syrgak-Kyzy, (Worcester Polytechnic Institute: Worcester Polytechnic Institute,[2011]), https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx2ZTEwc2hvcHN8Z3g6NDY0NDQ0NzIwYWNjOGYyYQ (accessed 08/25/2011).

[4] Ibid.

Many laws concerning retail are also in a 2006 IQP report[5]. There are also quite a few difficulties associated with collecting data on past retail locations because documentation on store closing is very poor.

Data from past IQPs has not been completely reproduced in the same neighborhoods. Retail store data is difficult to obtain because there is very little official documentation about stores beyond the initial stage of receiving a permit for operation when the store opens. The city of Venice does offer this permit information; however, it is costly and very time-consuming to receive this information. Crowd sourcing information would be a great tool in obtaining information but this presents another challenge in this project. An efficient way for Venetians to report information on current or past retailers has not yet been accomplished. The type of attention this project might receive from residents and business owners, positive or negative, is also in question. It is unclear how owners will feel about the online publication of their business information; therefore making it difficult to accurately record data in the retail sector of Venice.

The main goal of this project was to capture the evolution in the Venetian retail sector since World War II by collecting current data and developing a mechanism to display and update past data in a quick, accessible way. In order to accomplish these goals, we took several different courses of action. We divided into teams of two and walking through an entire s*estiere,* or neighborhood, to update retail locations and information collected in the past. It is our intention to update the s*estiere* of Castello. After this was completed, we built web pages for every address and published it onto www.Venipedia.org. We created a database that lists not only the information we collected, but also all the data from past retail projects completed. The database also includes an interactive map that shows the locations of every store location collected from past and present IQPs. Also included on the map are pictures of storefronts that were taken this year, classification of store type, and any additional information about the location that we could gather in the field such as store name, hours, telephone number, or items sold. These processes are repeatable and reliable so that future researchers can continue documentation on past research.

---

[5] Rodriguez,Luis M.Student author -- IE and others, *Decline of Venetian Food Stores as a Gauge for Social Change in the City* (Worcester, MA: Worcester Polytechnic Institute, 2007).

2. Background

Overall global economic activity has significantly weakened over the past few years. There is major concern and anxiety about the development of strength within global activity. According to the International Monetary Fund, during the second quarter of 2011 the global supply chain was highly disrupted because of slowed consumption. For example, in Europe there is a huge problem with the banking sector and within sovereign debt. In Japan, the great earthquake and tsunami that hit the area recently are major factors causing economic instability because of the fact that there has been major damage in their infrastructure. In the Middle East, as well as North Africa, the region is suffering from a surge in oil prices. These are just a few examples of how widespread the problem of financial weakness and instability really is[6].

The deteriorating economy is not only something that has become apparent in a worldwide sense, but it is also something the United States are experiencing. The cost of living is increasing while wages received for working a job are not. US citizens are attaining less and less for hard-earned dollars. The United States is seeing store closings, higher unemployment, bankruptcy, and corruption at extremely high rates. According to the United States Department of Labor, as of August 2011, the average unemployment rate in the United States was 9.1% which is up which is up 0.3% just from this past March[7]. The United States Department of Labor also says that the average cost of living, also known as the consumer price index (CPI), has gone up almost 4% in just this past year from August 2010 to August 2011[8]. As of the census in 2009, the average household income was only $50,221[9]. These statistics are proof that the US economy is in trouble.

---

[6] *Slowing Growth, Rising Risks*, ed. International Monetary FundInternational Moneytary Fund, 2011), http://www.imf.org/external/pubs/ft/weo/2011/02/ (accessed 10/12/2011).

[7] "Economy at a Glance," United States Department of Labor, http://www.bls.gov/eag/eag.us.htm (accessed 9/18, 2011).

[8] "CPI Up 3.8 Percent from August 2010 to August 2011," *TED: The Editor's Desk* (2011), http://www.bls.gov/opub/ted/2011/ted_20110920.htm (accessed 9/27/11).

[9] U.S. Census Bureau, *USA*United States Government,[2010]), http://quickfacts.census.gov/qfd/states/00000.html (accessed 9/27/2011).

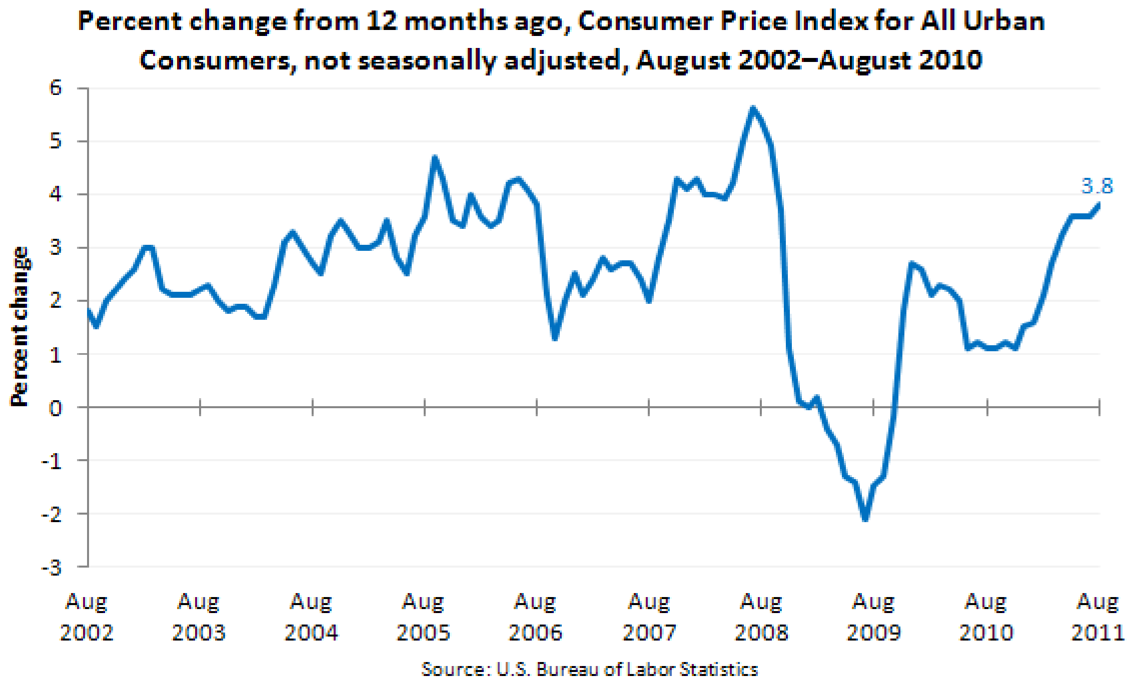


Figure 1: Percent Change Between 2002 and 2011[10]

In the United States, the number of new retail locations has decreased since 2009. One area in particular that retail stakeholders are interested in reviving is the various downtown areas of urban developments. Downtown areas can be largely beneficial to cities because it provides its residents with a common place to gather, shop, and interact. For example, in Louisville, KY the city has invested $450 million on a development called the City Central District11. The hope is that this project will bring about new shops and entertainment venues in an attempt to breathe new life into that particular area of the city. Aside from major money investments such as the one in Louisville, other areas are trying slightly different approaches to revitalizing their downtown districts. In 2008, New York assemblyman Sam Hoyt proposed his idea of implementing tax-free zones in the downtown areas of Buffalo, Niagara Falls, Syracuse, and Rochester. His argument was that this venture would not cost the state a great deal of money, and the potential that it had to revitalize these downtown areas greatly outweighed the opportunity cost12. His hope was to bring people in from surrounding suburbs by enticing them with the prospect of saving money.

---

[10] CPI Up 3.8 Percent from August 2010 to August 2011

[11] Blake Cordish, "Revitalizing Downtowns," *Retail Traffic* 38, no. 4 (2009): 96.

[12] Anonymous, "Revitalizing Downtown: Plan to Create Sales Tax-Free Zones in City is Worth Careful Examination," *Buffalo News*2007.

In 1993, the European Union was created in order to eliminate old world currencies and replace them with Euros. This arrangement was made post World War II, in order to create a system where there are guaranteed jobs, early retirement and great benefits for the citizens. This system is now being threatened because some Mediterranean European countries, such as Greece, are facing bankruptcy. The European Union can no longer finance this economic model. Property values are sinking, welfare programs (such as free universities) are being taken away, and banks are in debt. COSES, a research company in Venice, has done studies to show the evolution in the retail sector and how it is shifting from residential to tourism, making it harder for residents to live in the Venetian economy. With a harder economy, the people are looking for more and more ways to save money. Some have the capabilities to find other jobs or less expensive places of residence, but others are not so fortunate, being handicap or elderly. Another way of saving money is by shopping for the cheapest possible items, which are usually located in supermarkets[13] .

2.1 Supermarkets in Venice

The difference between a small food store and a supermarket is that a supermarket sells a wide variety of items in one central location rather than a few, limited array of items. There are usually several different departments that make up a supermarket such as food, apparel, home goods, health and beauty; oftentimes there also different types of services available as well. Some of these services include car maintenance and repair, nail and hair services, optical services, and a pharmacy. The biggest retailer in the world is Walmart, whose yearly revenues are above the combined revenues of top second through sixth retailers in the United States[14].

In the six *sestieri* that make up the main island of Venice, also known as historic Venice, there are 13 supermarkets. The main chains are Billa, Coop, SuVe, Punto, and Prix. Last year's IQP group found the locations of the 13 supermarkets shown in Figure 2 below. It can be seen that the supermarkets are not evenly distributed around the main islands of Venice. San Marco has no supermarkets, but there are quite a few that are very close together in San Polo. These supermarkets are convenient for many Venetians because they offer lower prices and they are

---

[13] Jabeen Bhatti and Nikolia Apostolou, "In Europe, Economic Meltdown Tears at Unity," *USA Today*2011, http://www.usatoday.com/news/world/story/2011-10-11/eurozone-economic-meltdown-greece/50735002/1 (accessed 10/12/11).

[14] Emek Basker, "The Causes and Consequences of Wal-Mart's Growth," *The Journal of Economic Perspectives* 21, no. 3 (Summer, 2007): pp. 177-198, http://www.jstor.org/stable/30033740.

also able to pick up all of their groceries in one location, as opposed to having to go to many different specialty stores to get various food items[15].

Figure 2: Map of Supermarkets as of 2010

2.2 Big Box Retail and Small Business Dynamics

A big box retail store is one that physically occupies a large amount of space, offers a large variety of products, and an array of services, such as hair salons or car repair. Big box retailers, such as Walmart, have both positive and negative impacts on an economy. There have been many studies citing these impacts and it has been given the nickname the "Walmart Effect". The Walmart Effect has been defined as "*The economic effects attributable to the Wal-Mart retail chain, including local effects such as forcing smaller independent competitors out of business and driving down wages, and broader effects such as helping to keep inflation low and productivity high."* The Walmart effect can also be applied to other big box retail companies and supermarkets. When a new Walmart opens, there are sure to be many economic changes in a town or city. Since Walmart is a big box retailer, they are able to obtain a larger variety of goods at a very low wholesale price and thus, able to sell products to consumers at a much lower price than small businesses. Because Walmart is able to offer lower prices in larger portions, customers are more likely to shop there. Due to the fact that consumers decide to shop at big box retailers, smaller businesses are forced to close.

[15] Karen Student author -- ME Singh and others, The Evolution of Stores and Decline of Residential Comfort -- the Availability of Necessary Goods in the Historical Center of Venice, 2005).

However, in some cases opening a Walmart in town can help local businesses. Because Walmart offers cheaper prices and "one stop shopping," often consumers will drive to a different section of town, or even out of town, to the nearest Walmart. People will often stop at other stores near Walmart, thus increasing business in a town overall. Specialty stores that do not sell products that are offered by Walmart are usually not affected negatively by the opening of a Walmart nearby because they do not directly compete with Walmart. Often times these stores actually see an increase in business due to a greater amount of traffic coming through the area. Also, money saved by shopping at Walmart often leaves consumers with more money to spend at other retailers and service stores[16]. There are both positive and negative consequences of big box retailers, and this can be seen especially in the case of Vincent Aurilio's small grocery store in Henniker, New Hampshire.

Vincent Aurilio is a private business owner who supports his family solely off of the income from his mid-sized grocery store. The store is located in a small town with about 5,000 residents. His store serves that town and the small towns in the surrounding area. A couple of years ago a supermarket opened about 10 miles down the road from Vincent's store. Residents frequented this new retailer and it initially caused a 20% decline in business for the mid-sized grocery store. People were drawn to the lower prices and greater quantity of choices offered to them at this supermarket. Fortunately, within one year of the supermarket's operation, Vincent's business was close to back to normal. The demographics of those visiting his store did not change and it was determined that a greater factor affecting the loss of business was actually an effect of the poor economy[17].

This one example of a large chain supermarket opening near a local grocery store in Henniker, New Hampshire showcases no impact on business; however, in Venice this is not the case on local food stores.

An IQP group in 2006[18] researched the decline of food stores in Venice. In this case, big box retail and supermarkets are synonymous. They interviewed many locals and 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. The group also interviewed locals to find out why they choose to shop where they shop. About fifty-five percent of residents said

---

[16] S. Paruchuri, JAC Baum and D. Potere, "The Wal-Mart Effect: Wave of Destruction Or Creative Destruction?" *ECONOMIC GEOGRAPHY* 85, no. 2 (2009): 209-236.

[17] Vincent Aurilio, Questions about Family Business, 2011.

[18] Rodriguez,Luis M.Student author -- IE and others, Decline of Venetian Food Stores as a Gauge for Social Change in the City

they favored supermarkets and only about forty-five percent favored small food stores. One important factor was accessibility of the supermarkets versus small food stores. Eighty-five percent of Venetians are able to access supermarkets easily and only about twenty-five percent said they had easy access to small food stores. When choosing what food stores to shop in, many citizens chose factors that relate to big box retail, like variety and price, over small business store traits, such as quality and personal connection, as shown in Figure 3. Their research led to the conclusion that local residents shop at big box retailers because they are convenient to access, have a wide variety of products, and cheaper so they are able to frequent them more often.

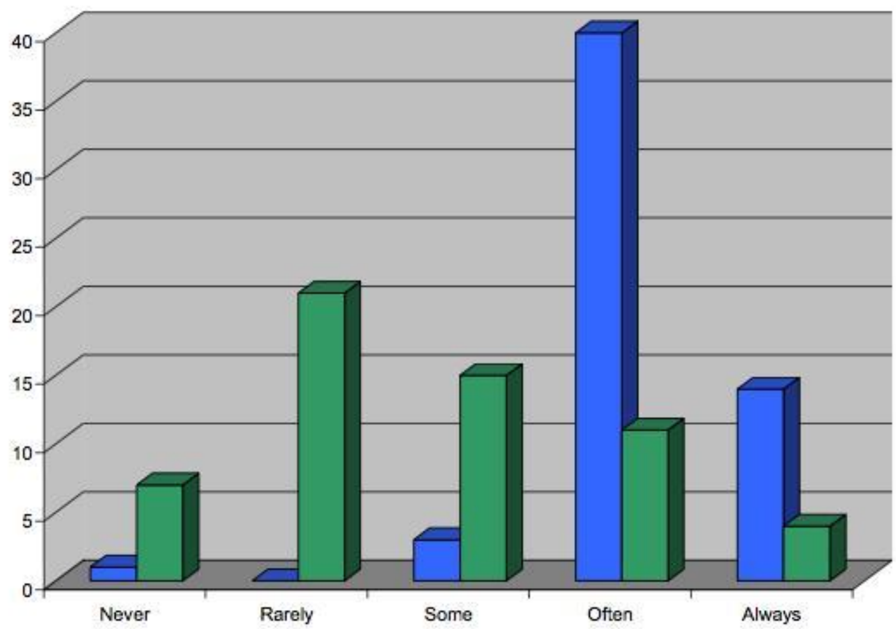


Figure 3: How Many Venetians Frequent Supermarkets (blue) vs. Small Stores (green)

2.3 Population Changes

Not only does the geography and economic status of the world affect business, but the demographic of an area is an effect as well. When the economy is down, people are less willing to spend their money on luxurious items causing. The demographic in Venice has played a major impact on local businesses in the city, causing them to shut down. The demographics of the city have changed dramatically within the century. Fifty years ago, the population was around 175,000 people; in 1966 the population was around 121,000; today, it is dwindling around 61,000. Even from January of 2011 to July of 2011, the population of residents decreased by hundreds. Around 50,000 tourists a day visit Venice, almost matching the amount of Venetian residents. If nothing is done to help the city, the population by 2050 may be none[19]. Of those residents left in Venice, the average age of Venetian population was 46 years, compared to the average age of Italians in general, 42 years. In similar years, just between 1981 and 2001, the average age of residents escalated from 40.6 years to 48.2 years. As shown, the average age of residents is elevating and this is not only a result of expensive living but a spike is tourism throughout the city as well.

2.4 Tourism Effects in Venice

Tourism in the city has more than doubled that of 50 years ago. This tourism incline has a big effect on residents living in the historic city. Tourism creates crowds and noise that is more than a bother to the residents.

Tourism can have a negative and positive effect to any situation. A negative effect is when residents try to go to work or go grocery shopping and the crowds pose as obstacles. Tourism also poses a threat to not only residents but local store owners with small business as well. For a small meat store located near a cruise port, business could go fall because residents will no longer shop there knowing it will be congested with tourists and opt a different route to a more secluded store. This is inconvenient for the store owner who loses business and the resident who has to choose a different path that may be further to traverse.

For small business owners and residents, the effect of tourism is hard but introduces a new opportunity for a different business in this historic city. Tourism brings in a lot of revenue for restaurants and souvenir shops. Also, if the tourists are staying in town, they provide revenue for hotels. This means tourism provides more business for those businesses but less business to residential businesses.

2.5 Needs vs. Wants

In addition to the analysis of the demographic in certain areas of the city, it is important to consider what is and what is not necessary for people to survive. According to psychology professor Abraham Maslow and his hierarchy of needs, people need certain types of needs met before others. He goes on to explain how, above all else, every human being needs to have their physiological needs satisfied. This includes those that are basic to human survival, such as food,

---

[19] Richard Owen, "
Venice in Peril as the Tourists Flood in and Locals Get Out," *The Times*2007, http://www.timesonline.co.uk/tol/travel/destinations/italy/article1615074.ece (accessed 9/27/2011).

shelter, warmth, and water. If one's basic needs are not being met, it causes them to experience pain or discomfort[20]. Until these issues have been rectified, consumers can only focus on their basic needs before pursuing luxury goods and services.

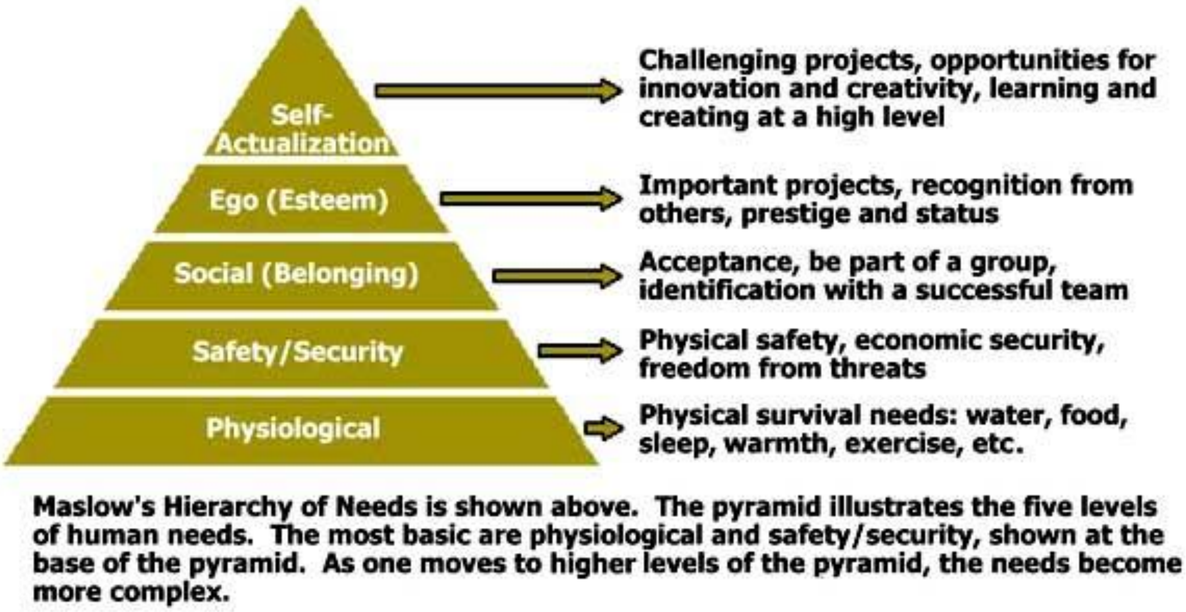


Figure 4: Maslow's Hierarchy of Needs

[20] University Department of Rural Health, University of Tasmania, "**Community Leadership in Rural Health: Maslow's Hierarchy of Needs Pyramid**," University of Tasmania, http://www.ruralhealth.utas.edu.au/comm-lead/leadership/maslow-diagram.htm (accessed October 5th, 2011).

3. Methodology

During our project, we have added data to Interactive Qualifying Projects (IQPs) that were completed in previous years. However, what makes our project different is that we have emphasized the impact of supermarkets on the retail sector in Venice, specifically in the *sestiere* of Castello. When the retail sector of Venice was first analyzed in 2004, Castello was the first *sestiere* chosen to be observed. This *sestiere* was chosen because it has not been updated since 2004. We have also organized all the information that was collected in the past for all *sestieri* and added any additional information we came across while in Venice. We used this information to explore whether or not all the needs of the citizens were being met, specifically with the current population trends and demographics of the city.

We developed a Venipedia web page for every classification and listed all the address in Castello that fall under that specific typology. We also improved maps that were created by past IQPs and added additional information to them.

The end goal of this project was to explore the change of the retail sector since supermarkets have been introduced into the city of Venice. To accomplish this project, we created four main objectives. In the following sections, we discuss methods, mechanisms and tactics used to organize and add data about the retail sector of Venice.

3.1 Area of Research

Even though an analysis of the entire historic city of Venice has taken place, the current information was collected solely in the Castello neighborhood in 2011. Past groups have collected information on the other five *sestieri;* however, analysis or data has not been collected on any of the outlying islands of Venice such as Lido, Giudecca, Burano and Murano. Therefore, they are not considered in our report. Mainland Venice was also not taken into account.

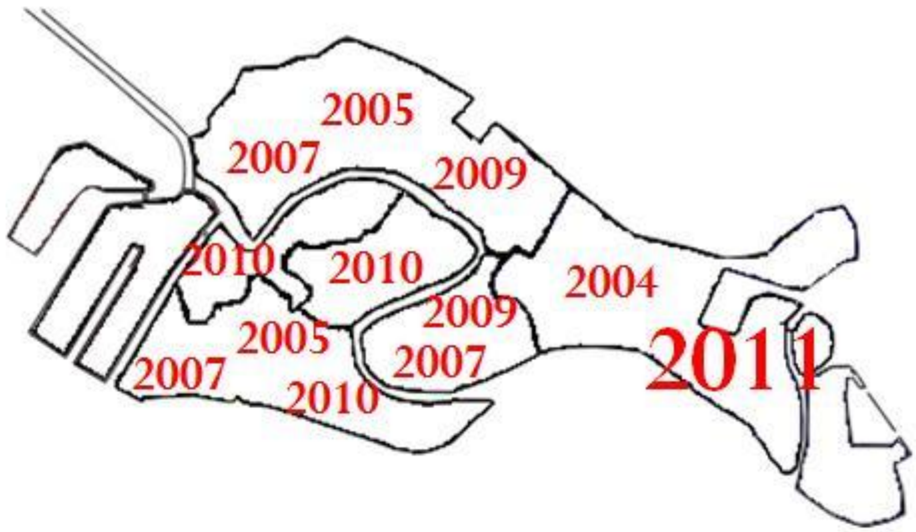


Figure 5: Area of research for WPI projects by year

3.2 Organizing past and present retail information

There have been many past IQP groups that have completed a project that focused on the retail sector of Venice. We used data collected from these projects to update and organize retail information. This objective allowed us to compile all of the past store information, as well as add our new updated information.

In order to collect new information our team split into two smaller groups of two people each to record information on the *sestiere* of Castello. Before we separated into the two groups, we all completed a trial run together collecting information for the first 300 addresses. This trial run confirmed that we were all able to identify a closed store from an open store, as well as classify the open stores into the correct category. After the trial run, each team of two physically walked through the *sestiere* of Castello, one team starting at the highest address and the other team starting at the lowest address until meeting in the middle. We updated all of the retail information using a standard field collection form that can be seen in Appendix B. Along with filling out the field form, we took a picture of each retail location in order to have current visual evidence of the business. Stores were appropriately sorted into specific categories and stored in our database along with previously collected store information from past IQPs.

3.2.1 Typologies

In order to classify each store, we used a typology system that the 2010 Venice Shops IQP team created. This system was based on the European economic classification system called NACE codes. NACE stands for “Nomenclature Generale des Activites Economiques dans l’Union

Europeenne", or, translated, General Name for Economic Activities in the European Union[21]. These typologies have been supplemented so that they are more specific for each store. For example, instead of simply classifying a store as "non-food retail" a store will be described as an "accessory", "shoes", or "clothing" store. There are a total of 64 different typologies and can be seen in detail in Appendix A.

3.3 Compiling and Cleaning up Past Data

Previous IQP groups chose to keep their collected retail store information in an Access database. In their opinion, this made it easier to generate a Google Earth map layer to be used as their final product when visually displaying store locations. We decided to take a slightly different approach by using MySQL as our back-end database for storing and cataloging all of our information. One tremendous benefit is that this is hosted on the Internet and thus is accessible from a wide variety of locations, as opposed to the Access database which is very limited to local access only. This made it easier to have multiple sources of input occurring all at the same time. This also opens up the possibility for us or a future group to implement some sort of mobile client which would be better suited to rapidly collecting data about various stores.

3.3.1 Normalizing Typologies

In addition, we cleaned up past IQP data and normalized their concept of store types. In the past, store types were simply strings of text which can be awfully difficult and time consuming for a computer to compare. It also led to a lot of unnecessary duplication of types due to misspellings. We broke these typologies out into a separate table in our database in order to sift through the data and remove any duplicates. Next, we assigned each type a unique identification number that ultimately linked back to its corresponding store entry.

3.3.2 Organization of Stores

In order to properly present all of the store information collected, a website was created: http://super.venice2point0.org. Our interactive Google map is held on this website, along with the ability to enter new data. By housing these two major components into one area, data collection, data storage, and map generation becomes much more user-friendly because the data and maps are both interconnected.

---

21 "NACE-Code," Schober International, http://www.schober-international.com/nace.html (accessed 10/12, 2011).

In order to accomplish this, a relational database was used. When working with databases, most people simply choose to use programs such as Excel to create spreadsheets. This is not the most efficient method because these sheets are “flat”; the more complicated the information, the messier it becomes because adding new information to the sheet only adds more and more columns. With a relational database, you have multiple tables present and each table has its own spreadsheet. Data is associated from table to table, whereas with Excel this would pose a problem.

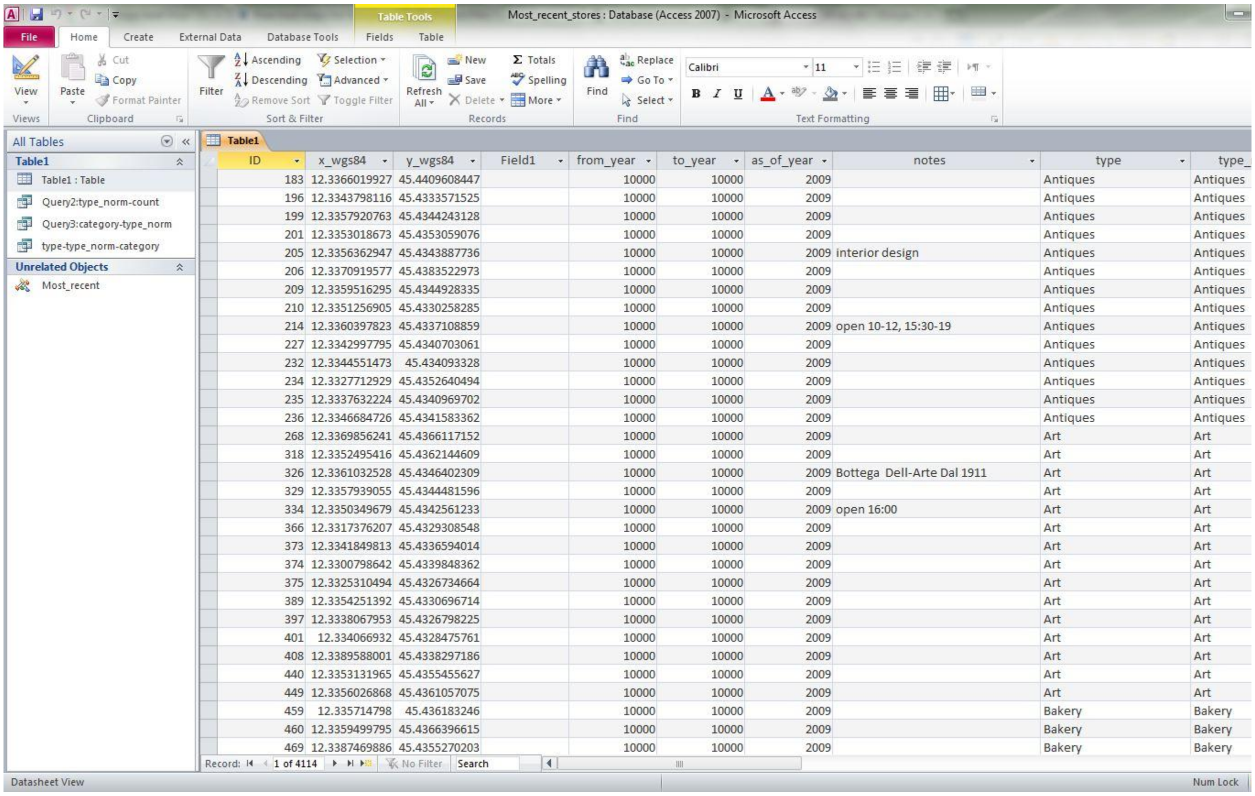
Because we have the issue of having multiple addresses associate with one store, this type of database was much simpler to use. It was also much easier when it came to addresses with more than one picture, and any overlap with past and present store information. The relational database structure can be seen in Appendix F.

3.3.3 Current Stores

To add information from each store to the database on the website we followed a few simple steps. First, we logged into http://super.venice2point0.org. When at the main menu, we clicked the “Stores” link in order to add a store. After entering the data, each store had a unique ID number. We then copied the ID number and added it into the “Address Association” link located under the “Stores” link on the main menu. After each store was associated with each address and marked whether it is primary address or not, each picture was then associated to each address. In order to do this, we clicked the “Picture Association” link on the main menu. At the bottom we clicked “Add” and copied the URL from the wanted picture into the required field and associated it to an address. Once finished, the map automatically updated itself .Each category could then be selected for convenience viewing. For a detailed step-by-step process see Appendix G.

3.3.4 Past Stores

All store information collected by previous IQP groups was moved over from the Microsoft access database where it was stored to our current working website and database. The Microsoft access database can be seen in Figure 10. This was decided because there were various issues with having this information kept in a Microsoft access databases because there can be multiple versions of the database and the information is not centralized in any way. You also cannot have multiple people working on the database at the same time which creates a major inconvenience for any group working together to enter in large amounts of data (which is the case for this type of project).



ID	x_wgs84	y_wgs84	Field1	from_year	to_year	as_of_year	notes	type	type_
183	12.3366019927	45.4409608447		10000	10000	2009		Antiques	Antiques
196	12.3343798116	45.4333571525		10000	10000	2009		Antiques	Antiques
199	12.3357920763	45.4344243128		10000	10000	2009		Antiques	Antiques
201	12.3353018673	45.4353059076		10000	10000	2009		Antiques	Antiques
205	12.3356362947	45.4343887736		10000	10000	2009	interior design	Antiques	Antiques
206	12.3370919577	45.4383522973		10000	10000	2009		Antiques	Antiques
209	12.3359516295	45.4344928335		10000	10000	2009		Antiques	Antiques
210	12.3351256905	45.4330258285		10000	10000	2009		Antiques	Antiques
214	12.3360397823	45.4337108859		10000	10000	2009	open 10-12, 15:30-19	Antiques	Antiques
227	12.3342997795	45.4340703061		10000	10000	2009		Antiques	Antiques
232	12.3344551473	45.434093328		10000	10000	2009		Antiques	Antiques
234	12.3327712929	45.4352640494		10000	10000	2009		Antiques	Antiques
235	12.3337632224	45.4340969702		10000	10000	2009		Antiques	Antiques
236	12.3346684726	45.4341583362		10000	10000	2009		Antiques	Antiques
268	12.3369856241	45.4366117152		10000	10000	2009		Art	Art
318	12.3352495416	45.4362144609		10000	10000	2009		Art	Art
326	12.3361032528	45.4346402309		10000	10000	2009	Bottega Dell-Arte Dal 1911	Art	Art
329	12.3357939055	45.4344481596		10000	10000	2009		Art	Art
334	12.3350349679	45.4342561233		10000	10000	2009	open 16:00	Art	Art
366	12.3317376207	45.4329308548		10000	10000	2009		Art	Art
373	12.3341849813	45.4336594014		10000	10000	2009		Art	Art
374	12.3300798642	45.4339848362		10000	10000	2009		Art	Art
375	12.3325310494	45.4326734664		10000	10000	2009		Art	Art
389	12.3354251392	45.4330696714		10000	10000	2009		Art	Art
397	12.3338067953	45.4326798225		10000	10000	2009		Art	Art
401	12.334066932	45.4328475761		10000	10000	2009		Art	Art
408	12.3389588001	45.4338297186		10000	10000	2009		Art	Art
440	12.3353131965	45.4355455627		10000	10000	2009		Art	Art
449	12.3356026868	45.4361057075		10000	10000	2009		Art	Art
459	12.335714798	45.436183246		10000	10000	2009		Bakery	Bakery
460	12.3359499795	45.4366396615		10000	10000	2009		Bakery	Bakery
469	12.3387469886	45.4355270203		10000	10000	2009		Bakery	Bakery

Figure 6: Microsoft Access Database

In order to move this information from the old database into the new one, the old database was downloaded as a Microsoft Access file. Then, our web-based database was created and a script was written to upload all of the downloaded information into the new database. Because last year's group included all of the data collected from the years before them in their database, all previous information was transferred to us in one easy sweep. We also took precautionary measures to ensure that the way we were storing our information was consistent with the way it was done in the past to prevent any conflicts. Now both present and past information collected is all stored in one simple web-based database where it is easily accessible.

3.4 Interactive Map

The easily accessible database is in the same place as our interactive map. It can be reached by visiting the site http://super.venice2point0.org. A picture of the website can be seen in Figure 11 below. To incorporate the database with the interactive map, data is entered manually to the website and updated automatically to the map. This makes updates extremely neat and easy. Also, it is much easier to visualize the data on the interactive map in the same place as the database, allowing access for changes.

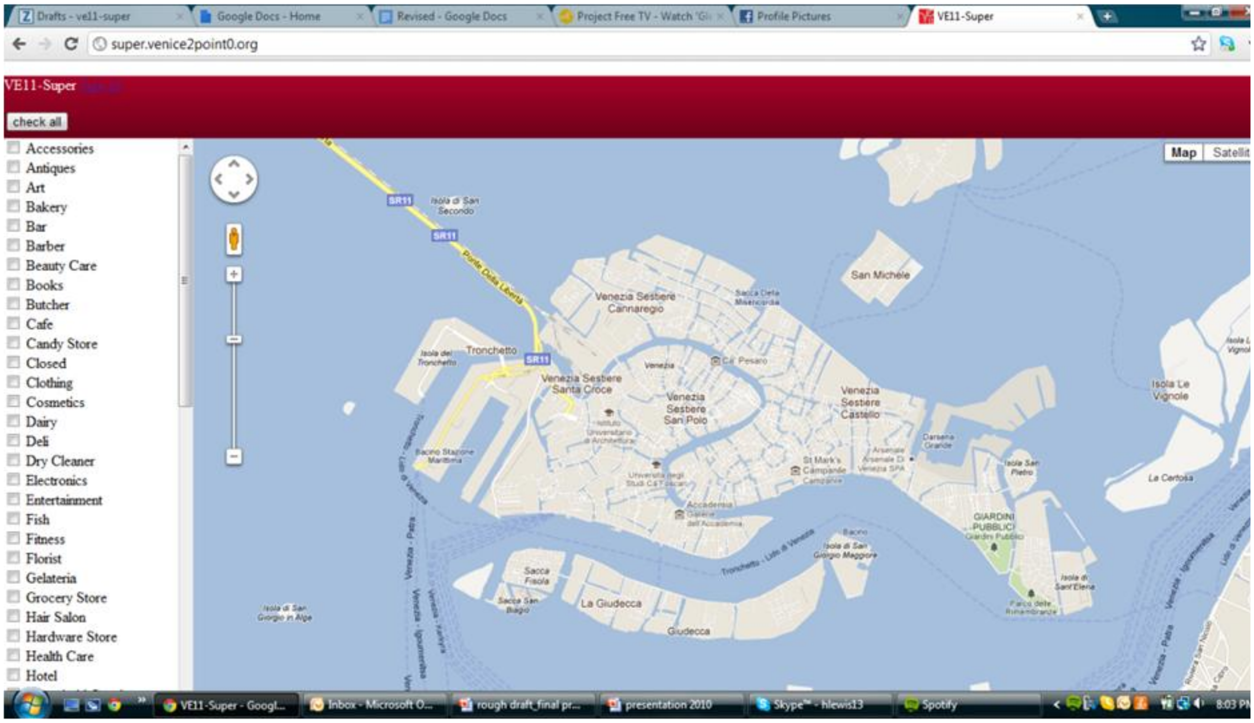


Figure 7: Website Created With Database and Interactive Map

As soon as data is entered in the database, it is then updated on the map and ready for viewing on the left side of the map. Clicking on any category allows for a point on the map to be shown and is color-coded according to the type. The map allows for filtering just one type, multiple types, or all types. Once a point on the map is selected, an information bubble pops up and the store name, address, store type and year the information was collected is shown. Along with information, a current picture of the store is shown. There is also an option to toggle the map, going from showing solely store locations to showing a density map as can be seen in Figure 12. These maps are important because they allow the user to see where there is a deficit or surplus of each store type.

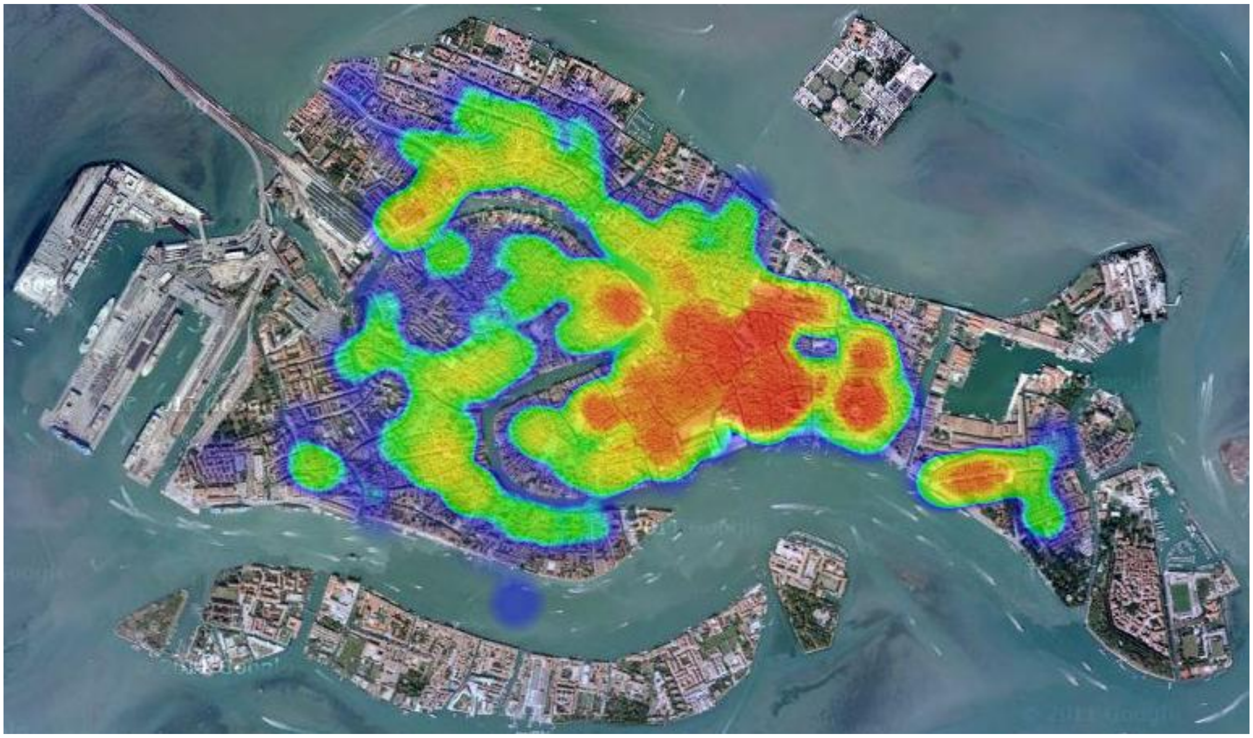


Figure 8: Density Map of All Stores in Venice

3.4.1 Creation of the Interactive Map

Creating the interactive map on our website was completed using a several sequential steps. A series of PHP scripts were used to retrieve information straight from our online database. These scripts pushed the information from the database to our website. The web page with the map itself incorporates heavy usage of HTML5. HTML5 is a language which allows you to show very complicated things directly from the browser. This language eliminates the needs for plug-ins, such as Flash, to be used. Next, a popular tool called jQuery was used to dynamically create many of the controls a user sees on the map, such as the check boxes for each store type. JQuery was also used to interpret the information from our database and turn it into objects that people can interact with on the website. Most importantly, Google Maps API was used to actually turn all of our data into points and markers on the map that can be seen. All of this information is hosted on a *bluehost* account that is available for all of the Venice Project Center's use. The code used to create this map can be viewed on attached CD.

3.5 Publishing Retail Information on the Internet and Allowing Public Updates

Once we compiled all of our data from the addresses in Castello and past IQP data, we needed an effective way for the public to be able to view and interpret our findings. We analyzed the work that past IQP groups completed and expanded upon their interactive maps. In their previous state, the pages did not work properly; therefore, we restored them to a functional state. After we walked around Castello collecting data from each store, we created a Venipedia page of the *sestiere* of Castello to compare and contrast every retail address, past and present. Once opening the Venipedia page, called Evolution of Castello, there will be a table including every address that holds or has once held a store. In the columns following the addresses will be years in which WPI has collected data. This data includes the typology for each store currently is or was, and in which year.

3.5.1 Interactive Map

Once we complied all of our data collection, we published it online so that anyone can view our findings with an easy-to-use interactive map. We decided to take advantage of the Google Maps API due to its relative simplicity and rich set of features. Once we gathered our updated data from Castello, we combined it with last year's team's Google Earth layer to create one complete package. This way anyone can easily view our work from any web browser and can see data from the previous years.

The map is dynamically associated with the database such that it automatically reflects any changes without any further action required on either the user or developer's part. Last year's group would have had to run an exporting tool every time they wanted to generate an updated Google Earth layer. By eliminating this overhead, we provided a more intuitive user experience.

3.5.2 Venipedia Integration

Furthermore, we extended the functionality of our Venipedia pages so that one could easily access our interactive map. Each page provides the user with all locations of stores that fall into that typology. In addition to this, they will be provided with a thumbnail of the interactive map so they can see the location and/or density of that specific type of store. The Venipedia pages can be accessed at http://venipedia.org/index.php?title=Castello.

3.6 Assessing the Evolution of the Retail Sector Investigating the Cause of Closed Stores

With the introduction of supermarkets in Venice, there have been many changes to the face of the retail sector. In order to directly observe these changes, we attempted to investigate what stores were present in the past as well as what stores are open now. Our first step was to look at past records and documentations of stores that existed previously. The City of Venice, COSES and past IQPs were looked at as great resources. We met with the City and COSES in order to acquire information about supermarket openings to see if there was any effect on the rest of the retail sector. However, we were not able to obtain any useful information from either due to time constraints. We used the information collected in objective one (organizing past and present retail information) to see what stores are open now. The demographics and population of the city were also taken into consideration to see what effect, if any, these factors have in the evolution of the retail sector.

3.6.1 Comfort Level Analysis

Even though supermarkets provide a certain convenience to consumers as far as pricing and choice, they often are located further away from housing than specialty stores. Because of the aging demographic of Venice, it is assumed that the elderly are burdened by this since their mobility capabilities are more limited than that of a young person. They have a much more difficult time traversing the city; the further the distance they have to travel, the harder it is for them to get to a supermarket.

Being in Venice firsthand we have physically witnessed this process as we had to shop for groceries ourselves. Crossing a bridge and traveling 250 meters to the closest grocery store, Punto, is not the easiest walk especially with many tourists crowding the walkways. It can take anywhere between three and five minutes to walk there; however, walking back takes longer carrying the heavy grocery bags. Because buying a lot of groceries is heavy, many times we did not want to buy a lot, and therefore we had to travel to the grocery store every couple days. Although the convenience of having all of the necessities we need in one store is ideal, the distance we have to travel and the weight of all the goods we need to carry at once is often times more of a burden than expected.

The 2004 IQP group made it one of their goals to qualitatively analyze the evolution of the retail sector in conjunction with the how easily the Venetian citizens were able to obtain the necessary goods for life. The 2009 IQP Shops team continued the research and evaluation on this topic with the data that they collected. The current project extended this analysis by using a more simple rating system than what previous groups created. We basically used a heat map to show where basic needs are in Castello and compared that map to where most people live and how convenient these basic needs are to traverse to. The most recent census tracts as well as the maps that we created were used to analyze the comfort of getting to and from the basic necessity stores of the citizens in Castello.

3.7 Exploring Ways to Better Manage the Retail Sector

Because of stores closing and remaining closed for many years, it is in the best interest of the city of Venice to better manage the retail sector. Storefronts that are closed are not only displeasing to the eye, but also ruining the history of the city. The stores that are unoccupied are not being maintained and most likely deteriorating. Because of this issue, we explored as many ways as possible to revitalize the retail sector through our own observations as well as interviews conducted. Three major options were considered.

3.7.1 Distributed Supermarket Model

One concept considered was the idea of an outdoor distributed supermarket. In this unique model, small independent store fronts would band together under central management with store fronts very close or right next to each other to offer consumers a pseudo-supermarket shopping experience. The experience of going to individual, specialized stores, such as the meat store, cheese store, and bread store would still be there; however, consumers would benefit from the reduced prices and convenience that a supermarket offers. Residents would not have to sacrifice the traditional Venetian shopping experience for higher prices and would still have the pleasure of shopping in various smaller stores.

Many neighborhoods in Venice lack large storefront spaces which can prevent the opening of a supermarket. Supermarkets tend to take up a greater amount of space since they offer many more products in a store than a small business. However, the distributed model allows a “supermarket” to open in neighborhoods that do not have a storefront that is large enough for an actual supermarket. The supermarket company can either own many different storefronts or lease storefronts from the city of Venice for little or no rent. In using this model, customers would also receive the benefits that supermarkets provide, such as lower pricing and constant supply. This system would also be beneficial to the aesthetics of the city as more storefronts will be occupied and continued to be taken care of.

A specific area of Venice was chosen to be evaluated for this supermarket model. We took pictures of various closed storefronts in this area and they were combined in Photoshop to create one panoramic photo. This panoramic photo was then altered to show our visualization of the distributed supermarket. This allowed us to see how the model would appear, and whether or not it would be a feasible option for revitalization.

3.7.2 Limiting Specific Store Types

The last option that was considered is the possible limitation of store certain store types in specific areas. If there are too many of one type of store in a close enough proximity, these stores could potentially not be getting enough business due to a high level of competition. This could be a contributing factor as to why store are being forced to close down. Because of the high influx of tourists daily, vendors are now choosing to cater to these tourists by opening souvenir shops instead of selling items residents need for daily life. This high concentration of tourist shops is another issue that needs to be addressed.

After documenting where stores are located and what types of stores they are, density maps were created to visually present this information. The data was presented using Google Maps.

4. Results and Analysis

In the *sestiere* of Castello, we recorded a total of 879 stores, including the 214 that are closed. Currently, there are 26 stores that fall under the art/antique category, 61 food stores, 106 clothing and accessory stores, 164 eateries, 28 home-based goods stores, 59 luxury item stores, 42 stores focused on service retail, 149 tourist oriented stores, 16 health and beauty stores, and 14 non-specialized or other stores. The percentage of stores per category can be seen in Figure 5.

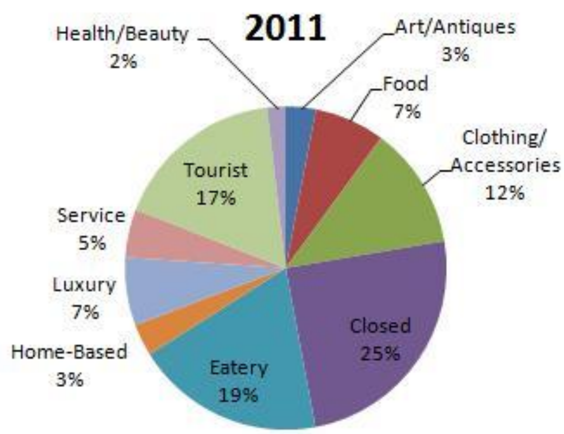


Figure 9: Castello Store Categories

Each category is further broken down into specific types which can be seen in Appendix C. Figure 6 shows a visual representation of the stores types in comparison to one another for the entire *sestiere*.

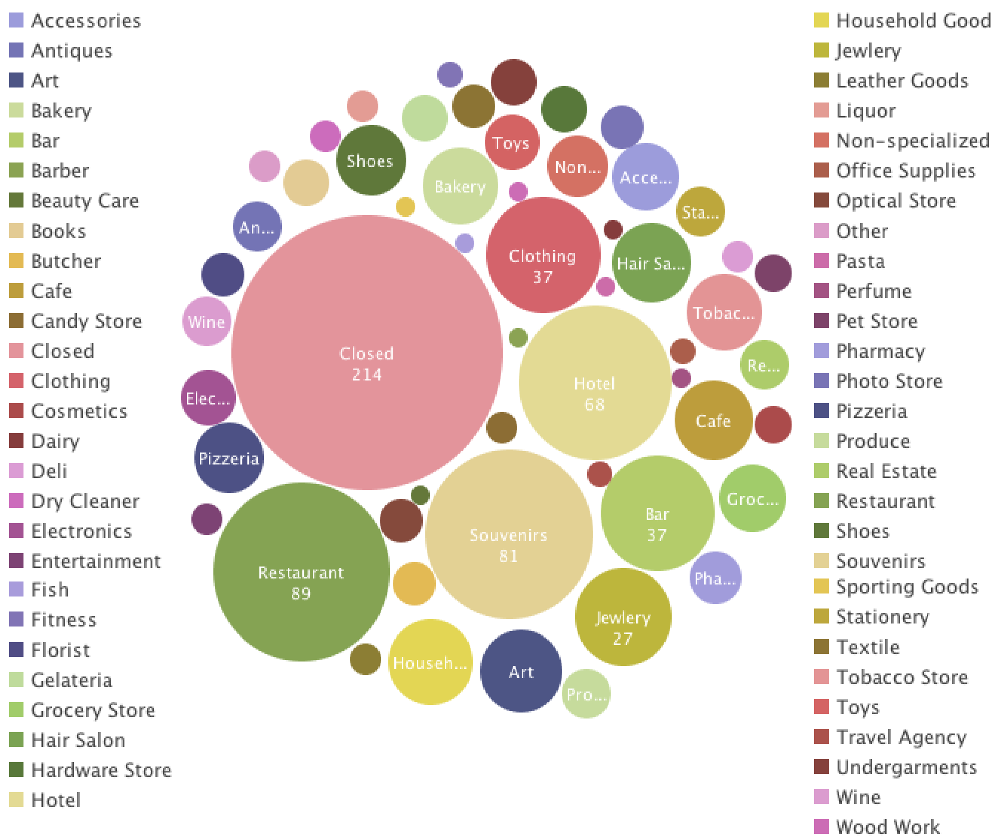


Figure 10: Store Types By Number for Castello in 2011

4.1.1 Evolution of the Retail Sector in Castello

The 2004 IQP group documented 803 store locations in Castello; compared to the 879 stores we documented, this shows an addition of 76 stores for a total of a 9.5% increase in stores overall. Figure 7shows the changes (both increase and decrease) of specific store types from 2004 to 2011.

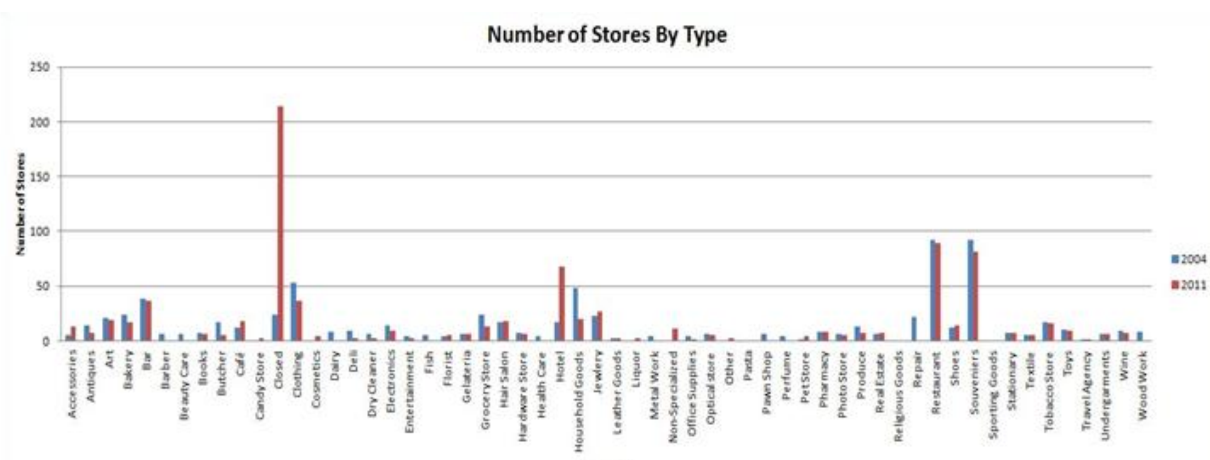


Figure 11: Changes in the Number of Stores by Type from 2004-2011

Of the various store types, the most dramatic change can be seen in the increased number of closed stores with a change of 88.8%. In 2004, only 24 closed stores were documented; this is much less than the 214 documented this year. This may be skewed because the 2004 group did not collect the same data as we did and in different ways. The categories that had the greatest decline in stores include food stores, home-based goods, and service oriented retail stores. A major increase was seen in hotels, which can be directly related to the influx of tourism. The majority of other store types experienced a decrease (with, of course, a few exceptions).

The stores that have not changed include seven different types: gelaterias, leather goods, tobacco stores, travel agencies, pharmacies, undergarment stores, and stationary stores. This steady trend is something to consider because there is not one specific category that these store types belong to. However, when analyzing the assortment of stores remaining consistent, we pondered reasons for this trend. Gelaterias remain consistent because they are a main tourist attraction. Tourists want to try gelato because it is an exquisite product of Italy. Leather goods, another product of Italy, are also a favored item for tourists because it is less expensive in Italy. Stores that favor both tourists and residents of Venice, such as the tobacco stores and travel agencies, will remain consistent in that they provide a steady need. Pharmaceuticals, undergarments, and stationary are a constant need to residents. Pharmacies provide health services; undergarments are a necessity and are not always sold at larger clothing stores. Stationary stores are needed for the working residents in Venice. This leads us to believe that there is certainly more than one factor affecting whether or not a store continues to stay open or if it is forced to close down. It is not simply enough to blame trends on one, singular cause.

Figure 8 shows a more general comparison of stores from 2004 and 2011, breaking them up by category instead of specific store type. Again, it can be seen that closed stores have seen the greatest amount of change. It is also easier to see that besides tourism and eateries, no other category has seen an increase.

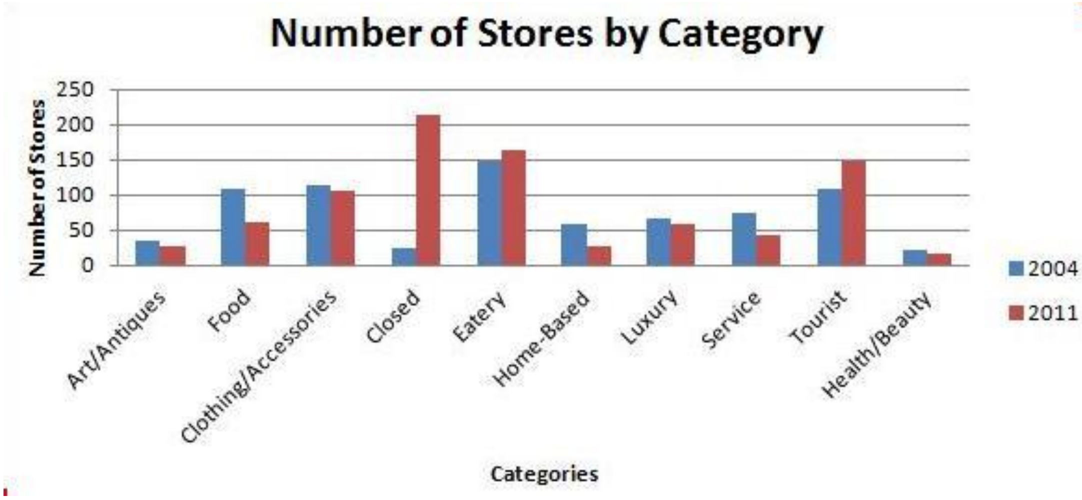


Figure 12: Changes in the Number of Stores by Category in Castello from 2004-2011

This trend shows that even with an increase of opened stores from the year 2004 to 2011, the closed stores counteract this "growth". It is also possible to see that there was a shift from a residential-focused retail sector to a tourist-based one, as the only categories that have experienced growth are the ones that would be beneficial to people that are visiting the island. An example of each store by category can be seen in Appendix D.

4.1.2 Evolution of a Sample Area of Castello

In addition to an overall view of the *sestiere* of Castello, a more detailed look at Salizada San Antonin was completed. Data was first collected in the 1790's from a study done in the book *Migropolis* and therefore a strong analysis could be concluded[22]. Past student research was also done on this street in the years of 2009 and 2010[23] . Our data from 2011 is compared to this past data in Figure 9.

[22] Hajte Cantz, Wolfgang Scheppe and IUAV Class on Politics of Representation, *Migropolis*Venice: Universita Iiav di Venezia, 2006) (accessed 2011).

[23] Shiotsu,Yoshitaka C.Student author -- CM and others, *Un'Economia Sommersa -- Documenting the Evolution of the Venetian Formal Economy* (Worcester, MA: Worcester Polytechnic Institute, 2010).

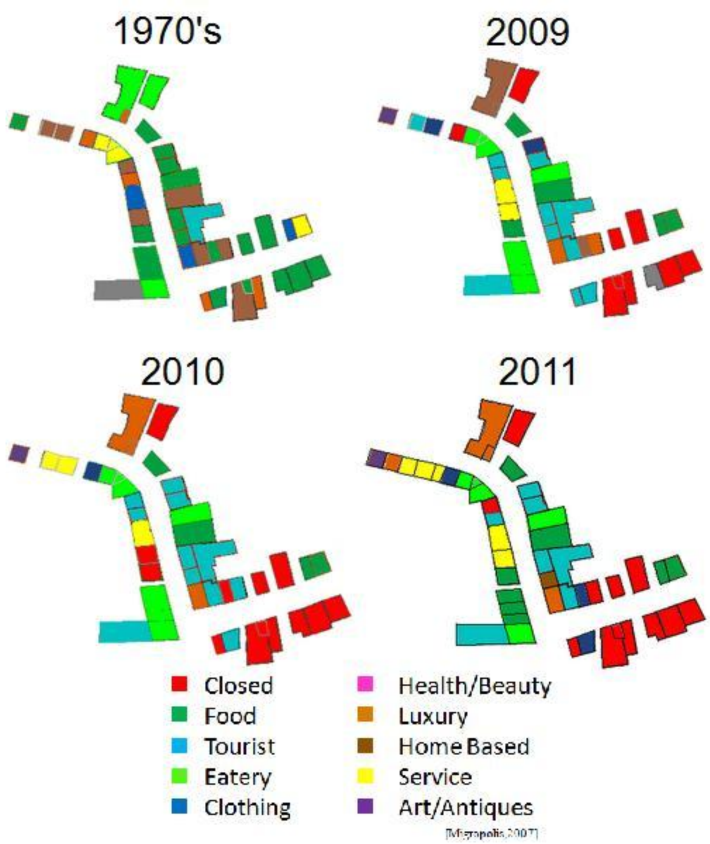


Figure 13: Case Study of Salizada San Antonin

This street is a strong indication of the decline of stores all throughout Venice, and more specifically, the decline of stores in a less touristy area. The street is still strongly affected by tourism, even though it is located in a more residential neighborhood. The specific percentage of each store type out of all stores present each year can be seen in Table 2. In the 1970's there were no closed stores on this street, but today the number of closed stores is at 26 percent. Although there was an increase in tourist shops since the 1970's, there was a decline of 6% since last year. This decline is important to recognize, again, because of the fact that this street is in more of a residential area. The local need may be beginning to prevail here over the tourist need. There was also an increase of 8% in food stores since 2010. This also shows a slight shift away from a more tourist-oriented focus back to the needs of the residents.

	Closed	Tourist	Food
1970's	0%	2%	42%
2009	21%	26%	12%
2010	28%	21%	9%
2011	26%	15%	17%

Table 2: Store Types on Salizada San Antonin From 1970-2011

This specific street actually shows the opposite trend to which the entire *sestiere* is experiencing. This is important to note because it indicates that a larger snapshot of the whole is needed to understand the big picture and major changes, rather than just a smaller data set. It is not reliable enough to classify an entire *sestiere* according to one specific area within the *sestiere*. This is not to say that a breakdown of specific areas within a *sestiere* is unnecessary. In fact, this closer look is a major indication that a micro-view is important in understanding the specific details behind changing retail such as demographics, tourism, and other various underlying causes such as the poor economy.

4.1.3 The Supermarket Effect in Castello

When examining the retail sector more closely in Castello, we questioned if the supermarkets had any effect on the closing of so many stores within the past seven years of research WPI has been doing. In order to do this analysis, we had to physically ask each supermarket when they opened. This posed some obvious problems considering the language barrier. In order to communicate with the Italian workers we had to translate some questions to ask which year the store opened. We also had to translate a statement that said we were asking this information for a school project so they knew were asking for a legitimate reason. We eventually got opening dates for three out of the five supermarkets in Castello; workers we asked in the other two supermarkets said they did not know and did not care enough to go out of their way to find out. This was a problem because we had no other way of gathering this information. Another thing to consider was that the information we gathered could not be taken as absolute fact because the workers may have remembered incorrectly or gave us the wrong dates making our analysis a bit weaker.

After gathering the dates and inputting them into our website, we took a look at the surrounding stores and noticed that at all of the major supermarkets there were more than five closed stores nearby. At one supermarket, Punto, there were over 40 closed stores. This was exactly what we expected, but there was also another surprising fact. Punto has seven basic necessity stores still open around it. The number of closed stores surrounding each supermarket can be seen in Appendix E. This made us question whether or not the supermarket had an effect on retail in that area or not.

From this data, we had to ask the question of whether the supermarkets or the closed stores came first. Did the supermarket force basic necessity stores to close or did the supermarkets simply fill the gap that closed stores were leaving? This analysis proved that we do not have enough information to base any solid conclusion off of. In order to make accurate conclusions, we must find out the exact dates of the openings of the supermarkets and the exact dates the closed stores went out of business. This information can only be obtained in future years and, hopefully, with the coordination of the city, records of closed and open stores can be collected.

4.2 Public Updating

Crowd sourcing, although a great option for keeping track of the most recent information, takes a lot more thought and consideration to implement than previously envisioned. For this reason, no solid public updating system was created. With the allotted amount of time we had to work on this project, crowd sourcing options were only able to be discussed. The major obstacle in our way was the fact that information has to be accurate if it is going to be publicized. We cannot have a multitude of spam and inaccurate information being entered into the system. In order to successfully crowd source, someone would have to be constantly monitoring our system for the rest of time, which is not a resource that we currently have.

However, within the confines of our project, two specific options for crowd sourcing are present: the Venipedia pages and/or entering information straight onto our website. The issue that arises with public access to updating our website is that a user would have to be taught how to input information correctly. Also, at the moment there is no way to create limited access to the account; therefore anyone who logs in could delete everything in the entire database, which poses obvious issues.

4.3 Venipedia Pages

The original plan was to create a Venipedia page for every store address that information was collected on. After a few discussions, a new alternative was decided on. Instead of creating a page for every store address, Venipedia pages were created for each of the 64 types of stores.

Each page was created based upon a Venipedia template, seen in Figure 13, which defines where all of the information on the page should go. Information was transferred from the database to the templates automatically with a program created by a series of PHP scripts. These PHP scripts break down the data that was collected by type and output the information in the correct order and in the correct format on the Venipedia pages. Most of the information was not entered manually; the only information that was entered manually was the two map screen shots per page.

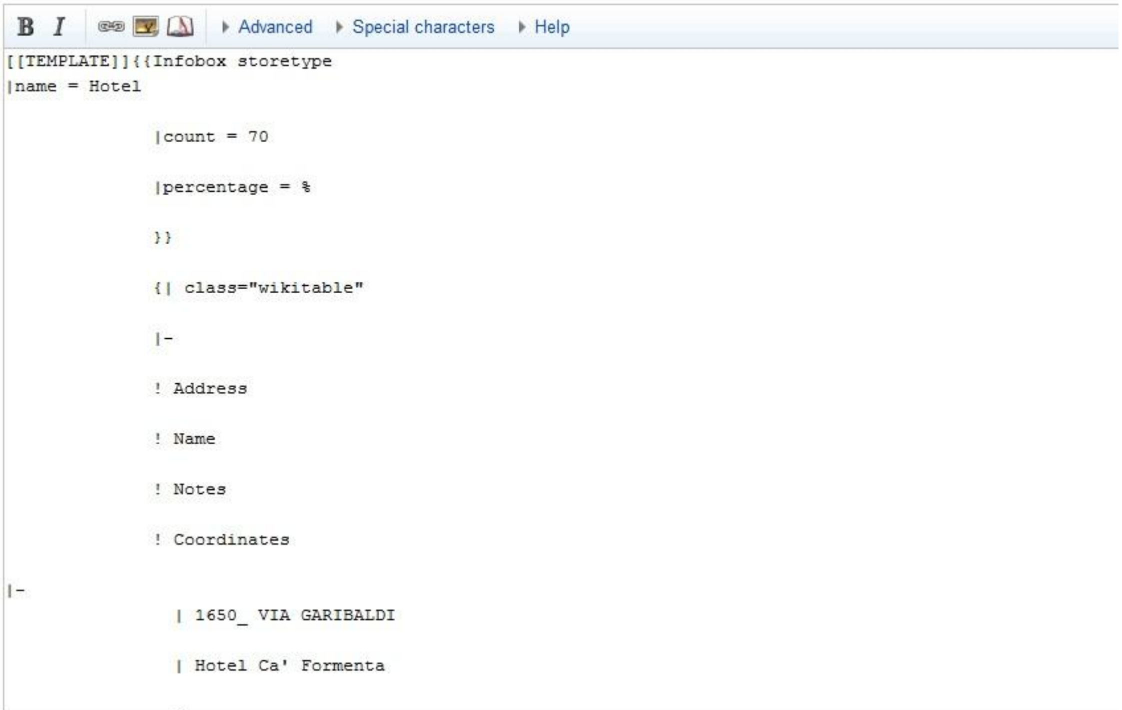


Figure 14: Venipedia Template

On each page is a listing of all store addresses that fall into that specific typology. Stores that were included were on the page were the stores in Castello collected in 2011. Each addressed is listed in ascending order. Not only is the address of each store included, but all the information collected about each store and the picture of the store front is included as well. Each page has a screen shot of the density map for that particular type as well as a screen shot of the location map. There is also an option to click on the maps which direct you to our website and dynamic maps. An example of the completed Venipedia pages can be seen in Appendix H.

4.4 Census Data

In order to accurately notice a trend between the population and retail evolution, census data collection was necessary. The last official census was completed in 2001, and is only completed every ten years; however, the City of Venice keeps track of population yearly as well[24]. In order to gain a better understanding of the population trends of the historic city center since the retail sector started evolving, census data was collected starting at the end of World War II until the present day. This graph, seen in Figure 15, shows a population decline of approximately 115,000 residents.

[24] Unknown, "**Servizio Statistica e Ricerca**," Citta di Venezia, http://www.comune.venezia.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/4807

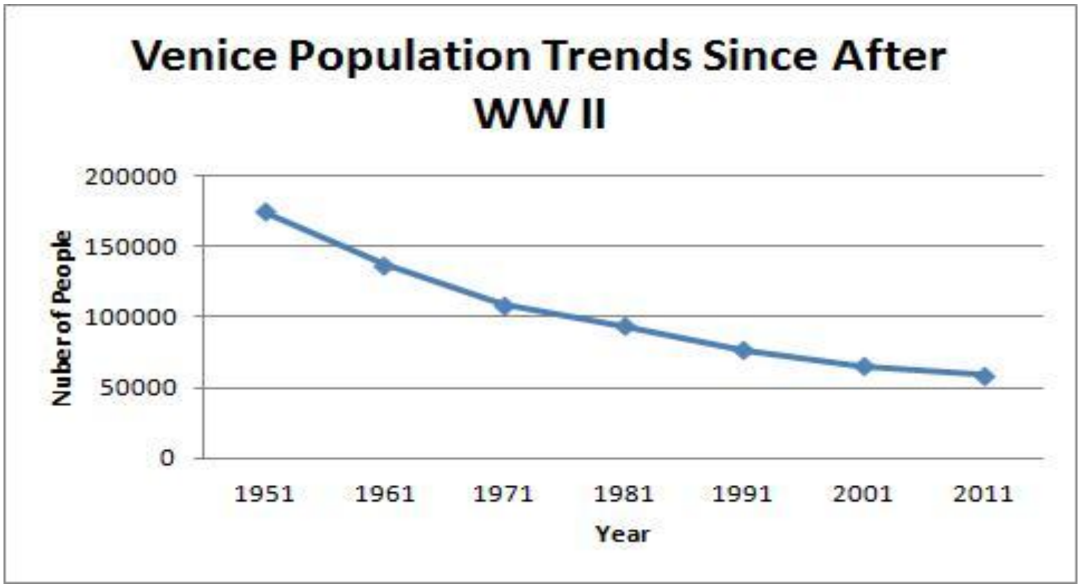


Figure 15: Population from 1951-2011

Since the Venice Project Center has collected data about the retail sector only since 2004, there was no way to directly compare both statistics unless we used data only from 2004 to 2011. This population trend can be seen in Figure 16. Through this data, we see that there is declination of approximately 5,000 people just within these seven years. This is a decline of about 8% overall which 1.15% per year.

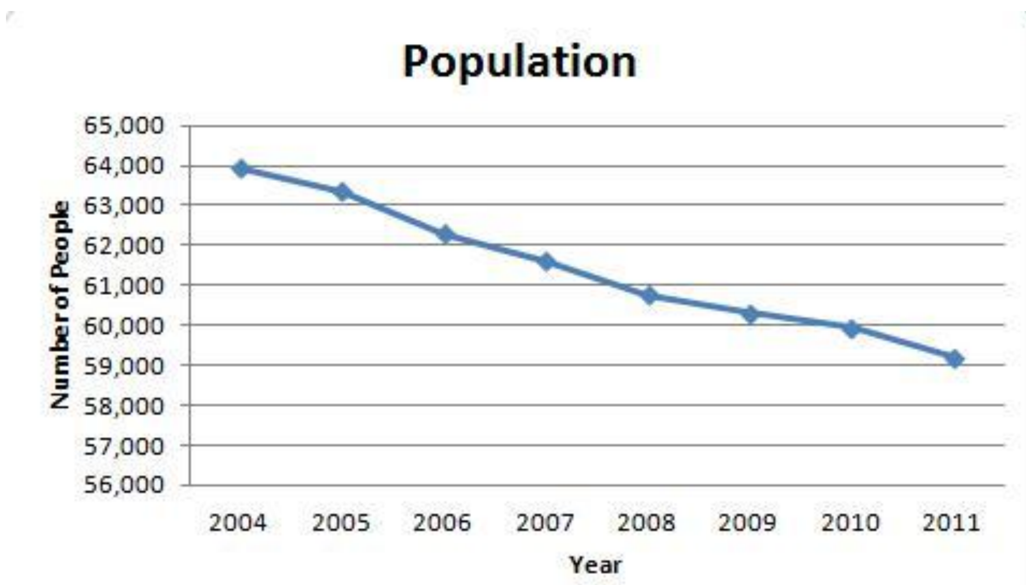


Figure 16: Venice Population from 2004-2011

In our research of the retail sector, we see an increase of closed stores, increase in hotels, and decrease in services. This observation shows a trend that connects both the census and our data collection. As population decreases, more stores are closing and services are being shut down because there is no demand for them. Hotels are becoming more prominent since large amounts of tourists are visiting the island. The ratio of tourists to residents on any given day on the island can be seen in Figure 17. Currently, the tourist population almost matches the resident population per day. This trend exhibits how the future of the islands may be one without residents and retail will be catering only to tourists.

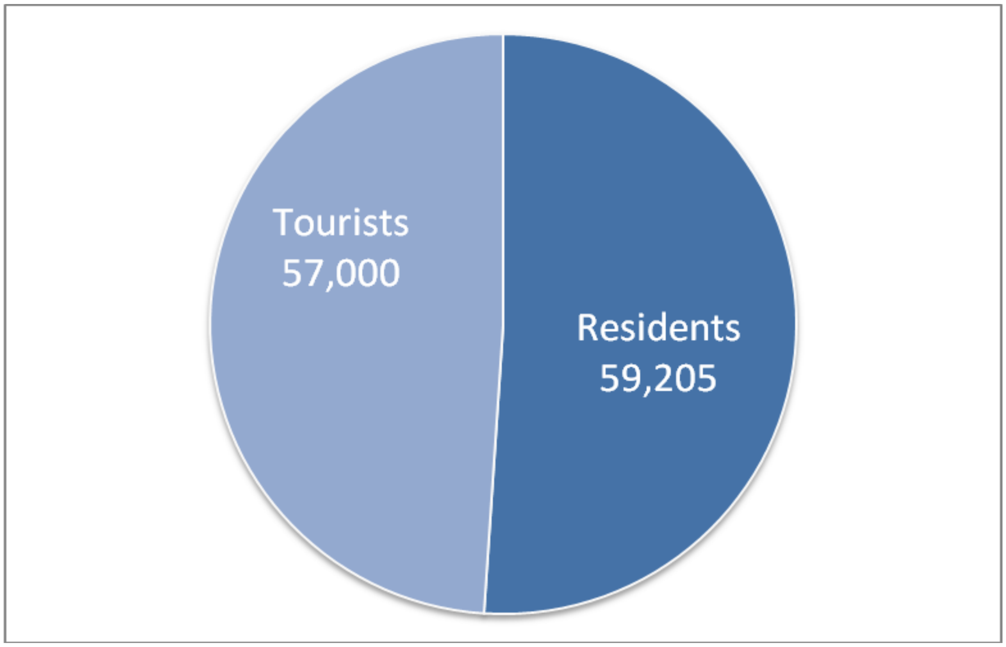


Figure 17: Number of Tourists and Residents in Venice per Day

4.4.1 Comfort Level Analysis

A more in depth look into whether or not the needs of the residents of Venice are being met was conducted. A comfort level analysis was completed for the *sestiere* of Castello in order to see the distance between where the residents live and where they can buy their goods. The closer the distance, the greater "comfort" the resident is experiencing, and the better quality of life they are able to live.

By creating a density map of all of the stores that are considered to be a "basic need" of residents (any store that falls into the food category) and overlaying them with the current census tracts for the *sestiere* of Castello, a visual representation of comfort levels can be seen in Appendix I which contains the three images we made to analyze the comfort analysis in Castello.

What we notice from this analysis is that not all places in Castello are satisfying the needs of residents with the ease of stores in residential areas. Some of the most populated areas such as San Pietro are more than a couple hundred meters from basic necessity stores making it harder for people who live in that area. We also noticed that the closer you get to the Rialto Bridge (the Western part of Castello), the more stores are present. Unfortunately, this area does not have a lot of residents which further proof that the needs of all the residents are not being met.

5. Conclusion

In summary, Castello showed a significant increase in closed stores since 2004. The examined area showed a dramatic increase in hotels as well. This not only follows the trend of a declining population and increase of tourists but it also signals a growing demand for visitor-oriented accommodations. The decrease in service stores illustrates a diminishing need for resident-oriented stores since they are moving to the mainland.

Among other achievements, our team made a manageable, online database incorporated with an interactive map for future groups to use while collecting data in the Venetian retail sector. One of the main goals of this project was to develop a sustainable and repeatable process for consistency throughout future projects. Data must be collected over a long period of time in order to make accurate conclusions on the state of the Venetian retail sector. The maps were created with this in mind and the hope that future data would be added and visualized together with all past and present data. The maps are both visual and interactive so anyone can add their information. Any knowledge, past and present, is welcome to be added to the map to gain insight about the evolution since World War II.

The availability of technology enables further data collection in a neat and easy way in order to draw more conclusions than in past years. It is our hope that making this interactive map will enable further research in Venice to continue the analysis of store closures and the evolution of the retail sector and possibly set limitations where needed in order to help the retail sector remain balanced between resident and tourist needs.

In using this technology created, we were able to conclude that not all of the resident needs in Castello are being met properly because of the far distance between basic necessity stores and heavily populated areas. Most of the stores are located in areas where most residents do not live. To meet these needs, revitalization efforts such as the distributed supermarket would be beneficial.

The retail sector of Venice is certainly seeing rapid changes, not necessarily beneficial to the city. Overall we concluded that with such a dynamic retail sector, it is not sufficient to blame the changes on one underlying cause. It is a combination of things such as demographics, tourism, the advent of larger retailers, the flocculating economy and several other unknown variables.

6. Recommendations

To truly understand the retail sector of Venice and the phenomenon that has been taking place would require research and evaluation over the course of several years. For this reason, these additional steps should be taken into consideration by future groups as we believe they would be beneficial to the project.

6.1.1 Improve Data Collection Process

With over 30,000 addresses and 149 km of walkways in the six *sestieri* of Venice, collecting every store's data would take way too much time and effort for only seven weeks of time. To complete all *sestieri* would leave little to no time for analysis and implementation. To collect and analyze the most data, we suggest collecting data from one or two *sestieri*. The suggestion is to collect data from the earliest collected *sestieri*. For next time, the earliest collected are Cannaregio and San Marco. When going through the actual process of collecting data, go on a day by day basis as far as entering data into the computer. Once a collection day is complete, compile all data and pictures onto the website as soon as possible. This will save from having to do hours of tedious and repetitive work on the latter end of the project. It will also help in order not to rush towards the end of the term.

Start the collection process of past data early in preparation. It takes a lot more time than one would think to find this past data. Take data from the City of Venice and compare to any and all data collected in past IQP projects. These means email sponsors as early as possible and try to continue emails going so no contact is lost. After receiving as much data from the internet, past IQPs, and sponsors, analyze the pictures received from the 1990's that no past project has had time to analyze. Make sure to ask the advisor for all resources he has, both in Worcester and at the Venice Project Center.

Once in Venice, continue to keep in contact with the sponsors. Also try and talk to as many elders as possible who have a rich memory of the past. Get in contact with as many of them as possible and ask them if they remember what stores used to be in certain areas to get a good picture of the past. Try to get more than one opinion to make sure the information is accurate as accurate as possible.

Another way to make sure data collection is as accurate as possible is to use the same standard field collection form throughout the group. Collect as much information about a store as possible. Collect the name, the hours, and five to ten items it sells. Try to recognize and state the primary item that the store sells in order to categorize the store into a specific typology. Be as familiar with the typologies as possible before you start field collection data. Know what you are looking for and what you are not looking for. Be critical about the typologies and add any if necessary. A problem in the past has been that there was no typology for funeral services. We suggest adding in a classification for these stores, as well as considering adding one for post offices, banks, and medical services (doctor's offices, dentist's offices, hospitals etc).

6.1.1.1 Create a Mobile Application

A strong recommendation we have is for future groups to really focus on design and creation of a prototype for a smart phone application for data collection. This application should allow the user to take pictures, properly categorize, name, and enter any other known information about the store. The application should also upload all of this information directly to the website that was created this year. This recommendation will save future researchers large amounts of time because there will be no dealing with physical papers to collect data. Data collection and data entry will also become one streamlined process.

6.1.2 Continue to Upkeep the Website for Retail Information

Even if the mobile application does not get past a prototype phase, it is strongly recommended that all future groups continue use of our website. It is difficult to create a new website and map every year for new information. It is also time consuming and quite literally a waste to do so if one already exists. Not only is it easy to use, but this way all data collected will be kept in one succinct place and a real, more in depth, analysis can be done for each year information is added. The evolution of the retail sector will be much clearer if all information is accessible in one place year after year.

6.1.3 Update Venipedia Pages

Along with the upkeep of the website, an upkeep of the Venipedia pages we created this year is necessary. The Venipedia pages are able to show past and present information for each typology. It shows what used to be there, what time it used to be there, and what is there now. Because pictures of the storefronts are included, you not only get a conceptual screenshot of the past, but a visual one as well.

6.1.4 Explore and Implement ways to Crowd Source

The modern concept of crowd sourcing in the Internet age is simultaneously very powerful and dangerous. While we are thrilled to be able to capture a wide variety of information from the local population, we need to be able to verify the authenticity of this information. This certainly presents a unique challenge, but we suggest collaborating in an attempt to develop a method to determine how accurate crowd sourcing data is.

6.2 Implement ways to Manage the Retail Sector

Answering the question about whether or not there can and/or should be restrictions on specific types of stores that are allowed in certain areas is not one that we are authorized or qualified to accurately resolve. However, we have collected enough information to provide detailed information to those who are qualified to make this decision. Density maps for each store type were created so that location and quantity can be seen very easily in a visual way

Italy is a part of the European Union, meaning that Venice must follow all restrictions that are imposed within this union when it comes to laws and regulations of owning and operating a retail store. According to Olivier Boyland and Guiseppe Nicoletti, even though there are strong barriers when it comes to zoning an area for retail services, there is still a large number of business openings and closings because there are few restrictions on business entry once an area has been zoned for business. In other words, business owners come and go with a fairly quick turn over because they don't have to do much to start up their company. They are not required to register what type of trade they are conducting in their business operation and there is no school diploma necessary to run these shops[25].

The main focus for restrictions is on large stores. The major concern is that the larger the store, the more negative implications the store can have on urban planning. There is also a concern that the larger stores will cause too much competition for the smaller stores. The other main restrictions imposed on the retail sector (including both large and small stores) are on operating hours for religious reasons and to protect employees, and the freedom to set prices of the products being sold[26].The fear of imposing more restrictions is that there would be quantitative limits on new business owners entering into the retail sector. By implementing more licenses or permits to open stores, there is a greater risk of restricting competition[27]. However, it is our belief that competition restriction is not a bad thing in Venice's case, and therefore we recommend that there be some type of permit process put in place for both hotels

---

[25] Olivier Boylaud and Giuseppe Nicoletti, *REGULATORY REFORM IN RETAIL DISTRIBUTION*OECD,[2001]), http://www.oecd.org/dataoecd/30/52/2732142.pdf (accessed 11/10/2011).

[26] Ibid.

[27] Ibid.

and souvenir shops. The major increase in hotels is a great concern of ours because it shows a major shift to catering towards tourists.

The City of Venice has to abide by all of these European Union laws; however, the information provided in the maps we created will still be very helpful in future decisions about the retail sector. It will provide the city with strong evidence to present to the European Union to prove that Venice is a unique city that should have more control of its own retail sector. This report will also be provided so that they may have our evaluations to look back on for years to come.

6.2.1 Propose a Distributed Supermarket

After exploring several areas of Castello where a distributed supermarket could potentially open, it was decided that the best area for revitalization is a square in the Santa Elena area. This section of Castello is not only home to many residents, but also has experienced several business closings. The square in Santa Elena used to have every store front open and bustling with business; however, since stores starting shutting down, it too has suffered. A panoramic photo showing the current state of the square can be seen in Figure 14. Only two shops in the entire square are actually still up and running.

To get a stronger idea of the capabilities of the square, we walked around with a local resident and restaurant owner. He provided us with information such as square meters and cost of each store front. As one can assume, the larger the square meters of the store, the more the store front costs to rent. The average price of each store according to square meters can be seen in Table 3. These rental values are considered to be quite reasonable and so this specific square would be cost effective to revitalize.

Square Meters of Store	Approximate Cost (Euro)
$20m^2$	500.00
$25m^2$	600.00
$35m^2$	700.00

Table 3: Approximate Cost of Store Rental By Square Meters

We also found out that this idea of a distributed supermarket was previously brought up to the people who had businesses in the square in 1995, but it did not catch on. The restaurant owner had proposed this thought to his fellow store front owners. Each owner would still be responsible to sell of their own goods; however things such as promotions, advertising and product buying would be done collectively. This way they would all save money. There was not enough interest for this plan to be put into action.

After this conversation it was decided that the distributed supermarket model would still be a very feasible option. Each of the stores would house one of the follow main products: meat, dairy, bread, fruits, vegetables, dry goods, fish, and a deli. The first issue we discovered was that it is illegal in Italy to exit from one store without a receipt. “According to Italian law, not only must a shopkeeper issue a receipt but those buying goods must be able to produce it on demand” when appropriate (Roderick Conway Morris). This is to make sure stores are claiming the current taxes and customers have proof of purchase[28]. This would pose a problem for the customers as they travel from storefront to storefront to get their different products. The most obvious solution would be to change this receipt law; however, Italy, as well as all the other countries united in the European Union, has little control over their retail rules and regulations.

In order to work around this, alternative solutions were considered. The easiest solution would be to establish an overhang connecting all of the stores so technically a customer does not leave the store front. In Italy, these overhangs are very common. They are called *plateateci*. An owner is allowed to rent the space around his or her shop out to 1 meter away from the outside walls in all directions to create their own *plateateco*. Since each store would be right next to the other, there would be no gap between *plateateci*. This would help solve the illegality of one leaving a shop to go to another.

The last result that was concluded about this distributed supermarket model was the issue of paying in the end. It was discussed that a smart cart could be a possibility, but each cart is expensive and then every customer would be forced to use one, even if they were just getting one or two items. The cart scans and recognizes each item as the customer puts it into the cart, making the check out process very quick and easy. However, each cart costs more than the actual rental of the storefront itself, and therefore does not seem like a reasonable or feasible option. Our solution to an efficient and speedy check out would be simply to install a *plateateco* and check similarly to a traditional grocery store having both options for outside (under the *plateateco*) and inside (in the store with the largest square meters) the distributed supermarket. Our interpretation of how this distributed supermarket would look can be seen in Figure 14. Each product has its own storefront yet they are one united business.

---

[28] Roderick Conway Morris, "When in Italy, Keep that Receipt!" *New York Times*1992, http://www.nytimes.com/1992/04/10/style/10iht-rece_0.html (accessed 12/14/2011).

Figure 18: Distributed Supermarket Concept

6.2.2 Propose a Campaign to Change Laws in Specificity to Venice

Along with the challenge of crowd sourcing, another challenge is limiting store types. Limiting store types would allow for a variety of stores in an area. This would solve the problem of having the same stores right next to each other and allow for a better variety and selection for their customers. The major problem in Venice is that, it is too easy for store owners to open up any type of shop they want, wherever they want, and however they want. This poses the problem of having too many stores in one place. For future projects, we suggest to make a campaign to the European Union, proposing a law change to limit certain store types and provide it to the city. Some strong evidence would be to show how important it is to Venice that there is a limitation in order for it to thrive as a residential city as well as a tourist town. Other things to show would be how much research multiple groups have done in order to see where the problem is and that more than one person cares about this city. Not only has WPI students done multiple studies, but so has COSES and the City of Venice. Researchers have shown the decline of residents and overwhelming amounts of tourists, the amount of closed stores throughout the city at an astounding 20% of all stores, and also the amount of stores in which have changed from residential based to tourist based. This proposal has to have so much support and knowledge of the current law and strong enough evidence in order for the European Union to take it seriously.

7. Bibliography

"CPI Up 3.8 Percent from August 2010 to August 2011." *TED: The Editor's Desk* (2011), http://www.bls.gov/opub/ted/2011/ted_20110920.htm (accessed 9/27/11).

"Economy at a Glance." United States Department of Labor. http://www.bls.gov/eag/eag.us.htm (accessed 9/18, 2011).

"NACE-Code." Schober International. http://www.schober-international.com/nace.html (accessed 10/12, 2011).

Slowing Growth, Rising Risks. World Economic Outlook., edited by International Monetary Fund International Moneytary Fund, 2011.

Andrew Carey, Bryan Lee, Rebecca Meissen, and Aikanysh Syrgak-Kyzy. Worcester Polytechnic Institute: Worcester Polytechnic Institute, 2011, https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx2ZTEwc2hvcHN8Z3g6NDY0NDQ0NzIwYWNjOGYyYQ (accessed 08/25/2011).

Anonymous. "Revitalizing Downtown: Plan to Create Sales Tax-Free Zones in City is Worth Careful Examination." *Buffalo News*,2007.

Barry, Colleen and LUIGI COSTANTINI Associated Press. "Venice , Italy : Venice Dwindles, but Locals Won't Say Die." *Tulsa World (Oklahoma)*, November 15, 2009, sec. News.

Basker, Emek. "The Causes and Consequences of Wal-Mart's Growth." *The Journal of Economic Perspectives* 21, no. 3 (Summer, 2007): pp. 177-198, http://www.jstor.org/stable/30033740.

Bhatti, Jabeen and Nikolia Apostolou. "In Europe, Economic Meltdown Tears at Unity." *USA Today*,2011, http://www.usatoday.com/news/world/story/2011-10-11/eurozone-economic-meltdown-greece/50735002/1 (accessed 10/12/11).

Blake Cordish. "Revitalizing Downtowns." *Retail Traffic* 38, no. 4 (2009): 96.

Cantz, Hajte, Wolfgang Scheppe, and IUAV Class on Politics of Representation. *Migropolis* Venice: Universita liav di Venezia, 2006.

Newman, Cathy. Vanishing Venice: The World Tugs at the Lovely Hem of the City Thomas Mann Called. 08, 2009. 88+, http://go.galegroup.com/ps/i.do?&id=GALE%7CA213030824&v=2.1&u=mlin_c_worpoly&it=r&p=AONE&sw=w.

Olivier Boylaud and Giuseppe Nicoletti. *REGULATORY REFORM IN RETAIL DISTRIBUTION*: OECD, 2001, http://www.oecd.org/dataoecd/30/52/2732142.pdf (accessed 11/10/2011).

Paruchuri, S., JAC Baum, and D. Potere. "The Wal-Mart Effect: Wave of Destruction Or Creative Destruction?" *ECONOMIC GEOGRAPHY* 85, no. 2 (2009): 209-236.

Richard Owen. "
Venice in Peril as the Tourists Flood in and Locals Get Out." *The Times*,2007, http://www.timesonline.co.uk/tol/travel/destinations/italy/article1615074.ece (accessed 9/27/2011).

Roderick Conway Morris. "When in Italy, Keep that Receipt!" *New York Times*,1992, http://www.nytimes.com/1992/04/10/style/10iht-rece_0.html (accessed 12/14/2011).

Rodriguez,Luis M.Student author -- IE, Parsons,Stephen L.Student author -- ME, Duran,Sara I.Student author -- ECE, Bright,Lesley A.Student author -- BE, Carrera,Fabio Faculty advisor -- ID, and Jiusto,J.Scott Faculty advisor -- ID. *Decline of Venetian Food Stores as a Gauge for Social Change in the City*. Worcester, MA: Worcester Polytechnic Institute, 2007.

Shiotsu,Yoshitaka C.Student author -- CM, Infantino,Shanna L.Student author -- MAC, Chiacchiaro,Rhiannon Student author -- RBE, Anderson,Chelsey E.Student author -- CM, Gibson, Daniel Gilbert,Faculty advisor -- BB, and Carrera,Fabio Faculty advisor -- ID. *Un'Economia Sommersa -- Documenting the Evolution of the Venetian Formal Economy*. Worcester, MA: Worcester Polytechnic Institute, 2010.

Singh, Karen Student author -- ME, Patricia Student author -- BIO Pope, Christo,Andrew C.Student author -- ME, Chandonnet,Greg R.Student author -- CE, and Fabio Faculty advisor -- ID Carrera. *The Evolution of Stores and Decline of Residential Comfort -- the Availability of Necessary Goods in the Historical Center of Venic*e 2005.

U.S. Census Burea*u*. *US*A: United States Government, 2010.

University Department of Rural Health, University of Tasmania. "**Community Leadership in Rural Health: Maslow's Hierarchy of Needs Pyramid**." University of Tasmania. http://www.ruralhealth.utas.edu.au/comm-lead/leadership/maslow-diagram.htm (accessed October 5th, 2011).

Unknown. "**Servizio Statistica e Ricerca**." Citta di Venezia. http://www.comune.venezia.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/4807.

Vincent Aurilio. . Questions about Family Business, 2011.

8. Appendices

8.1 Appendix A: NACE Codes

NACE Code	Description	Type	Category
52.50	Retail sale of second-hand goods in stores	Antiques	Art/Antiques
92.32	operation of art facilities	Art	
52.24	Retail sale of bread, cakes, flour confectionery and sugar confectionery	Bakery	Food
52.22	Retail sale of meat and meat products	Butcher	
52.27.2	Other retail sale of food-Dairy	Dairy	
52.22	Retail sale of meat and meat products	Deli	
52.23	Retai sale of fish, crustaceans and molluscs	Fish	
52.27.1	Other retail sale of food-Candy, Chocolates, Confections	Candy Store	
52.11	Retail sale in non-specialized stores with food, beverages or tobacco predominating	Grocery Store	
5	Retail sale of fruit and vegetables	Produce	

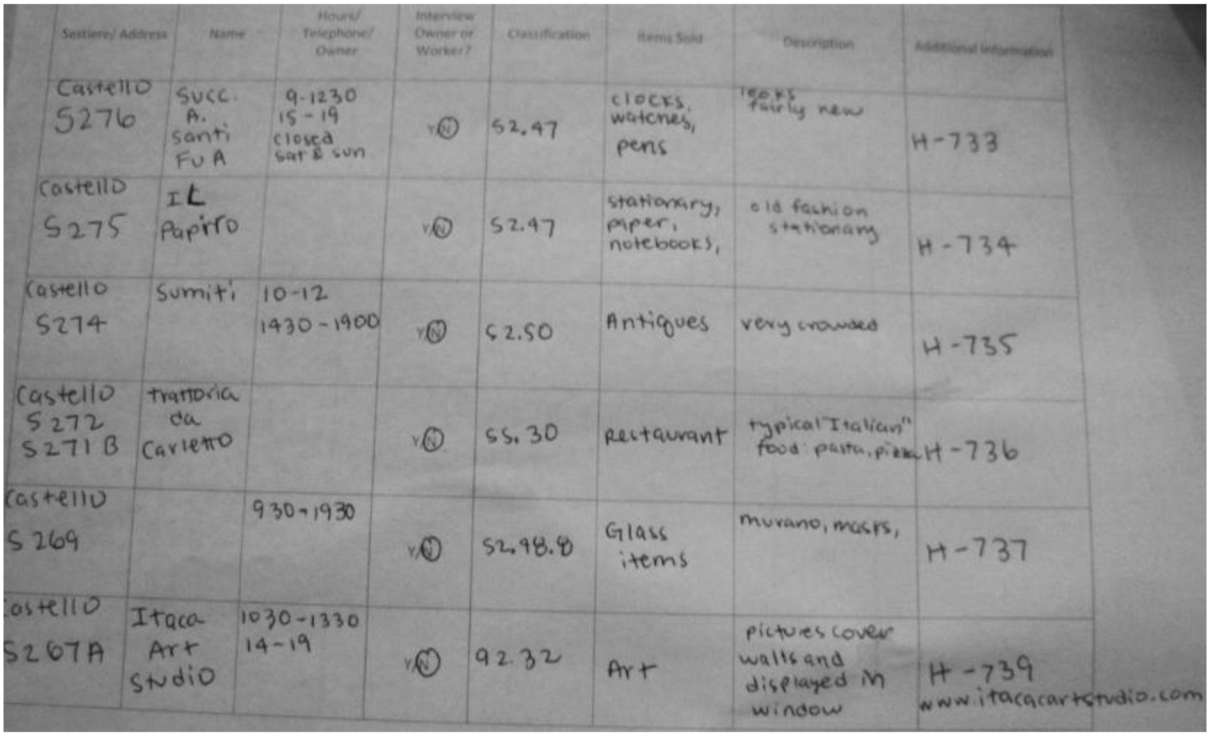
52.21			
52.27.3	Other retail sale of food-Pasta	Pasta	
52.25	Retail sale of alcoholic and other beverages	Liquor Store	
52.25	Retail sale of alcoholic and other beverages	Wine	
52.42.1	Retail sale of Accessories	Accessories	Clothing/Accessories
52.42	Retail sale of clothing	Clothing	
52.42.2	Retail sale of Jewelry	Jewelry	
52.43	Retail sale of footwear and leather goods	Leather Goods	
52.48.4	Other retail sale in specialized stores-Optical store	Optical Store	
52.50	Retail sale of second-hand goods in stores	Pawn Shop	
52.43	Retail sale of footwear and leather goods	Shoes	
52.42.1	Retail sale of Accessories	Undergarments	
-	-	Closed	Closed
55.40	Bars	Bar	Eatery

55.51	Canteens	Café	
55.51	Canteens	Gelateria	
55.51	Canteens	Pizzeria	
55.30	Restaurants	Restaurant	
52.46	Retail sale of hardware, paints and glass	Hardware store	Home-Based
52.44	Retail sale of furniture, lighting equipment and household articles n.e.c	Household Goods	
52.12	Other retail sale in non-specialized stores	Non-specialized Store	
52.47	Retail sale of books, newspapers and stationery	Office Supplies	
52.47	Retail sale of books, newspapers and stationery	Books	Luxury
52.48.1	Other reatil in specialized stores-Electronics	Electronics	
52.48.2	Other retail sale in specialized store-Entertainment	Entertainment	
52.48.6	Other retail sale in specialized stores-Pet Store	Pet Store	
52.48.7	Other retail sale in specialized stores-Religious Goods	Religious Goods	

52.47	Retail sale of books, newspapers and stationery	Stationery	
52.41	Retail sale of textiles	Textile	
52.11	Retail sale in non-specialized stores with food, beverages or tobacco predominating	Tobacco Store	
52.48.9	Other retail sale in specialized stores-Toys	Toys	
93.02	Hairdressing and other beauty treatment	Barber	Service
93.01	Washing and dry-cleaning of textile and fur products	Dry Cleaner	
52.48.3	Other retail sale in specialized stores-Florist	Florist	
93.02	Hairdressing and other beauty treatment	Hair Salon	
52.74	Repair n.e.c.	Metal Work	
74.81	Photographic activities	Photo Store	
70.31	Real estate agencies	Real Estate	
52.72	Repair of electrical household goods	Repair	
6	Activities of travel agencies and	Travel	

3.30	tour operators; tourist assistance activites n.e.c.	Agency	
5 2.48.10	Other retail sale in specialized stores-Video Store	Video Store	
5 2.74	Repair n.e.c.	Wood Work	
55 .10	Hotels	Hotel	Tourist
5 2.48.8	Other retail sale in specialized stores-Souvenirs	Souvenirs	
5 2.33	Reatil sale of cosmetic and toilet articles	Beauty Care	Heath/Beauty Care
5 2.33	Retail sale of cosmetic and toilet articles	Cosmetics	
9 3.04	Physical well-being activities	Fitness	
8 5.10	Human health activities	Health Care	
5 2.48.5	Other retail sale in specialized stores-Perfume	Perfume	
5 2.32	Retail sale of medical and orthopaedic goods	Pharmacy	

8.2 Appendix B: Field Collection Form



Sestiere/ Address	Name	Hours/ Telephone/ Owner	Interview Owner or Worker?	Classification	Items Sold	Description	Additional information
Castello 5276	Succ. A. Santi Fu A	9-1230 15-19 closed sat & sun	Y N	52.47	clocks, watches, pens	'80s fairly new	H-733
Castello 5275	IL Papiro		Y N	52.47	stationary, paper, notebooks,	old fashion stationary	H-734
Castello 5274	Sumiti	10-12 1430-1900	Y N	52.50	Antiques	very crowded	H-735
Castello 5272 5271 B	trattoria da Carletto		Y N	55.30	Restaurant	typical "Italian" food: pasta, pizza	H-736
Castello 5269		930-1930	Y N	52.98.8	Glass items	murano, masks,	H-737
Castello 5267A	Itaca Art Studio	1030-1330 14-19	Y N	92.32	Art	pictures cover walls and displayed in window	H-739 www.itacaartstudio.com

8.3 Appendix C: Quantitative Store Types in Castello

Type	Number of Stores
Accessories	13
Antiques	7
Art	19
Bakery	17
Bar	37
Barber	1
Beauty Care	1
Books	6
Butcher	5
Cafe	18
Candy Store	3
Closed	214
Clothing	37
Cosmetics	4
Dairy	1
Deli	3
Dry Cleaner	3
Electronics	9
Entertainment	3

Fish	1
Fitness	2
Florist	5
Gelateria	6
Grocery Store	13
Hair Salon	18
Hardware Store	6
Hotel	68
Household Goods	20
Jewelry	27
Leather Goods	3
Liquor	3
Non-specialized Store	11
Office Supplies	2
Optical Store	5
Other	3
Pasta	1
Perfume	1
Pet Store	4
Pharmacy	8
Photo Store	5

Pizzeria	14
Produce	7
Real Estate	7
Restaurant	89
Shoes	14
Souvenirs	81
Sporting Goods	1
Stationery	7
Textile	5
Tobacco Store	16
Toys	9
Travel Agency	2
Undergarments	6
Wine	7
Wood Work	1

Total Stores Added This Year: 879

8.4 Appendix D: Categorization of Stores with Pictures

Category	Picture
Art/Antiques	
Food	

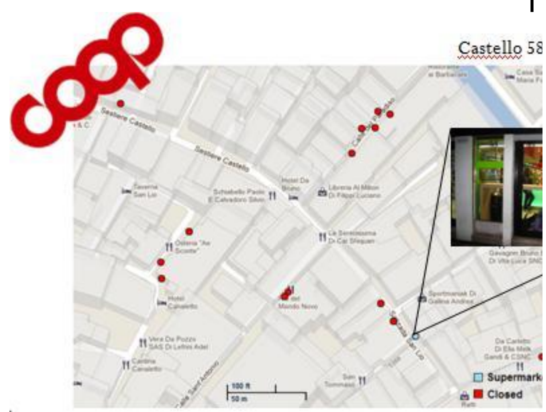
Clothing/ Accessories	
Closed	

Eatery	
Home-Based	

<table>
<tr><td>Luxury</td><td>
</td></tr>
<tr><td>Service</td><td>
</td></tr>
</table>

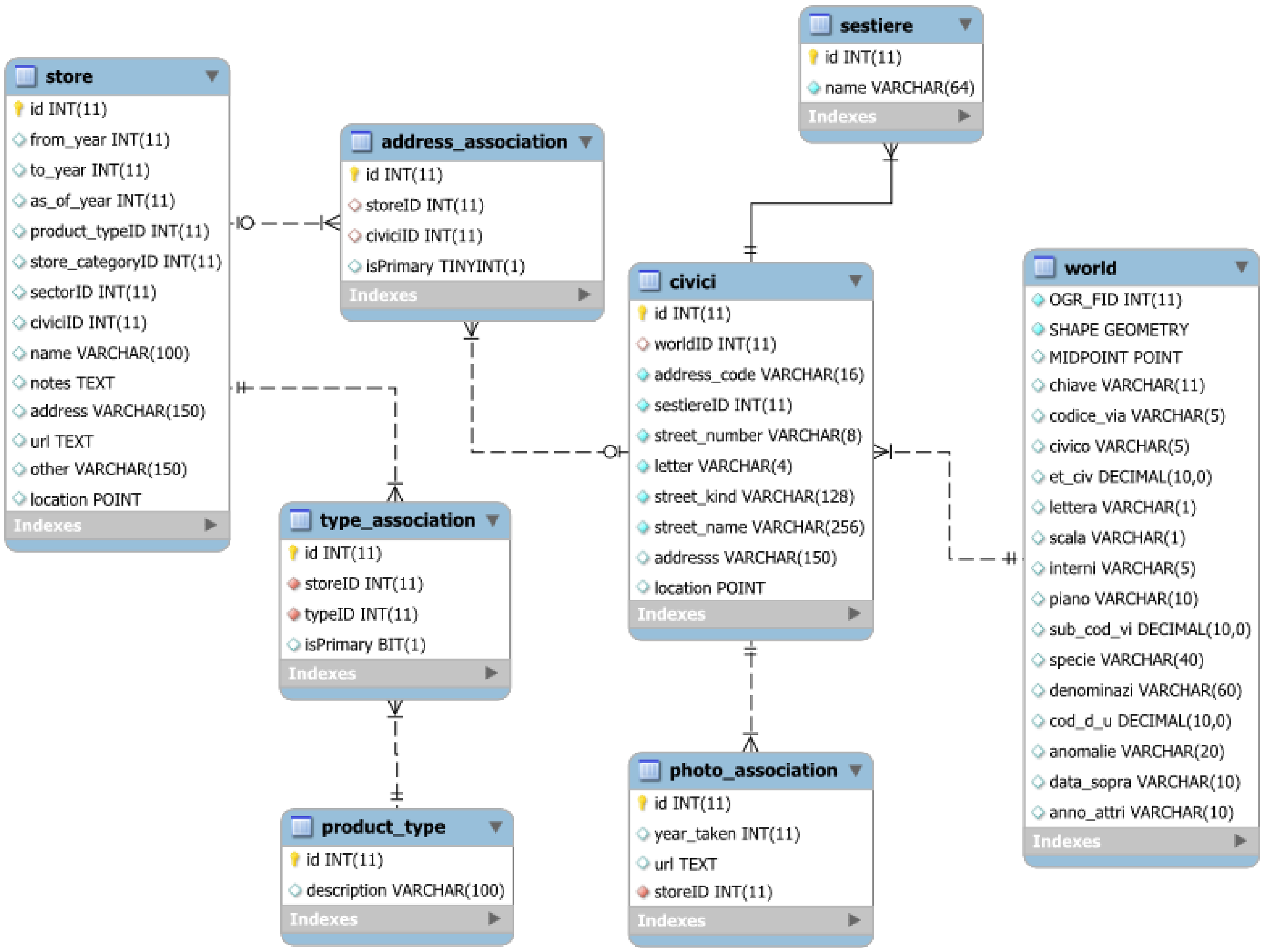
Tourist	
Health/Beauty Care	

8.5 Appendix E: Supermarkets vs. Closed Stores

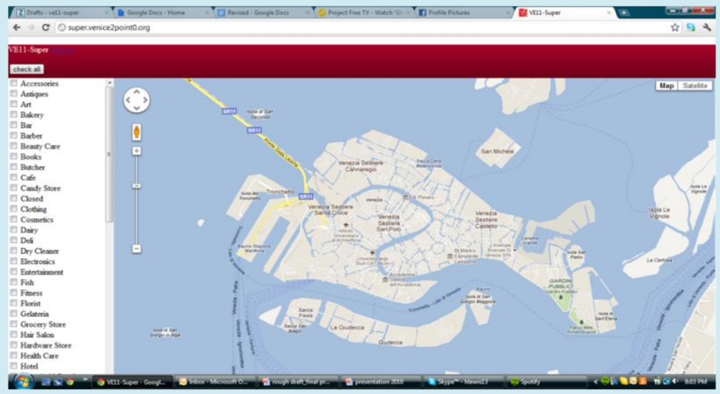
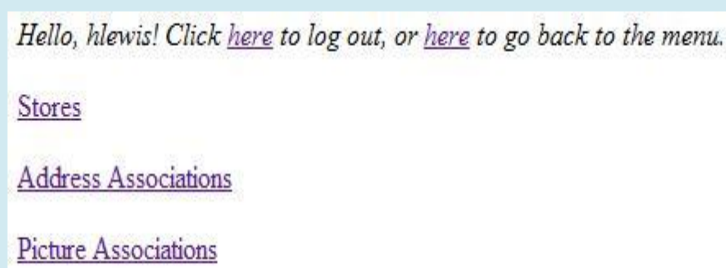
1. Castello 5989 Coop There are 17 closed stores surrounding this supermarket.	
2. Castello 5819 Coop There are 13 closed stores surrounding this supermarket which opened in March of 2011.	
3. Castello 319 Prix There are nine closed stores surrounding this supermarket.	

4. Castello 5065 Punto Sma There are 40 closed stores as well as 7 open basic necessity stores surrounding this supermarket which opened in 2003.	

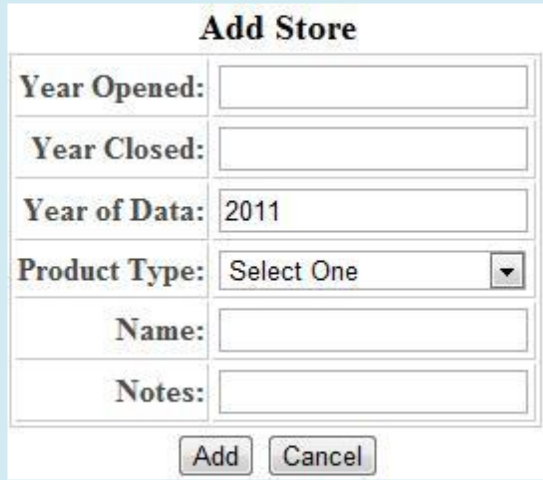
8.6 Appendix F: Data Structures



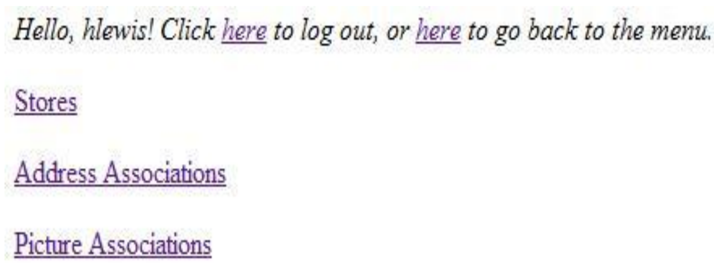
8.7 Appendix G: User Submission Form for Website

<table>
<tr><th>Steps</th><th>Pictures</th></tr>
<tr><td>1. Type <u>http://super.venice2point0.org</u> into the address bar. It will bring you to a screen with a map on the right and a list of categories on the left. At the top left-hand corner click Sign In.</td><td></td></tr>
<tr><td>2.Log in using Username and Password.</td><td>
</td></tr>
<tr><td>3. After logging in the main menu appears. To add a Store click Stores.</td><td>
</td></tr>
<tr><td>4. The new screen displays a list of each store. Scroll to bottom of screen and click Add.</td><td>
<table>
<tr><td></td><td></td><td></td><td></td><td></td><td>Fenice</td><td></td></tr>
<tr><td>6791</td><td>0</td><td>0</td><td>2011</td><td>Real Estate</td><td>Immobiliare Uscotti</td><td></td></tr>
<tr><td>6790</td><td>0</td><td>0</td><td>2011</td><td>Restaurant</td><td></td><td></td></tr>
<tr><td>6789</td><td>0</td><td>0</td><td>2011</td><td>Restaurant</td><td>Melo Grano Bon</td><td></td></tr>
<tr><td>6788</td><td>0</td><td>0</td><td>2011</td><td>Art</td><td>Alice in Wonderland</td><td></td></tr>
<tr><td>6787</td><td>0</td><td>0</td><td>2011</td><td>Toys</td><td>Jolly</td><td>Hours: 9:00am-12:30pm 3:30pm-7:30pm</td></tr>
<tr><td>6786</td><td>0</td><td>0</td><td>2011</td><td>Restaurant</td><td>Osteria al Garanghelo</td><td></td></tr>
<tr><td>6785</td><td>0</td><td>0</td><td>2011</td><td>Clothing</td><td></td><td></td></tr>
<tr><td>6784</td><td>0</td><td>0</td><td>2011</td><td>Cafe</td><td>Romina E Sara</td><td></td></tr>
<tr><td>6783</td><td>0</td><td>0</td><td>2011</td><td>Hair Salon</td><td></td><td>Hours: 9:30am-12:30pm 3:50pm-6:30pm, Saturday: 9:30am-1:00pm</td></tr>
<tr><td>6782</td><td>0</td><td>0</td><td>2011</td><td>Bar</td><td></td><td></td></tr>
<tr><td>6781</td><td>0</td><td>0</td><td>2011</td><td>Hotel</td><td>Hotel Ca' Formenta</td><td></td></tr>
<tr><td>6780</td><td>0</td><td>0</td><td>2011</td><td>Art</td><td>Domino Arte</td><td></td></tr>
<tr><td>6779</td><td>0</td><td>0</td><td>2011</td><td>Art</td><td>Via Eugenia</td><td>Hours: 10:00am-12:30pm 4:00pm-7:30pm</td></tr>
<tr><td>6778</td><td>0</td><td>0</td><td>2011</td><td>Optical Store</td><td>Paties</td><td></td></tr>
</table>
Displaying 1 - 20 of 6,792 Records
Page #: 1 Add Export Show/Hide Columns Order Columns Advanced Search
Search: Search Clear Search</td></tr>
</table>

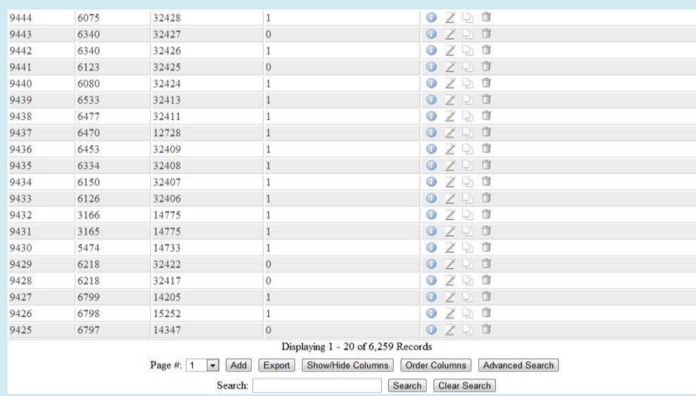
5. Enter all information you have. In Notes add information such as hours, telephone number, website address, or items sold. Click Add.



6. Back at the main menu click Address Associations.



7. The new screen displays a list of all the associated addresses. Scroll to bottom of screen and click Add.



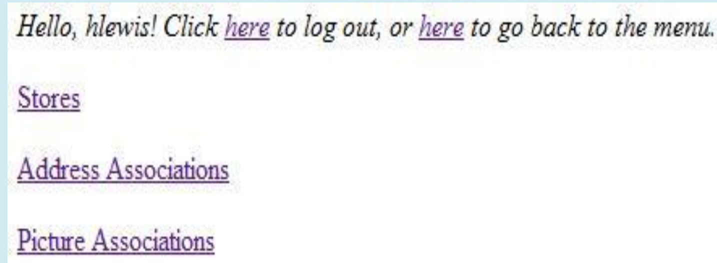
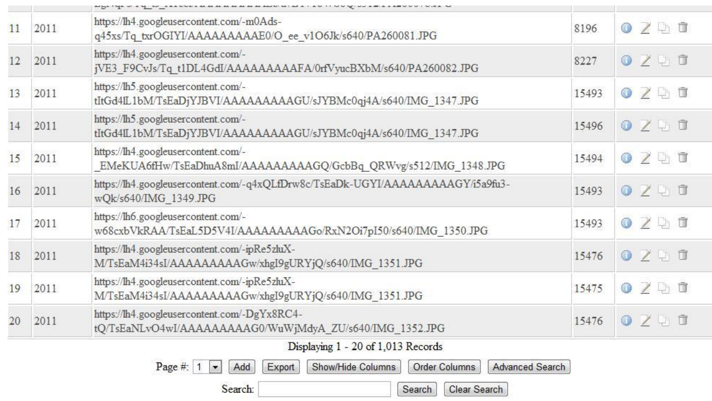
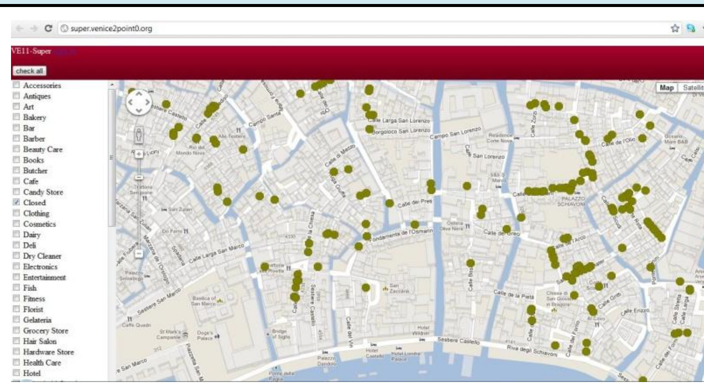
9444	6075	32428	1
9443	6340	32427	0
9442	6340	32426	1
9441	6123	32425	0
9440	6080	32424	1
9439	6533	32413	1
9438	6477	32411	1
9437	6470	12728	1
9436	6453	32409	1
9435	6334	32408	1
9434	6150	32407	1
9433	6126	32406	1
9432	3166	14775	1
9431	3165	14775	1
9430	5474	14733	1
9429	6218	32422	0
9428	6218	32417	0
9427	6799	14205	1
9426	6798	15252	1
9425	6797	14347	0

Displaying 1 - 20 of 6,259 Records

Page #: 1 Add Export Show/Hide Columns Order Columns Advanced Search

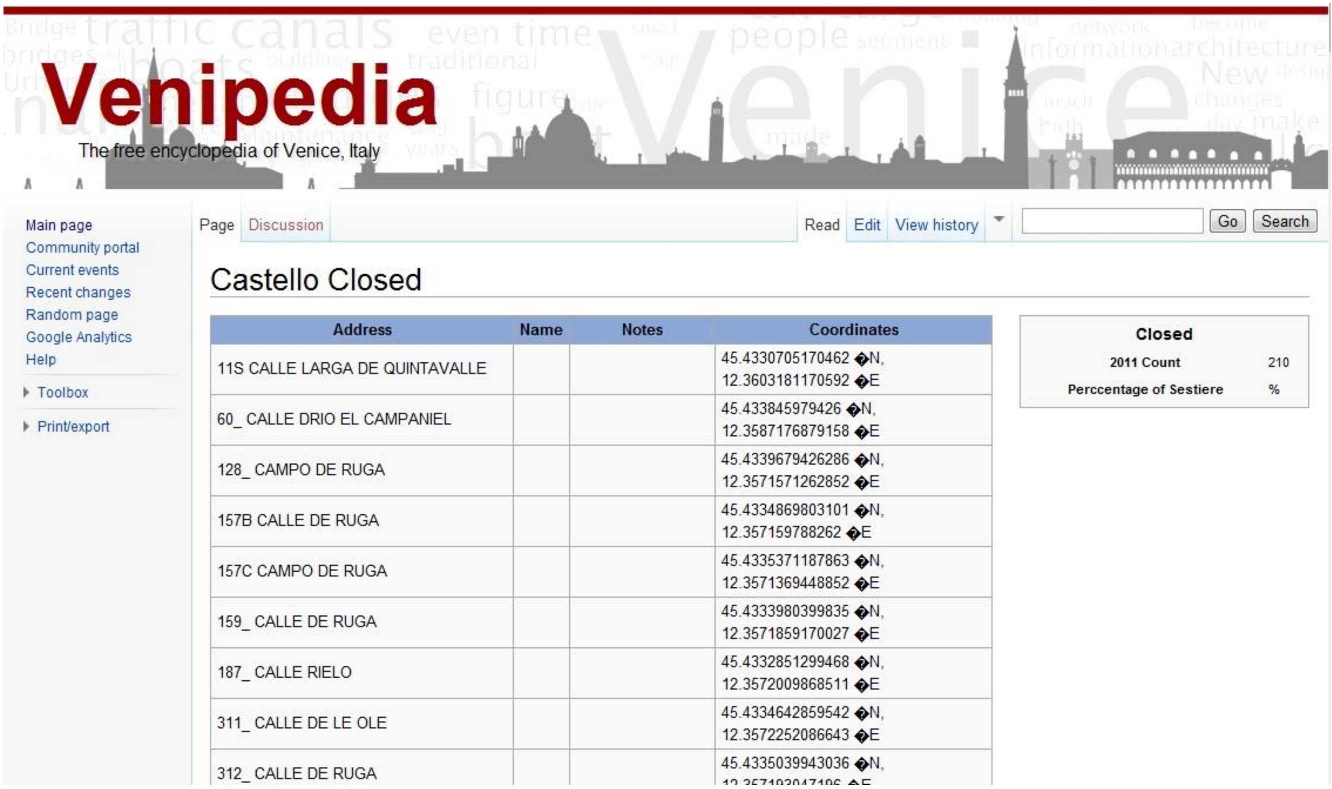
Search: Search Clear Search

8. Enter Store ID from store and select an Address. Select Is Primary? if it is the primary address. Click Add.

<table>
<tr><td>9. Back at the main menu click on Picture Associations.</td><td>
</td></tr>
<tr><td>10. The new screen displays associated pictures. Scroll to bottom of screen and click Add.</td><td>
</td></tr>
<tr><td>11. Copy URL from wanted picture and select corresponding Address. Click Add.</td><td>
</td></tr>
<tr><td>12. On main screen select any store category and view it on the map.</td><td>
</td></tr>
</table>

8.8 Appendix H: Venipedia Web Pages

Castello Hotels

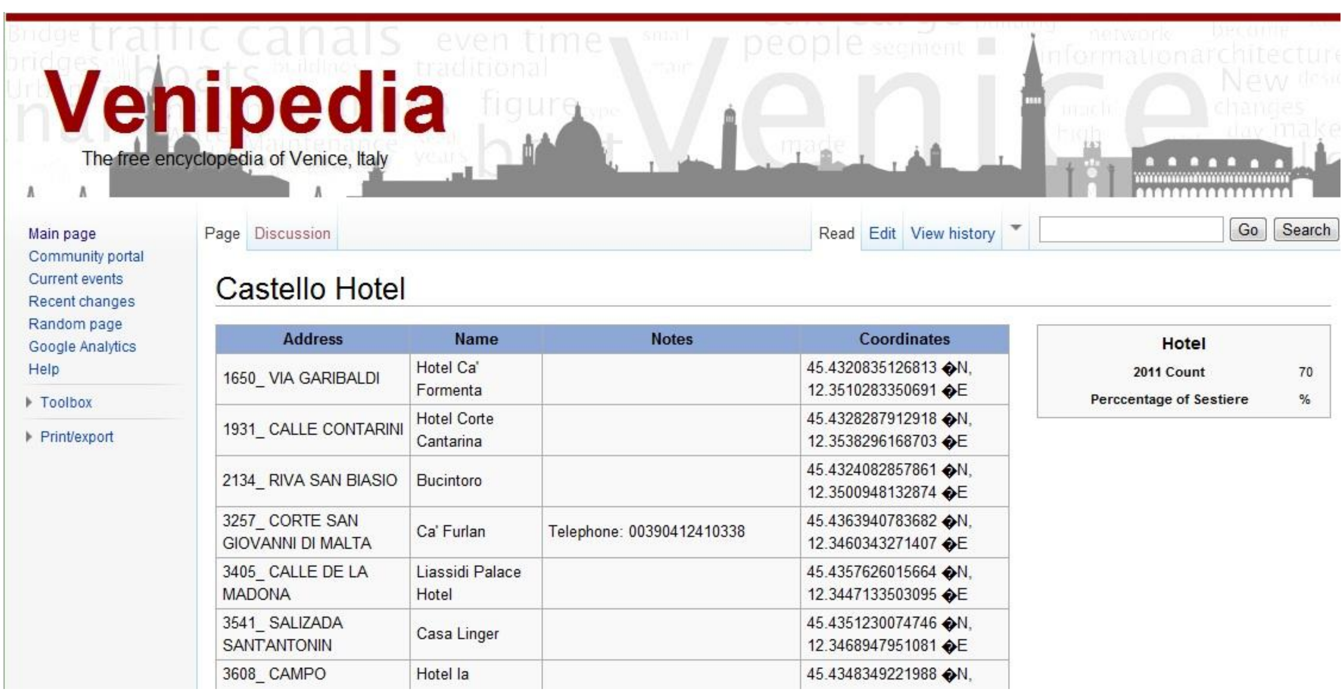


Castello Closed

Address	Name	Notes	Coordinates
11S CALLE LARGA DE QUINTAVALLE			45.4330705170462 �N, 12.3603181170592 �E
60_ CALLE DRIO EL CAMPANIEL			45.433845979426 �N, 12.3587176879158 �E
128_ CAMPO DE RUGA			45.4339679426286 �N, 12.3571571262852 �E
157B CALLE DE RUGA			45.4334869803101 �N, 12.357159788262 �E
157C CAMPO DE RUGA			45.4335371187863 �N, 12.3571369448852 �E
159_ CALLE DE RUGA			45.4333980399835 �N, 12.3571859170027 �E
187_ CALLE RIELO			45.4332851299468 �N, 12.3572009868511 �E
311_ CALLE DE LE OLE			45.4334642859542 �N, 12.3572252086643 �E
312_ CALLE DE RUGA			45.4335039943036 �N,

Closed	
2011 Count	210
Perccentage of Sestiere	%

Castello Closed Stores

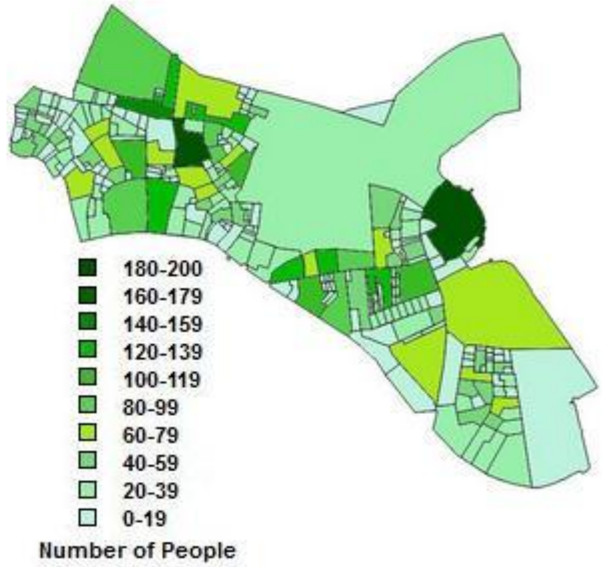
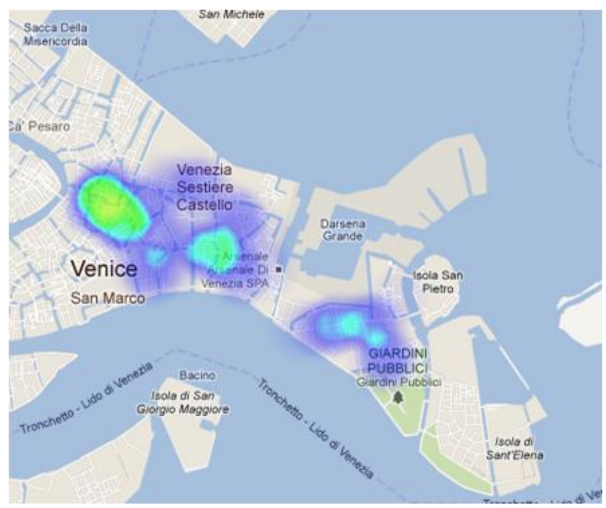


Castello Hotel

Address	Name	Notes	Coordinates
1650_ VIA GARIBALDI	Hotel Ca' Formenta		45.4320835126813 �N, 12.3510283350691 �E
1931_ CALLE CONTARINI	Hotel Corte Cantarina		45.4328287912918 �N, 12.3538296168703 �E
2134_ RIVA SAN BIASIO	Bucintoro		45.4324082857861 �N, 12.3500948132874 �E
3257_ CORTE SAN GIOVANNI DI MALTA	Ca' Furlan	Telephone: 00390412410338	45.4363940783682 �N, 12.3460343271407 �E
3405_ CALLE DE LA MADONA	Liassidi Palace Hotel		45.4357626015664 �N, 12.3447133503095 �E
3541_ SALIZADA SANT'ANTONIN	Casa Linger		45.4351230074746 �N, 12.3468947951081 �E
3608_ CAMPO	Hotel la		45.4348349221988 �N,

Hotel	
2011 Count	70
Perccentage of Sestiere	%

8.9 Appendix I: Comfort Level Analysis

<table>
<tr>
<td>1. This is a map of each district in Castello colored according to the population of that area. The lightest being 0-19 people, and the darkest being 180-200 people.</td>
<td>
</td>
</tr>
<tr>
<td>2. This is a density map of Castello of the basic necessity stores. These stores include food, household items, and pharmacies.</td>
<td>
</td>
</tr>
</table>

3. This is an overlay of the density map on top of the population map to see if the most populated areas have close enough basic necessities. As you notice, the most dense basic necessity areas are western Castello, central Castello, and a small area near Arsenale. Not a lot of people live near Arsenale and notice that the residents on San Pietro are pretty far from basic necessity stores.