Un’Economia Sommersa

Documenting the Evolution of the Venetian Formal Economy

An Interdisciplinary Qualifying Project submitted to the faculty of
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Authorship

We respectfully decline authorship to any one individual team member. Without the hard work of each team member, the completion of this project in regards to the data collection, databases, maps, charts, analyses, etc. would not have been as successful as it had been.

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Abstract

The formal business sector of Venice, Italy has evolved drastically since 1920 from a residential-based economy to one devoted mainly to tourism. This project explored these changes and documented the current formal economy of Venice, focusing on retail stores, hotels, and restaurants in the city. Additionally, the group compiled past projects' databases into a standardized, cohesive table that was used to observe the evolutionary trends in the formal retail sector. Finally, preliminary inquiries into the informal business sector and the economic impacts of flooding were conducted.

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1. Executive Summary

1.1 Background, Introduction, and Methodology

The City of Venice has always had to cope with a meticulous marriage to the sea since its maritime founding at Rialto in 452 AD. However it would seem to be true that especially in the last couple of centuries an extramarital affair with tourism has further strained the very basis of the city itself, both physically and internally, for as increased traffic wears away at the city’s earthen foundations, and waves of tourists continue to displace the local population, Venice is in as much of a danger of sinking into the Adriatic as it is into a surge of tourism. Past efforts to quantify the varying economic stresses, which afflict the City of Venice, have always proved elusive to the casual academic. Any attempts at research are often hindered by the overabundance of tourist related web pages trying to solicit one’s patronage instead of providing educational information on the economic situation of the city. The formal economy of Venice historically centered on its ports and industrial factories, representing the pinnacle of science, music, and technology in the Western hemisphere. Within the past century however Venice has suffered serious decline. The economic scene has changed dramatically from the city’s former glory to one of tourism. Where once Venice stood at the forefront of innovation, it now merely resides as a remnant of the past, thriving on the interests of tourists. In the place of green grocers, restaurants have cropped up and apartments are replaced with hotels. Specialized stores catering to the basic needs of the residents now sell Murano glass and Carnival masks at exorbitant prices, and as the Venetian population dwindles, the tourist influx continues to thrive. This project sought to address this amalgam of issues, laying the groundwork for investigations into the economy, in hopes that one day these problems can be solved in a way that will benefit the city and its residents instead of turning the islands into what is commonly referred to as ‘Theme Park Venice.’

The Venice Project Center has been collecting information about Venetian businesses since 2004. The databases created from gathering data on the size, shape, and typology of these stores, however, have all been completed and structured independently of each other. Additionally, a study conducted by the city of Venice has been obtained, but again does not display the same information in the same format as those completed by past Interactive Qualifying Projects (IQP). This is due largely to the fact that each group created their own field forms, based on what they felt was the most important data to gather. Never before had a group standardized the form, compiled the databases together, or laid a comprehensive plan for surveying the city in a systematic way. Finally, there has never been an economic project that focused on outlying factors, such as the informal economy and the environment.

The main goal of this project was to document the evolution and current state of Venice's formal economy, as well as analyze contributing factors. In order to accomplish this, we had to accomplish three main objectives:

- First, we needed to document Venice's current formal economy by focusing on the retail, restaurant, and hotel sectors. Focusing on these three main sections of the Venetian business sector were the best way to quantify the economic effects caused by the rise in tourism of the past century.
- After the initial data collection phase had been completed, it was possible to compile information about and display the evolution of the Venetian formal economy and lay

a foundation for future projects. The best way to do this was by collating the past and present databases and creating a standard form that future projects could use to continue this work.

- Our final objective was to devise strategies for future analysis and documentation of the effects of the informal sector and environment on the formal economy. This project took the first look into the informal sectors of the economy: the flower sellers, bag peddlers, and Rom beggars amongst others in an attempt to track their networks of operations. Additionally, we determined how to best utilize existing data to investigate the true cost of *acqua alta* regarding damage and loss of property and merchandise, as well as with regards to loss of productivity or sales due to flooded streets.

To accomplish our goals of gathering information on the current economy of Venice, as well as displaying the evolution of the city's formal business sector, we took to the streets for a month of active data collection (see Appendix A for our field form). Focusing on the retail, hotel, and restaurant sectors, we compiled physical information and photographs about each store and created a comprehensive database of two of the largest and most populated *sestieri* in the city. Afterwards, we compiled our database with those of past IQPs, as well as one generated by the city, to show our results in a public, standardized, and updatable manner. Additionally, we explored the activities of the informal economy (illegal vendors, beggars, etc.) and researched the economic impact of flooding via periodicals in order to create a platform for future projects wishing to take a more comprehensive look at the city's economy.

Our survey spanned two full *sestieri*, San Marco and Cannaregio (see Figure 1). Our database contains 1110 retail stores, 318 restaurants, and 152 hotels. Additionally, we have 113 documented instances of informal activity at varying times and locations within the city. The compiled database includes five total databases, including the 2004-2009 student databases and the comprehensive city data that spans back to the 1920's. For a detailed look at the information we gathered, please refer to Appendix A.

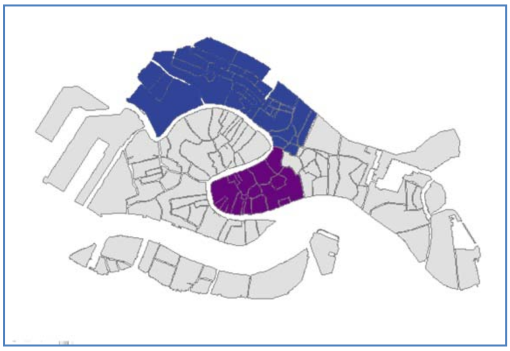

Figure 1: Areas of Venice surveyed in 2009.

1.2 Conclusions and Recommendations

Although there are almost twice as many retail stores in San Marco than in Cannaregio (988 versus 592 respectively), a comparison of percentages of each store type in both *sestieri* can be made to display the demographic differences between the two areas.

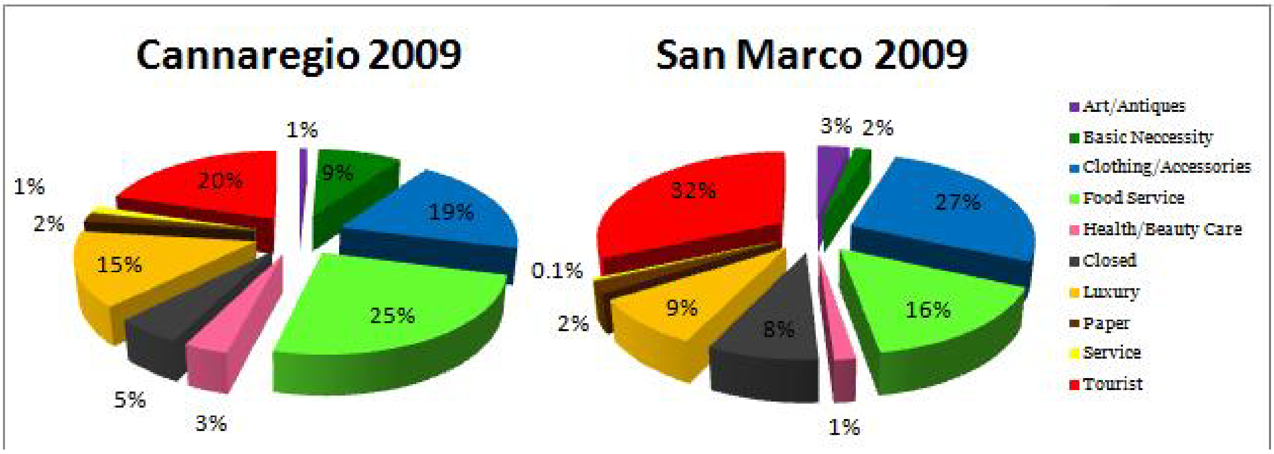

Figure 2: Comparison of Cannaregio and San Marco stores.

A number of trends can be analyzed from observations of the comparison exhibited by Figure 2. Basic necessity stores and resident services make up a larger percentage of Cannaregio than San Marco (there are barely any service shops in San Marco). However, the reverse holds true for tourist shops and closed stores, the latter of which may suggest that resident shopkeepers have left the area. It can be deduced from these statistics that Cannaregio is suited more to a residential atmosphere, whereas San Marco has a very tourist-based economy. These trends are not surprising as San Marco has always been the central hub for visitors entering the city, while Cannaregio has maintained a larger base of native residents. The typological distribution of the businesses in both s*estieri* is relatively similar, with the Food Service, Clothing/Accessories, and Tourist categories vying for supremacy, while the Basic Necessity, Art/Antiques and Paper categories dwindle in popularity. Given that stores providing food services and clothing can be considered to cater to both tourists and residents, it is safe to assume that Cannaregio with its much larger local population could still be considered residential even though San Marco would be typified as massively touristic.

After compiling the *Migropolis* data taken on *Salizada S. Antonin* with our own survey results, we created color-coded maps of the stores in the area. These maps show the evolution of the locations from the original survey (pre-1970) to 2007 and then 2009.

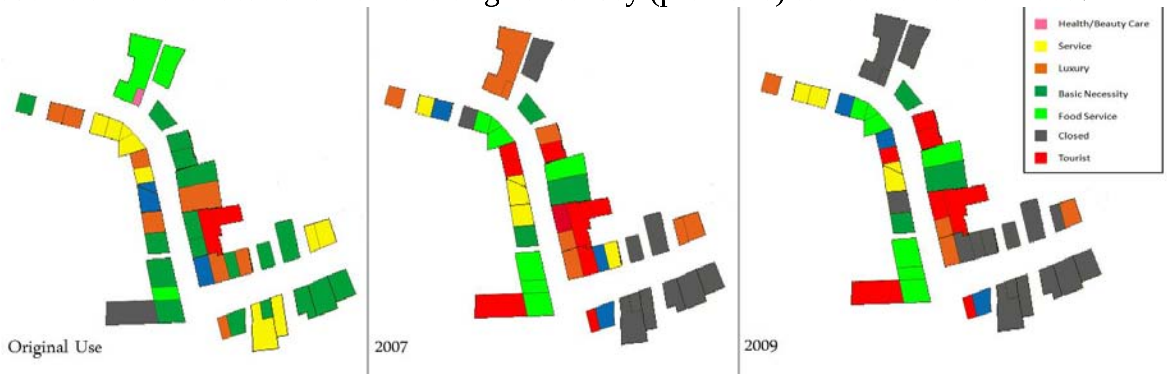

Figure 3: Evolution of *Salizada S. Antonin* in Castello.

This evolution demonstrates the early deterioration of a residential neighborhood in Venice. Many streets like this are transforming into a tourist location or becoming overrun with closed stores, even in more residential *sestieri* such as Castello. Figure 4 below illustrates the quantity of each store type in the three different surveys. It can be discerned from the graph that over the past 30 or so years, there has been an increase in both tourist shops and closed storefronts. Over time, the number of closed stores increased from 1 to 16 out of the sample of 43. Many of these empty lots used to be basic necessity stores, with half of them closing in only the last two years. Additionally, there has been a stark decrease in the number of basic necessity stores (18 to 2) and services, such as radio and television repair, cobbler shops, and watch making. All of these services cater to residents of the area, therefore, the decrease in the number of services depict the decrease in businesses catering to residents. All of these notable shifts heavily suggest that the economy is shifting towards catering to tourists over residents, even in areas that still cling to a mainly residential population.

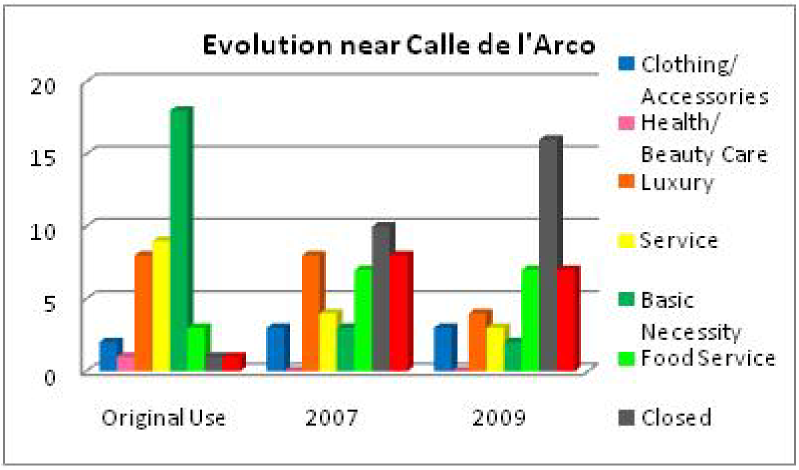

Figure 4: Quality changes in stores by type on *Salizada S. Antonin*

As of 2009, all past databases that contain data on the locations and evolution of the retail sector have been standardized to the extent that common categories have been assigned to describe the original typology of their stores dating back to 2004. However due to the time consuming process of reorganizing all the past work done at the Venice Project Center regarding the stores in Venice, the team did not have time to make the best of the data that was available. The following section includes some of the ideas we had for possible applications and analysis that could be performed on this data.

The prevalence of the informal activity that occurs in Venice has a profound impact on the Venetian formal economy. From Piazza San Marco to Riva degli Schiavoni and from Strada Nova to Lista di Spagna, the mid-afternoon and nights belong to the vendors who will cut prices down to a point where the buyer cannot refuse. These hotspot locations found for the bag sellers, flower sellers, beggars, and other vendors is just the beginning in what will become the evolution of the informal economy and a decline in the formal economy.

Figure 5: View of Google Earth with locations of informal activity.

Specifically, the retail stores that are located in the hotspot informal areas lose out on potential earnings for every bag, belt, toy, or wallet sold. Out of the 113 instances of illicit activity an estimated €5,767.01 to €12,666 potential Euros, that's $8,650.51 to $18,999 U.S.D., has been calculated away from the formal economy. A major percentage of this estimate is dependent on bag sellers. With the amount of formal bag stores roaming the city of Venice, the rise in bag sellers will be anything but helpful as the years past.

Since the focus of our project was mostly geared towards the formal economy, it did not seem feasible to create a second standardized database strictly for informal activities. Due to our limited knowledge of MapInfo and its user-compatibility issues (MapInfo is not a particularly intuitive program), we chose to manually add each instance of informal business into Google Earth. As a more in-depth search into this part of the economy occurred, however, this method of data entry could potentially prove inefficient. As such, we suggest designing a standardized, updatable database and creating maps using one of two strategies. Either learn MapInfo sufficiently to create a map layer of each instance, or develop a program (if one does not already exist) that will allow for the quick conversion of a database into a Google Earth file (extension .kml or .kmz).

The correlation of existing door height data with the compiled database yielded the following graph which encompasses a rough estimate of the stores most affected by tides at certain water levels.

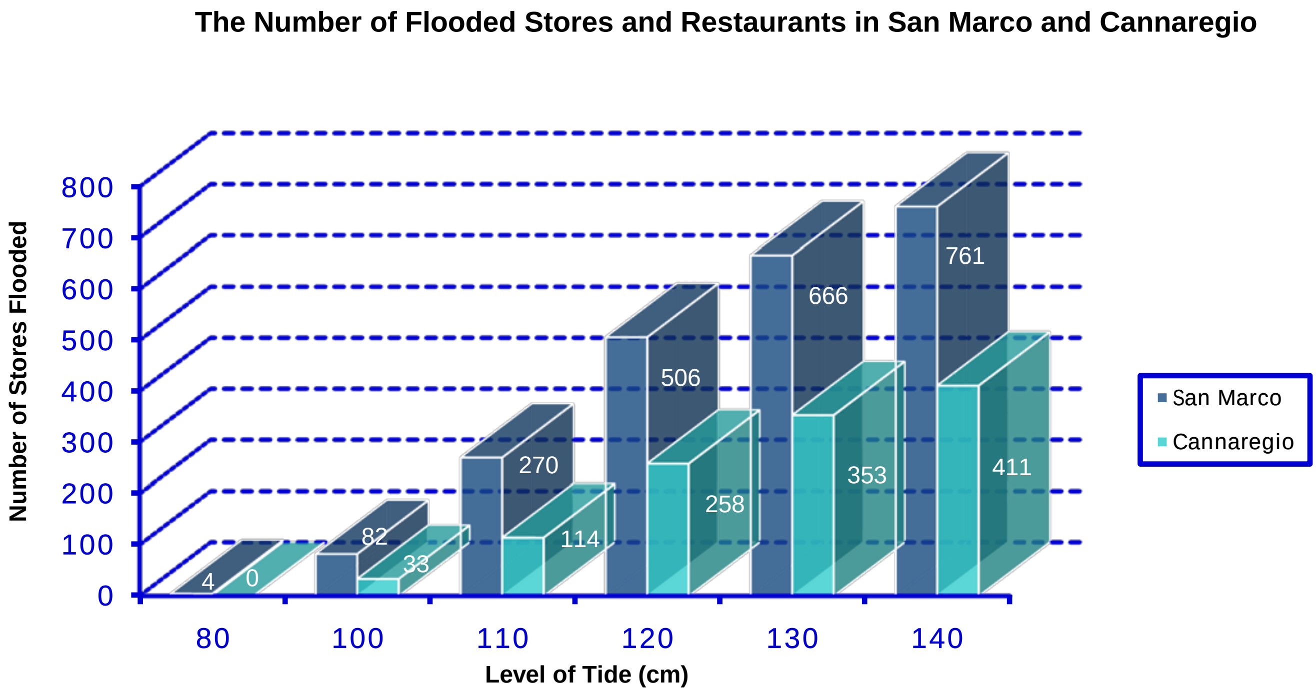

Figure 6: Graph of the number of stores affected by flooding in San Marco and Cannaregio.

Of particular note is the number of stores that become flooded in San Marco at 120, 130, and 140 cm (506, 666, and 761 respectively). This *sestiere* is in the lowest part of the entire city relative to sea level, and as the center of Venice's tourist income, the data shows that floods as high as 120 cm can amount to the flooding of 270 stores. While this data gives a good grasp on the number of stores affected at different tide levels, it does not display the degree of severity to which they are flooded. More data will have to be collected in order for a proper damage assessment can be predicted of future floods.

Throughout our research, our group compiled data relevant to estimating the effects of floods and *acqua alta* in the business sector. Using the doorstep heights we were provided with (which are displayed in our database), we suggest that the next group create an interactive map with variable tide levels. This display can be combined with the typology map, to create a comprehensive graphic which allows the user to calculate how many of each type of store gets flooded and how often. Additionally, an inquiry into average flood heights would help in calculating a real estimate of how drastically the environment could impact the economy, as opposed to the theoretical situation that the map would display.

Throughout our research, fieldwork, and analysis, our group drew conclusions about multiple facets of the project. At the onset of this project, we had hoped to give equal weight to investigations on the formal economy, informal economy, and the economic effects flooding. After arriving in Venice, we quickly realized that doing justice to any of these three objectives requires a separate project. Recommendations regarding these project ideas can be viewed in Section 7. Additionally, we learned that it was completely unreasonable to attempt to cover the entire city in less than 7 weeks, take detailed data on each store, and create a functional database. Instead, we concluded that it would suffice to survey as many full *sestieri* as we could within a reasonable time span of 4 weeks.

In regards to the current state of the formal economy, we documented 592 total stores, restaurants, and hotels in Cannaregio and 987 in San Marco. This suggests that Cannaregio is significantly more residential than San Marco. Furthermore, during both formal survey periods and casual observation, we distinctly noticed that the economy of San Marco depended much more heavily on tourists than that of Cannaregio. To verify that this was the case, we found that there were 169 restaurants and 92 hotels in San Marco compared to 149 restaurants and 59 hotels in Cannaregio. Because these two sectors (especially hotels) reflect a higher tourist presence, it is a fair assumption that the discrepancy in numbers stems from a larger tourist presence in San Marco.

During the compilation of our databases, past and present, we identified a few trends that correlated with our identified causes of economic change. A conclusion we drew involved the change in store typology. By comparing recent data to that of 2007, provided by *Migropolis*, we were able to notice a rise in stores in the food service and tourist categories. At the same time, the number of basic necessity and service stores has decreased. This change marks a clear shift from a residential to touristic economy.

Because of our limited time and resources, we were unable to gather any conclusive evidence regarding the impact of either floods or informal vendors on the economy, but we were able to realize some trends. There was a significant presence of beggars and illicit merchants on the streets, even more than we had realized. After only a cursory examination, we documented no less than 113 instances of informal activities, in 10 different categories. Further research into this topic will no doubt yield results. Similarly, we have concluded that a project about floods would be worthwhile given our data on doorstep heights and flood levels. Using both hypothetical simulations and first-hand observations, we discovered that there were a fair number of stores flooded in the city. Additionally, one of the most heavily affected areas was *Piazza San Marco*, which also happens to be the area of highest tourist concentration on any given day. These coinciding facts are bound to form a stable base for future projects.

Overall, we were pleased with our results. Our hypotheses were generally proven, and we gathered a fair amount of data to back our claims. Not only that, but we were able to establish useful foundations for future projects. Our hope is that in the coming years, IQP groups will be able to peruse our methodology and results and use them as starting points for important and substantial work.

2. Introduction

Since the end of World War II, the Italian economy has transitioned from agrarian to industrial, becoming the world's sixth-largest developed market economy. However, the business sector still faces ongoing hurdles. Recently, the global financial crisis has caused the rate of Italy's economic growth to decline. It is predicted that in 2009, there will be a 2% to 3% decline in Gross Domestic Product (GDP) as the value of the Euro decreases and world economies slow.[1] Additionally, a large underground market of illicit goods, which can be considered a source of lost revenue to the central government because those goods are not taxed, affects the Italian economy. This black market of bags, flowers, and souvenirs has a particularly strong foothold in Venice, where tourism has dominated the culture and economy of the city.

Although Venice is not the only heavy tourist spot in the world, or even in Italy, it is a place where the overpopulation of tourists not only physically affects the city, but also profoundly impacts the lives of the people who live there. In Venice, the number of tourists that visit each year is much greater than the number of residents living there full-time. Approximately 16.5 million tourists visit Venice annually, making the ratio of tourists to residents greater than 232:1 (14,000,000 tourist presences[2] to 60,311 residents as of 2006) at any given moment.[3] Because of this ratio, Venice's economic atmosphere has altered to the point where it caters more to tourists than to its own residents. With the advent of increased tourism, there has been a marked decline in the number of local retail stores that tend to the basic needs of residential life. In their place, scores of restaurants, souvenir shops, and hotels have sprung up, forcing many resident storeowners to change their manner of business, move away, or deal with a constantly decreasing consumer base.

Even with the myriad difficulties that the storeowners of Venice must face socially, there is yet another obstacle that many of the businesses deal with each month. The Venetian lagoon is at the mercy of the tides, and many areas of the city are guaranteed to flood multiple times a year. One area that faces some of the most extreme flooding, Piazza San Marco, is also the most touristic area in the entire city. As such, there are many stores that are forced to close during *acqua alta*, the high tides that cause the canals to overflow and spill into the streets. With all of these factors, the city and its business sector have sparked the interest of a great many groups, some who wish to simply analyze and document the city's economic evolution, and others who have a greater goal of saving the city in mind.

As it stands, there have been multiple studies conducted by scientists, engineers, and the Venetian government. Additionally, Worcester Polytechnic Institute has published Interactive Qualifying Projects that touch upon the economic situation, tourist setting, and flooding in Venice. Previous projects conducted under the supervision of Professor Fabio Carrera have extensively covered issues surrounding the retail sector, cargo delivery system,

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[1] "Background Note: Italy," U.S. Department of State, http://www.state.gov/r/pa/ei/bgn/4033.htm (accessed 10/6/2009, 2009).

[2] A presence is defined as one person on one day. For example, one person in Venice for two days counts as two presences.

[3] Fabio Carrera, Andrea Novello and Alberto Gallo, "Street Performances, the Role of Visual Analysis in the Microzoning of Public Space in Venice, Italy" Massachusetts Institution of Technology; Worcester Polytechnic Institute), .

and expenses incurred by excursionist tourists, or “day trippers” as they are popularly called, in the city of Venice. These past projects have provided the most recent raw data that can be utilized within our own socioeconomic compilation. For example, one team began the analysis we continued regarding the evolution of retail stores. This helped display the fact that Venice’s economy no longer relies primarily on residents, and has shifted to better cater to tourists. Additionally, past IQPs directly dealt with the then-current economic status of Venice, as well as its effects on the city’s residents. Despite the extensive studies, however, there were still many gaps to be filled.

Past efforts to quantify the varying economic stresses afflicting Venice have always proved elusive to the casual academic. Any attempts at research are often hindered by factors such as time and the overabundance of tourism-oriented stores focused solely on sales as opposed to actually providing information. Because of factors like these, past projects have done an excellent job of documenting the stores in a certain area, but there had never before been a comprehensive sweep of entire *sestieri*. Existing data needed to be updated because the annual documentation done from 2004-2007 did not occur last year. Furthermore, there have never been finalized, tested strategies for researching and analyzing effects on the formal economy such as the environment and informal economy. Finally, before this year there had been no standardized method for making the information about the Venetian economy available via an updatable, easily accessible database.

The main goal of this project was to document the evolution and current state of Venice's formal economy, as well as analyze contributing factors. In order to accomplish this, we had to accomplish three main objectives. First, we needed to document Venice's current formal economy by focusing on the retail, restaurant, and hotel sectors. Focusing on these three main sections of the Venetian business sector were the best way to quantify the economic effects caused by the past century’s increase in tourism. After we had gathered this data in the field, we had to compile information about and display the evolution of the Venetian formal economy and lay a foundation for future projects. The best way to do this was by collating the past and present databases and creating a standard form that future projects could use to continue this work. Our final objective was to devise strategies for future analysis and documentation of the effects of the informal sector and environment on the formal economy. This project took the first look into the informal sectors of the economy: the flower sellers, bag peddlers, and Rom beggars amongst others in an attempt to track their networks of operations. Additionally, we determined how to best utilize existing data to investigate the true cost of *acqua alta* regarding damage and loss of property and merchandise, as well as with regards to loss of productivity or sales due to flooded streets.

3. Background

3.1. History of Venice's Economy

Most of Italy is surrounded by water and has easy access to surrounding areas and countries through its many ports. When the Fourth crusade reached Italy in 1201, Crusaders arrived short on cash and in need of maritime transportation in order to get to their target in Egypt, where it was thought to be the most vulnerable part of Saladin's empire. Dandolo, the Venetian doge, struck a deal with the Crusaders saying that they would provide ships for 4,500 knights and their horses, 9,000 squires to serve them, 20,000 foot soldiers, food for a year, and 50 galleys as an escort for a small exchange in return. The Crusaders were supposed to pay 85,000 silver marks and relinquish half of the lands they conquered to Venice.[4] In addition, the Crusaders would stop at certain ports along the eastern Adriatic to help the Venetians consolidate control along the Adriatic length.[5] When it came time for payment, the Crusaders were unable to come up with the agreed upon amount, resulting in the Venetians proposing that they would accept deferred payment if the Crusaders captured Zara, an important coastal city recently seized by the Hungarians.[6] Venice soon dominated the trade routes to the Holy Land. The landlocked Far Eastern merchants were bound to Venetian shipping once Venice gained controlled of all East and West ports. Warships fought off pretenders for more than two centuries keeping the ports under Venetian ownership. The territorial gains from the capture of Constantinople was not under the pretense of conquer land, but more so about protecting and expanding Venetian shipping.[7]

By the late Fourteenth Century, Venice became a leader in the Mediterranean in the overseas transportation of pilgrims between Europe and the Levant. The Venetian ships taking pilgrims to the Holy Land from Europe stopped in Venice for weeks or months at a time. Beginning in the 1380s, Venice drew in at least three hundred pilgrims yearly from Western Europe, through these voyages. Over the years, the amount of pilgrims visiting Venice largely increased so that eventually they were spending 25,000 ducats, which is approximately 100,000 American dollars in Venice. They spent their money on food, lodging, and entertainment, which are the same methods that Venice makes money from tourism today. The pilgrims were attracted to the cultural and religious attractions in Venice, such as the relics located in the Venetian churches. San Marco was a large gathering place for these pilgrims. By the 1530s, the formal transportation of pilgrims began to decline and the last organized pilgrimage voyage from Venice to the Holy Land reportedly took place in 1580. Shortly following this, tourism in Venice began to rapidly grow especially when more than ten thousand tourists flooded in for the festivals in February.[8]

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4 Bamber Gascoigne, "History of Venice," HistoryWorld,
5 John Keahey, *Venice Against the Sea: A City Besieged*, 1st ed. (New York, NY: Thomas Dunne Books, 2002), 296.
6 Bamber Gascoigne, *History of Venice*
7 John Keahey, *Venice Against the Sea: A City Besieged*, 296
8 Robert C. Davis and Garry R. Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City* (Berkeley: University of California Press, 2005), http://name.umdl.umich.edu/HEB90030.

The visitation of the pilgrims helped Venice prepare for the future rise of tourism. *Tolomazi* were tour guides or travel agents of medieval Venice. They would book lodgings and trips to the Holy Land for the pilgrims. An agency, named *Giustizia Nuova*, was created in the 1380s to regulate and document the inns. The rise of these types of agencies shows the change in the economy. The city's existence started as being practical, built to provide for the residents, and at this moment in time, was not for tourism. Since the Fourteenth Century, Venice's economy has evolved from catering to residents to catering to tourism.[9] However, one aspect of the city has not evolved to facilitate tourism. Flooding in Venice has been increasing in both severity and frequency, leading to the city's greatest natural disaster to date.

In the early days of November 1966, Venice was hit with the most devastating catastrophe in modern history. Deemed the Great Flood of 1966, the deluge of water that overtook the city reached almost six feet (about two meters) above normal flood levels. Starting on the 4th of November, the flooding lasted for over 15 hours and filled *Piazza San Marco* with four feet of water. Even though no lives were lost, the flood caused massive damage to the architecture of the area, and alerted Venice and the rest of the world to the increasing threat that the high tides presented.

The flood was caused by an extremely unfortunate set of circumstances. First, the rain began. Though November is right in the middle of *acqua alta* season, normally the water floods and then is able to retreat to the ocean. However, a mixture of high winds and low pressure pushed the water out of the lagoon and kept it on land. Though this was the most extreme flood ever recorded, it was only one event in a series of increasingly worrying meteorological trends. Since the beginning of the 20th century, annual flooding has increased almost ten-fold (from 5-7 times a year to 40-60 in the early 1990's). Additionally, the severity of floods has worsened steadily in the past 80 years, peaking around the 1960's and 70's.

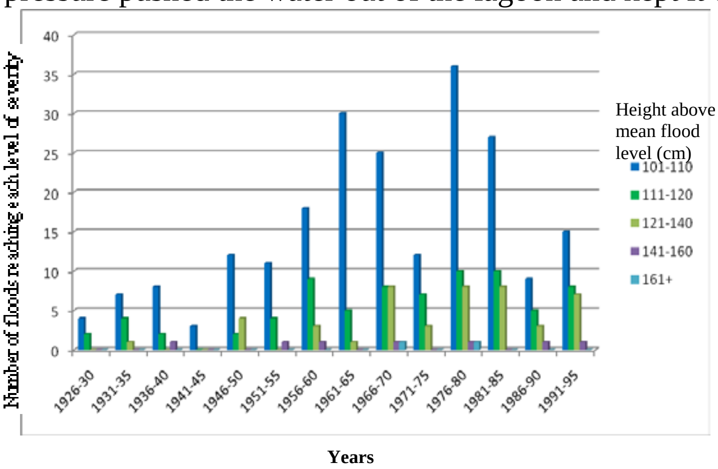

Figure 7: Graph detailing the rising trend in flood severity from 1926-1993[10]

In response to the Great Flood and many of these startling statistics, Venice began taking action. The Italian parliament attempted several measures to ensure the survival of Venice, something unusual for focusing solely on a specific city. Prior to 1966, a series of five special laws were passed specifically for Venice to safeguard the city against the ever-growing amount of floods and destructive effects of tourism. The third of these special laws,

[9] Robert C. Davis and Garry R. Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City* (Berkeley: University of California Press, 2005), http://name.umdl.umich.edu/HEB90030.
[10] Edmund Penning-Rowsell, Peter Winchester and John Gardiner, "New Approaches to Sustainable Hazard Management for Venice," *The Geographical Journal* 164, no. 1 (Jan-1, 1998), 1.

passed in 1956, was intended to address in some of the effects of tourism and floods. This special law promised money that would be used specially for dealing with the increase in pollution and to restoring deteriorating buildings. The fourth special law, passed in 1966 just before the flood, further intended to aid the city with providing billions of lire[11] for more restoration and improvements. Following the flood of 1966, the Italian government offered billions more to repair seawalls.[12] Despite these special laws passed, no projects were launched and the only step towards implementing the intent of the laws was meeting of the *Comitatone*[13]. As environmental concerns regarding the lagoon progressed, the members of parliament hoped to close Venice's ports. This was unlikely to happen, however, since some recognized the need for economic development in the lagoon. In their opinion, the region needed more than tourism, which was progressively increasing, drawn to the city's historic center. Thus, in April 1973, the fifth special law, Special Law 171, was passed. This law declared Venice and its lagoon as being a problem of "essential national interest." While it did not call to close the ports, it did halt the development plans of the lagoon waters being filled by earth in order to expand chemical, petroleum, and container-port operations at Marghera. When the flood of December 23, 1979 hit the city, parliament again passed a new special law for Venice, Special Law 798, which favored a more experimental approach to safeguarding Venice than Special Law 171. It called for an intervention to further protect the lagoon and to develop a plan to restore buildings, preserve Venice's historic town plan, its environment, and its economy.[14]

3.2. Evolution of Venetian Formal Economy

Venice's formal economy has two types of business owners, local owners and international owners. Locally owned businesses usually cater more towards residents because residents often own them. Many internationally or corporately owned businesses cater more towards tourists.

[11] A lira is a coin and monetary unit of Italy equal to 100 *centesimi*.
[12] John Keahey, *Venice Against the Sea: A City Besieged*, 296
[13] The *Comitatone* was established in 1966. It was a big committee whose purpose was to conduct scientific research and collect technical data on how to protect the lagoon from rising tides.
[14] Ibid.

3.2.1. Venetian Retail

Figure 8: One of the many closed stores in Venice.

The Venetian retail sector has seen a decline in the number of traditional and basic necessity stores. The total number of retail stores is not decreasing overall and therefore, touristic and non-food stores are increasing. The number of traditional retail stores decreased by one hundred stores, from 675 to 575, between 1990 and 2000. A closed storefront is displayed in Figure 8[15]. Seventy-five percent of the stores that closed carried basic foods such as vegetables, bread, and meat. Much of this decline has been attributed to over specialization in one area of the market such as butcher shops and bakeries. The convenience of grocery stores, which provide all of the daily consumer's needs in one location, has aided in their prevalence over traditional food stores in Venice's retail sector. As such, although the number of food stores is declining, the amount of goods available to the residents is not. As the number of retail stores diminishes, the number of restaurants and bars has increased. Between 1990 and 2000, the number of restaurants increased by 110 and bars by 7765.[16] The stores in the Venetian retail sector are dependent on each other to draw in customers to their businesses. If one store closes, shops around it will lose customers because they will go to another part of the city for their shopping. If a customer wants to shop at several different types of stores, they will look for stores close to each other to have a quicker shopping trip. This is another reason grocery stores are replacing several smaller stores.[17]

3.2.2. Corporately Owned Businesses Located in Venice

Since tourism has become a major part of the Venetian economy, many internationally owned companies have stationed their stores in Venice. The number of corporately owned businesses is slowly increasing as the number of locally owned businesses is slowly decreasing. Banks or department stores are abandoning Venice's historic center in turn leaving behind buildings too large for smaller businesses. The large void left behind can only be filled with stores catering to tourists. When buildings are being sold, either by the previous owner or by the government, the party that can offer the most money will usually obtain the store. The Venetians are "selling off bits of their city".[18] Local businesses cannot

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[15] Ta Karra Greene, Benjamin Isabella, Freddy Jervis, Danielle Modeste, *Residential Comfort Level: An Analysis of the Venetian Retail Sector*

[16] Ta Karra Greene, Benjamin Isabella, Freddy Jervis, Danielle Modeste, *Residential Comfort Level: An Analysis of the Venetian Retail Sector*

[17] Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony, *Pressing Issues: A Venetian Socioeconomic Overview*

[18] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*

compete with the amount of money that an international or corporately owned business can offer. There is little competition and therefore more stores are being internationally owned. This change from more locally owned businesses to more corporately owned business show trends toward large-scale development.[19]

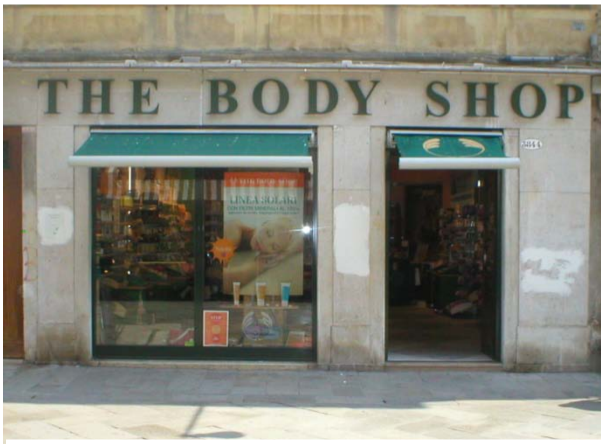

Figure 9: The Body Shop, an American owned business, located in Venice.

Retail stores stationed in other parts of Italy such as Prada, Fendi, and Versace have locations in Venice so they are able to put "the city's name on their label."[20] Some corporately owned businesses are The Body Shop (which is shown in Figure 9[21]) and Lush Cosmetics. Some local stores sell products that are sold all over the world and whose manufacturers' headquarters are not in Venice or Italy such as Non Solo Sport sells Puma athletic gear and Acca Kappa sells Revlon products. Most of the money made through products like these does not stay in the city and goes to the headquarters in another country.[22]

3.3. Venetian Informal Economy

With an increase in tourism, Venice has seen an increase in informal vendors. Sometimes these vendors are illegal such as the bag peddlers, flower sellers, and beggars. *Vu' cumprà* also called *venditori ambulanti abusivi extracommunitari*, meaning "unlicensed, itinerant, non-EU vendors"[23] are illegal vendors. Most of these vendors are males from West Africa, China, Bangladesh, Sri Lanka, and Eastern Europe. It is estimated that in the high tourism season, there are five hundred *vu' cumprà* on the street. The areas that are most populated with the vu' cumprà are "from the Riva degli Schiavoni to Piazza San Marco, from Strada Nova to the Lista di Spagna, from via XXII Marzo to Campo Santo Stefano."[24] These locations, with the exception of Campo

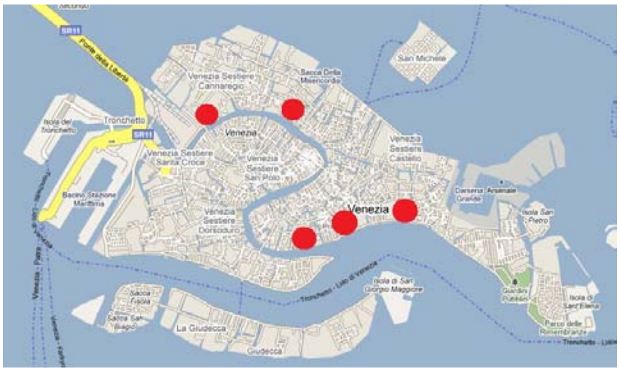

Figure 10: Areas most populated with the vu' cumprà.

[19] Ibid.
[20] Ibid.
[21] Ta Karra Greene, Benjamin Isabella, Freddy Jervis, Danielle Modeste, *Residential Comfort Level: An Analysis of the Venetian Retail Sector*
[22] Ibid.
[23] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[24] Ibid.

Santo Stefano, are marked with red circles in Figure 10[25]. Figure 11[26] is an image of a *vu' cumprà* with their fake designer purses placed on their white sheet. These vendors lay out white sheets on the sides of streets to place their goods on. On many streets one can find numerous sheets lined up down the entire street on both sides. Each of these sheets has two people that tend to it as well as at least one lookout. The lookouts stand at the end of the street and notify the others tending to the sheet that the police are approaching. With lookouts, the bag peddlers have time to gather their goods and run away. The activities of these vendors are illegal in many ways. Not only do they sell illegal goods, such as fake designer purses, but they in Venice illegally, without visas or proper documentation. Finally, the *vu' cumprà* do not have licenses to sell their products on the street and are using public space for their business. Due to the small size of the Venetian police force, it is difficult for the police to apprehend the large numbers of *vu' cumprà*. Even if the police can arrest these illegal vendors, they can only be charged with selling without a license. When the vendors are arrested they cannot show proper identification or work permits and must return at a later date. Many do not return for this certain date to present their identification and instead continue illegally selling their wares. Although the police cannot catch many of the vu' cumprà, they confiscated twenty tons of illegal goods, such as leather purses, in 2001.[27]

Figure 11: Bag seller with their white sheet.

Many tourists purchase illegal goods from the *vu' cumprà*, which are cheaper than the same goods in an established business. Therefore formal businesses are losing money to illegal vendors. Not only are formal businesses losing money to informal vendors through stealing customers away, but they are also hindering the government from receiving all the money that should be paid through taxes. The illegal economy of Italy accounts for 27% of Italy's Gross Domestic Product. Many of this illegal activity occur in Venice, therefore, Venice's informal economy takes money away from the overall national government of Italy. Street vendors' products are not subject to taxation and this is a loss of income to the local and national government.[28]

[25] Ibid.
[26] Ibid.
[27] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[28] "Background Note: Italy," U.S. Department of State, http://www.state.gov/r/pa/ei/bgn/4033.htm (accessed 10/6/2009, 2009).

3.4. International Tourism

With globalization and the emergence of new developed countries on the rise, the tourism industry has continued to evolve into one of the world's largest and fastest growing economic sectors. From 1950 to 2007, international tourist arrivals grew from 25 million to 903 million people per year and the income they bring in has caused tourism to rank fourth after fuels, chemicals, and automotive products. It is predicted that by 2010 international arrivals are expected to reach 1 billion people, and 1.6 billion by 2020. These trends are represented within Figure 12[29]

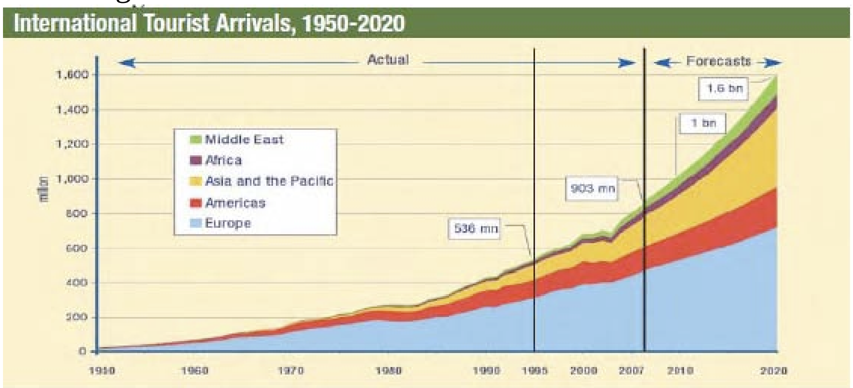

Figure 12: International tourist arrivals along with representative predicted regional growth from 1950-2020.

[29] *Tourism Highlights: 2008 Edition*United Nations World Tourism Organization,[2008]).

3.5. Tourist Venice

Although the City of Venice spans a total area of 412 km^2 of land,[30] the majority of tourists usually restrict their experience to the three major tourism sectors of the city; this includes the Piazza San Marco, the area around the Rialto Bridge, and within the vicinity of the Galleria dell' Accademia. These three regions form a triangle of major tourist attractions as depicted in Figure 13.[31] While this roughly correlates to the area of highest concentration of tourist traffic, it is also important to note that the whole of the *Centro Storico* region can be considered Tourist Venice as notable popular tourist attractions proliferate throughout the City of Venice. These regions are also densely populated with various souvenir stands, clothing stores, masquerade shops amongst other tourist oriented mercantile institutions complimented by a proportionately multitudinous array of hotel and bed and breakfast infrastructure to supply the demand of nearly 16.5 million visitors each year.[32]

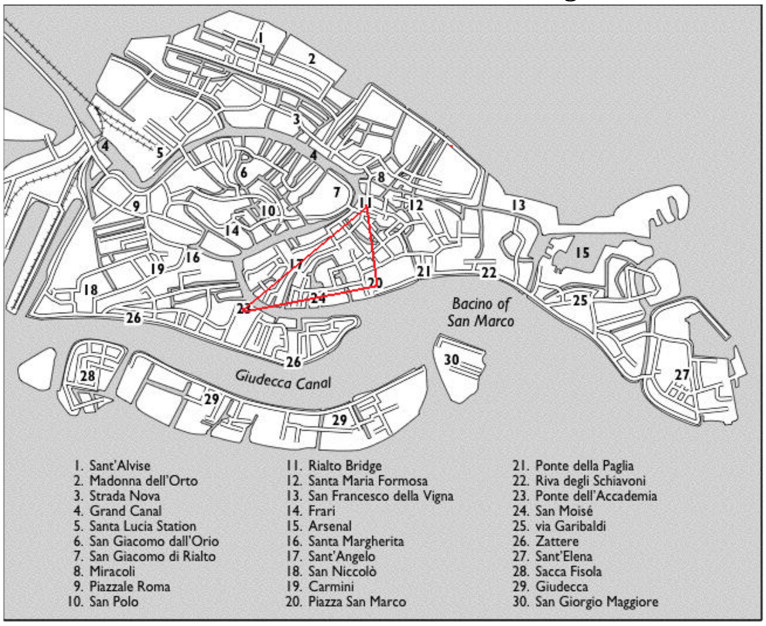

Figure 13: The Piazza San Marco, Galleria Dell'Academia, and the Rialto Bridge form a triangle of major tourist traffic.

3.5.1. Tourist Attractions

The Piazza San Marco is perhaps the focal point of the tourist's eye, and measuring 175 by 75 meters easily the largest of Venice's squares. The Basilica of San Marco was finished and consecrated in 1094 AD, and its immaculately decorated walls and painted ceiling make it one of the most trafficked tourist attractions in Venice. The equally ornate Ducal Palace, former abode of the doges of the Serenissima, is the number one tourist attraction in terms of paid admissions. In a study conducted in 1993, over one million visitors viewed the paintings of Titian, Tintoretto, and Veronese that decorate the inner walls of the palace. The *Zecca* and *Loggetta* compliment the towering Campanile and were designed by renowned Jacopo Sansovino. [33] The Campanile of San Marco is a bell tower that serves as an

[30] "Statistiche in Pillole," Citta' Di Venezia, http://www.comune.venezia.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/1176
[31] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[32] Da Mosto, *The Venice Report*
[33] Ibid.

excellent vantage point for tourists to take pictures of the stunning bird's eye view it provides. In spite of all the attractions, a great many more tourists are content losing themselves in the intertwining streets, back alleys, and bridges. In addition to these famous historical buildings, there are a number of festivities that bring tourism Euros into the country.

Tourists from all over the world come to Venice to witness the beauty of the city during the festival season. In the centuries prior to the Second World War, it became apparent that festivals and holidays were beginning to tailor to tourists' expectations and desires, whereas before such events were celebrations of Venetian culture. While similar festivities have been held in several other countries and Italian cities, the festivals of Venice have always possessed special qualities that set them apart from the rest drawing in more and more tourists each year (as seen in Figure 14[34]). As early as the seventeenth century, Venice's unique topography, churches, relics, artwork, and commemorative inscriptions, as well as the sheer length of festivities, drew foreigners into the city to witness the Venetians' version of celebration.[35]

Several cities, most notably Venice and Viareggio, hold what is known as *Carnevale* –one of Italy's largest annual tourist events. Dating back to the ancient Roman festival of *lupercali*[36], *Carnevale* combines together pagan rights, Christian spirituality, magic, exorcism, history, and death.[37] The entire festival is a spiritual celebration that transforms the city into a stage of fancy dresses and masks. Traditionally, these masks let the wearers hide their identity and temporarily escape the various stigmas of their social class, though today they are mostly for show. Every year, the *Carnevale di Venezia* brings massive crowds into Piazza San Marco[38] for a celebration that can last anywhere from six weeks to two months.[39] Unfortunately, the changes that have been made in order to bolster tourist enjoyment have left residents feeling irrelevant during their own cultural celebrations. By the 1980s, residents were not even sure their own government could stop the celebration if they wanted to.[40] While the *Carnevale* is Venice's greatest tourist event, there are other festivals that equally contribute to drawing tourists into the city.[41]

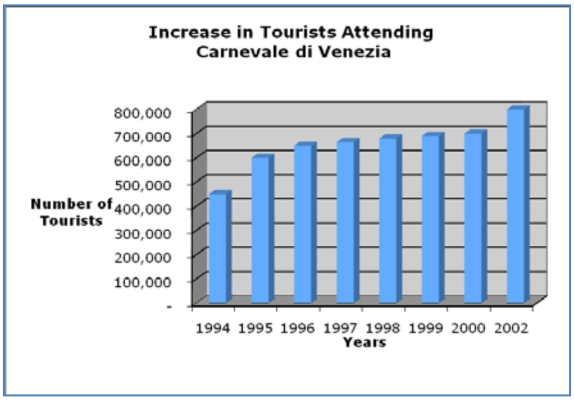

Figure 14: The attraction towards the Carnival of Venice has increased more than ever since 1994.

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[34] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[35] Ibid.
[36] *Lupercali* refers to rituals that took place in mid-February in which young men consecrated to the god Pan and then ran nude holding the skins of sacrificed goats that they used to lash sterile women.
[37] Maria Laura Della Croce, Annie Sacerdoti, "The Great Book of Italy," (2004).
[38] Piazza San Marco was the center of Venetian festive and ceremonial life.
[39] Festivities usually start sometime around Christmas and last until just before Ash Wednesday.
[40] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[41] "Venice Events and Festivals; a Calendar | Italy Heaven " http://www.italyheaven.co.uk/veneto/venice/events.html (accessed 10/6/2009, 2009).

Festivals[42] and holidays[43] capture the attention of tourists with their carnivalesque celebrations. From the *Festa della Sensa*, which combines an aquatic spectacle, a trade fair, and a springtime carnival, to the Venice Film Festival, which features a multitude of new and independent movies, festivals are ongoing events that keep hundreds of thousands of spectators coming back each year. They showcase Venetian culture and history, while at the same time stimulating the economy. Much to the dismay of the residents, however, these festivals sometimes come one after the other[44], creating a constant flood of tourists that takes over the city for weeks or months at a time.[45]

Figure 15: A group photo from the 2009 Carnevale di Venezia.[46]

3.5.2. Carrying Capacity: Hotels, Inns, and Other Lodgings

The carrying capacity is the maximum amount of tourists that a city can hold without significantly hindering the city's ability to perform all the functions and activities characteristic of a city. According to research done in 1991, the carrying capacity of Venice was 22,500 visitors, only 10,700 of which should have been excursionist tourists.[47] A more recent study conducted in 2005 showed that Venice has the necessary infrastructure to provide 19,101 beds in the *Centro Storico,* of which 13,728 are hotel beds. The remainder consists of hostels, bed and breakfasts, and other lodging establishments. Most recently however, based on data taken in 2008, the COSES Report has concluded that Venice has the necessary infrastructure to accommodate 26,000 visitors a day while remaining comfortably operational. It has further predicted that the absolute saturation point beyond which tourism is entirely intolerable is 86,000 tourists. The current average daily influx of tourists stands within this range at 59,000 tourists suggesting that the Commune already considers the

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[42] List of a few festivals: Festa della Sensa, The Vogalonga, The Biennale, Festa del Redentore, Venice Film Festival, Regata Storica, Festa della Salute.
[43] List of a few holidays: Epiphany, Easter, Celebration of Liberation (also a festival), Assumption Day, All Saints' Day, Saint Stephen's Day
[44] From January to June, with the exception of forty days for lent, the Festa della Sensa is followed by Saint Mark's Day and then followed by a festival for Corpus Christi.
[45] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*
[46] Alessandro Santini, *Photo Gallery - Maschere all'Arsenale*, 2009).
[47] Antonio Paolo Russo, "The ' Vicious Circle' of Tourism Development in Heritage Cities," Annals of Tourism Research, no. no. 1 (2002), 165-182.

current tourist situation in Venice to be above comfortable tourist levels.[48] The number of non-hotel beds has doubled since the year 2000 from 2,508 to 5,373. [49] The general growing trend has continued to the point where as of 2008 there are 1516 structures containing a total of 22935 beds.[50] This growth has been attributed to the legislation *Le Leggi Sul Bed and Breakfast Come Aprire un B&B in Veneto* enacted in 1999 to allow for more bed and breakfast type establishments.[51] The legislation promoted competition decreased lodging prices and encouraged the overall number of overnight stays, the most profitable type of tourism, to the City of Venice. The following two maps contrast the difference in the number of lodging institutions between 1999 and 2008. Based on data taken in 2008, the COSES Report has concluded that Venice has the necessary infrastructure to accommodate 26,000 visitors in a day and remain comfortably operational. It has further predicted that the absolute saturation point beyond which tourism is entirely intolerable is 86,000 tourists.

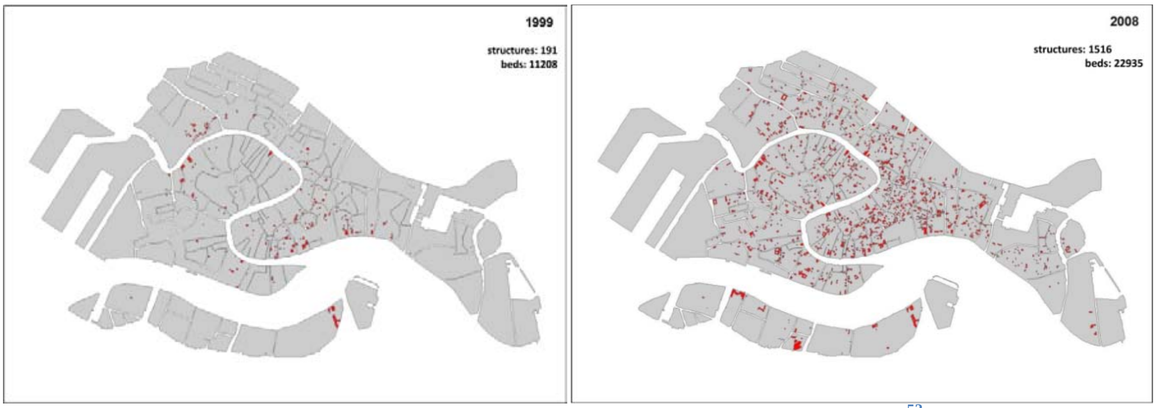

Figure 16: Comparison between 11208 beds in 1999 and the 22935 beds available in 2008[52]

3.6. The Effect of Tourism on the Venetian Economy

Tourism represents nearly 70% of Venice's gross domestic product and is responsible for at least 50% of their job market.[53] As such Venice with an unemployment rate of 4.2% is significantly outperforming the 8.7% national Italian unemployment rate. A consensus conducted in 2004 estimated that out of 4.4 billion Euros spent in the Veneto region, 2.4 billion Euros were spent in Venice alone and the total tourism Euros spent in the Veneto region constituted 15% of Italy's 28 billion Euro tourism industry that year. It is also estimated that the increased waste production and wear and tear on the city comes with an annual cost of 250 million Euros a year that amounts to over 10% of their income. [54] As a result hefty sales taxes are imposed to help pay for the cost and maximize profit. The various

[48] Da Mosto, *The Venice Report*
[49] Frederica Durigan, *Turismo a Venezia: Trend, Statistiche, Dati e Indrizzi* (Milano: Libri Scheiwiller, 2005).
[50] 2009, http://venice2point0.blogspot.com/search?q=harbinger.
[51] "LE LEGGI SUL BED AND BREAKFAST: Come Aprire Un B&B in Veneto," http://www.bed-and-breakfast.it/leggi_bed_and_breakfast_veneto.cfm
[52] Fabio Carrera, *The Harbinger of Alberghi: Hotel Proliferation in Venice*
[53] Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony, *Pressing Issues: A Venetian Socioeconomic Overview*
[54] Durigan, *Turismo a Venezia: Trend, Statistiche, Dati e Indrizzi*

businesses in the area must also raise their prices to make a sizeable profit of their own and the overall cost of living rises within the city. This in turn encourages residents to leave the city for more suitable living conditions and the overall demand for residential needs such as basic food and affordable clothing naturally decreases with the smaller population. When compared to the overbearing demand for tourist related items, like designer clothing and overpriced souvenirs, the whole city's economy naturally shifts to supply the demand of tourists.

In the tourism industry there are two major categorizations of tourists. First are the residential tourists, which are defined as anyone who visits and stays at a tourist locale for at least one night. Visitors who only visit for the day are classified as excursionist tourists and are more popularly called 'day trippers' who only visit Venice for a day. Based on a recent count of 16.5 million annual tourist arrivals, the following graphic from The Venice Report depicts 4 million residential tourists to 12.5 million excursionists along with their respective demographic arrival statistics.[55]

1. LEISURE VISITORS TO VENICE, 2007
by method of transport.
Source: COSES

METHODS OF TRANSPORT	ARRIVALS	PRESENCES (A)	DAY-TRIPPERS (B) FROM			TOTAL VISITORS (A+B)
			The Lido	Terraferma	Beyond	
Venice & Treviso Airports	1,262,000	3,450,000	-	-	-	3,450,000
Train	509,000	1,347,000	-	450,000	6,667,000	8,467,000
Car	95,000	268,000	-	-	751,000	1,019,000
Tourist Bus	131,000	365,000	-	547,000	1,787,000	2,699,000
Scheduled Bus	44,000	120,000	-	1,110,000	600,00	1,830,000
Cruise Ship	239,000	843,000*	-	-	-	1,278,000
Water Transport	-	-	466,000	160,000	2,235,000	2,861,000
Total Visitors	2,280,000	6,393,000	466,000	2,267,000	12,043,000	21,604,000
Equivalent Population**	6,247	17,515	1,277	6,211	32,995	59,189

*514,000 nights spend on board ** Visitors p.a. divided by 365 days

[1] See *Indagine Strutture Ricettive Extralberghiere, Indagini sui Siti Web*, July 2008, Comune di Venezia, Assessorato alle Politiche della Residenza

Figure 17: Massive influx of tourists along with their respective methods of arrival in the year 2007.[56]

3.7. Effects of the Current Global Recession on Venice's Economy

There is no question that the world is in the middle of a recession. Major world powers such as the United States and United Kingdom are suffering financially (The U.S. is $11 trillion in debt[57], and the last quarter saw the U.K. in an £11.4 billion deficit[58]). Even though the European Union saw its deficit decrease from € 73.2 billion to € 55.1 billion, the countries still suffer from decreased trade surplus[59]. Within the Union, major tourist countries such as Italy, France, and Spain have seen major drops in the number of yearly visitors, leading to various economic losses. In Italy alone, an estimated 8.3% drop in tourism rates is predicted for the May-October season. This past June and July, the Italian beaches saw 1.5 million fewer visitors than it had only a year ago. These losses have forced hotels and restaurants to slash prices (up to 30% for some four-star hotels), hoping to attract the same

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55 Da Mosto, *The Venice Report*

56 Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony, *Pressing Issues: A Venetian Socioeconomic Overview*

57 "U.S. National Debt Clock " http://www.brillig.com/debt_clock/ (accessed 9/29/2009, 2009).

58 "National Statistics Online " http://www.statistics.gov.uk/cci/nugget.asp?ID=194 (accessed 9/29/2009, 2009).

59 "Global Times - EU Current Account Deficit Falls in Second Quarter " http://business.globaltimes.cn/world/2009-09/467343.html (accessed 9/29/2009, 2009).

people that used to be able to afford overseas travel but are now hindered due to the increase in job loss and debt. Rome seems to have maintained a steady stream of tourist-based income, but Venice has not been so lucky[60]. The current economic situation has kept tourists inside their own country, so even though there have been more Italian tourists; the number of American visitors has decreased. Additionally, Americans who are able to make it to Italy will be less inclined to leave the immediate area and take day-trips to Venice. Day-trippers make up 70% of the Venetian tourist economy[61], so the decrease will lead to a major economic loss. This lack of income is only compounded by the effects of *acqua alta* and the costs incurred not only to clean up after them, but also to develop strategies for preventing them.

3.8. Attempts to Prevent Flooding

Since the 1970's, there has been a multitude of suggestions for how to best save Venice from the sea. The *Consorzio Venezia Nuova* (CVN) was charged with finding the solution to the increasing floods. Eventually, it was determined that the best solution was to create a system of mobile barriers, which can be placed at strategic locations throughout the lagoon. By closing off the inlets that make the city most susceptible to flooding, the gates and breakwaters will hopefully save the land from the majority of the flood waters. Once the threat is over, the barriers can be removed to allow boats to continue passing through. The first prototype created by the CVN was called the *Module Sperimentale Elettromeccanico* (The Experimental Electromechanical Module, or MOSE). Developed between 1988 and 1992, this system will protect the three crucial inlets at Lido, Malamocco, and Chioggia from allowing dangerous levels of water to make landfall. The barriers will be implemented after the water levels reach 110 cm above normal. If placed at the right time, the gates shouldn't be up for more than 5 hours, in order to minimize downtime for passing ships. However, simulations have still shown that the system is not perfected, and the barriers are activated unnecessarily almost half of the time[62].

60 "DAWN.COM | Front Page | Europe's Top Tourist Destinations Hit by Global Recession " http://www.dawn.com/wps/wcm/connect/dawn-content-library/dawn/the-newspaper/front-page/europes-top-tourist-destinations-hit-by-global-recession-489 (accessed 9/29/2009, 2009).

61 "Overcrowded Venice may Ban Day-Trippers | Gadling.Com " http://www.gadling.com/2009/09/18/overcrowded-venice-may-ban-day-trippers/ (accessed 9/29/2009, 2009).

62 Fletcher and Mosto, *The Science of Saving Venice* , 91

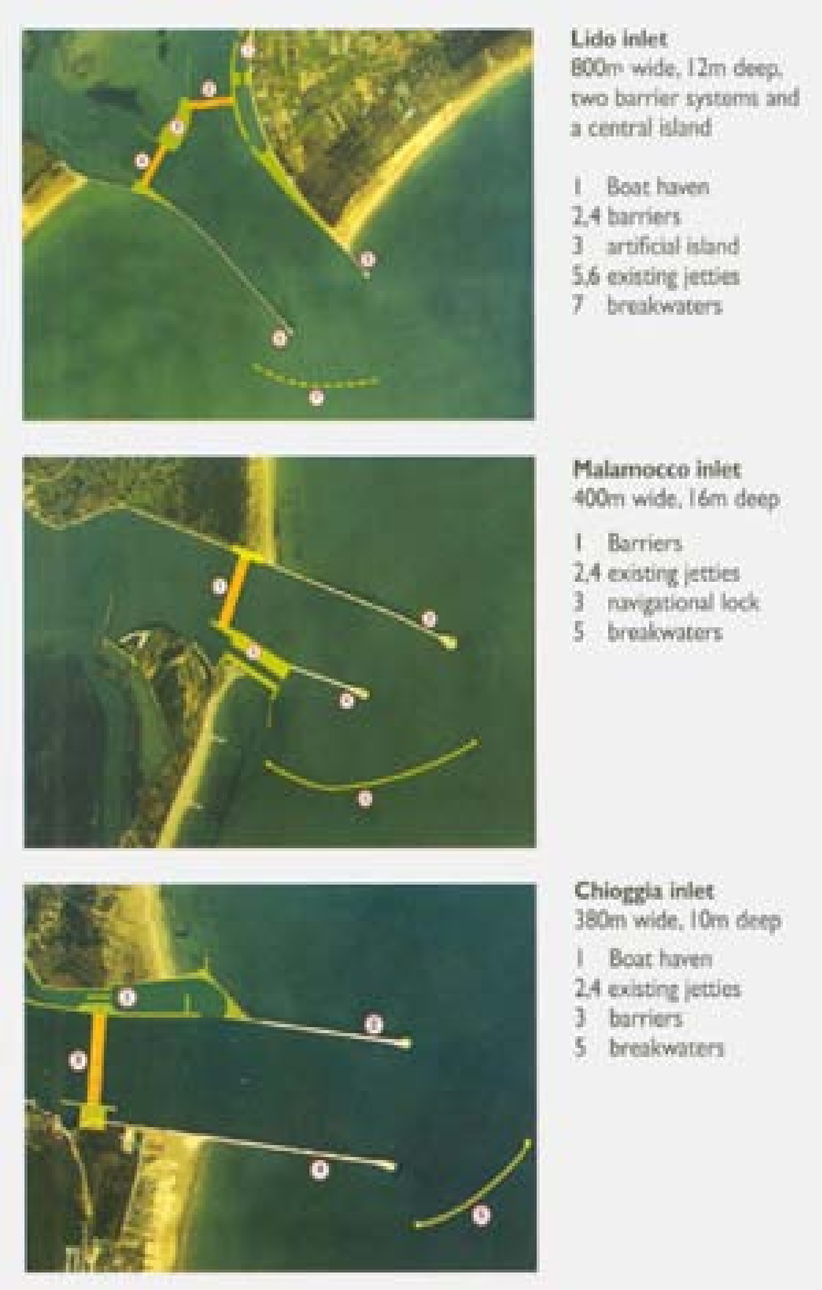

Figure 18: The proposed setup of the MOSE system at the three crucial inlets in Venice[63]

Because of these inconsistencies, there are critics of the MOSE system. One such group[64] explained in 1993 that the gating system is flawed. First, it can cause an increase in pollution both from higher traffic to alternative routes while the barriers are up and from the inability of the lagoon to flush itself out. Additionally, there are political and socioeconomic factors that hinder construction from a legislative viewpoint, partially due to the fact that the European Union does not always approve of agencies such as the *Consorzio*. To address

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[63] Ibid.

[64] Penning-Rowsell, Winchester and Gardiner, *New Approaches to Sustainable Hazard Management for Venice*, 1

these and other issues, there was an alternative two-fold solution proposed. The first part of the process is mainly strategic, and includes years of discussion and planning with appropriate agencies to determine what to do and when. These negotiations and dialogues would serve to resolve the fundamental problems regarding the protection of Venice, as opposed to just using quick fixes that get debated, rejected, and redeveloped. While these more lengthy processes take place, improvements in local flood proofing would be put into effect. Even though for the time being the floods themselves would keep coming, hazard response and renovations would help keep people safe while the flooding occurs. Of course, this is only one alternate theory proposed, and others have met with varying degrees of success and controversy.

3.9. Implications of tourism on residential lifestyle

As more Venetian businesses shift their customer base from residents to tourists, it becomes more beneficial to examine the impact tourism has had on the residents' living situations. This is because changes in Venetian lifestyle have changed the economy in the past. Traditionally, children took over their families' businesses instead of going to school. Today, however, the number of children attending colleges and universities has increased, resulting in many families selling their businesses because they can no longer rely on family members to run the store. Additionally, the number of grocery stores (in Venice) has increased, leading to a decrease in the number of specialty stores such as bakeries and butcher shops. This is due to the increase in comfort level that Venetian residents have come to expect. Residents do not want to shop at two or three stores each night for their food, and instead opt for a grocery store where they can purchase all of their food in one place. Comfort level has also changed the locations of stores; people will choose to go to stores that are in the vicinity of others instead of going out of their way to shop at a particular store.[65]

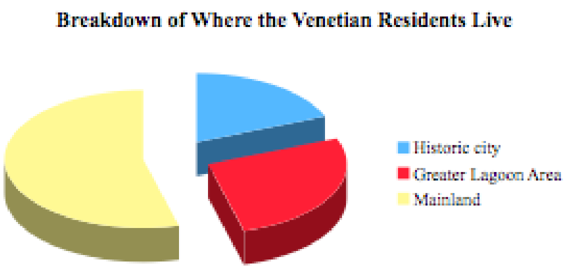

Figure 19: As of 2000, there were 70,000 Venetians living in the historic center, 100,000 in the greater lagoon area, and 200,000 in the mainland area.

Additionally, the cost of maintaining a comfortable standard of living has dramatically changed for Venetians. Rents have spiked up thanks to celebrities buying Venetian real estate. Property can cost as much as €1 million per 100 square meters, forcing Venetians to migrate to the mainland where the cost of living is less expensive and there are less crowded areas (See Figure 20[66]). Venice's resident population has decreased approximately 41.3% from 1950 to present day[67] (See Figure 14[68]). Those who choose to stay struggle to remain in a city where they are quickly becoming strangers and where they are unwanted by the tourists who would have overpopulated their ancestors' homes. Residents have to face pollution, and disturbances, ignorance, and disrespect brought in by visitors. At the start of the 21st century, the residential population was barely 65,000. Every year, Venice

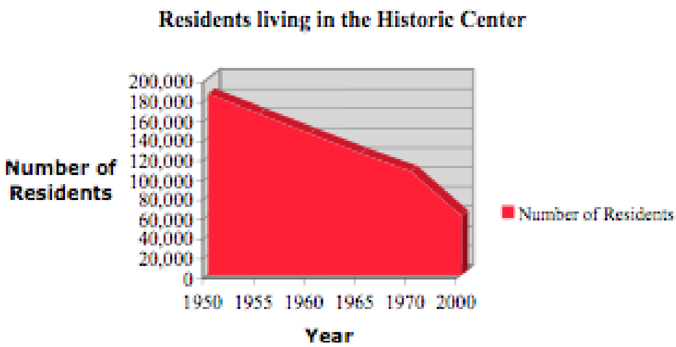

Figure 20: Decrease of Venetian residents in the Historic Center

[65] Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony, *Pressing Issues: A Venetian Socioeconomic Overview*
[66] John Keahey, *Venice Against the Sea: A City Besieged*, 296
[67] Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony, *Pressing Issues: A Venetian Socioeconomic Overview*
[68] John Keahey, *Venice Against the Sea: A City Besieged*, 296

is overwhelmed by 13 to 14 million visitors meaning that there are no fewer than 89 foreigners for every 100 Venetian residents in the city at any given time. This is the highest tourist-to-resident ratio in Europe.[69] The question that arises is whether the mass amounts of tourism are ultimately beneficial or detrimental towards the Venetian residents.

[69] Davis and Marvin, *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*

4. Methodology

4.1. Documenting Venice's current formal economy, focusing on the retail, restaurant, and hotel sectors.

We began our study of the Venetian formal economy by conducting surveys of the city. Due to time constraints, our documentation was limited to two *sestieri*: Cannaregio and San Marco. Thanks to the fact that addresses in Venice are assigned by *sestiere* instead of by street, we systematically walked through the *sestieri* following the building numbers from one until we reach the final number (6426 for Cannaregio and 5562 for San Marco). When walking through the *sestieri*, we used one form to document information about retail stores, restaurants, and hotels filling in the appropriate boxes for each address. To ensure that no locations were missed, we walked by every address, regardless of whether or not the street appeared to be residential.

4.1.1. Investigating the current retail sector of Venice

For this project, retail stores are defined as locations that sell goods that are meant to be taken off-premises. Our study did not include newsstands, souvenir stalls, or any other stands with wheels or that did not have an actual building address. Our study only included retail-related services such as florists, video stores, and photo developing stores. All of these establishments provide a service, but goods such as flowers, videos, and cameras can be purchased at these locations. Our study did not include services such as dry cleaners, hair salons, and repair shops that did not also offer merchandise for purchase.

There is certain information that was only collected for retail stores. This included depth, merchandise, type of merchandise lowest to the ground, and the height of this merchandise. The depth of the store (in meters) was estimated by sight and extended from the storefront to the farthest point from the main entrance that customers were able to walk. We recorded the merchandise so that after data collection was completed, we could separate the different retail stores into standardized categories and types. As part of our flood analysis, we wanted to determine what merchandise was more likely to be lost due to a possible flood. We recorded what the lowest merchandise was and estimated its height from the ground (in centimeters).

4.1.2. Investigating the current restaurant sector of Venice

A restaurant for our purposes is an establishment where food or beverages are served for consumption on the premises. This includes bars and cafes that offer takeout options. Most restaurants have some seating, whether inside or out, which became our best indicator for quantifying the clientele and estimating revenue. For the restaurants, the only information that was recorded in addition to the general data was the number of seats inside and outside the restaurants. Because it can be difficult to see inside a restaurant we sometimes estimated the number of seats inside. For chairs inside a patio, we considered it inside only if there were awnings and plastic drape walls completely surrounding the area.

4.1.3. Investigating the current hotel sector of Venice

We have defined hotels as locations that provide luxury lodging for a temporary period of time. Bed & breakfasts and historic lodging houses were included in this sector, but apartments that are generally leased to students and long-term tourists were not. Because there was little information we wanted to know about hotels, no additional information was recorded. To express that it was a hotel on our form, we put an "X" in the hotel column.

4.1.4. Documenting the typology of stores in a sample area

For a smaller area in Castello, we assessed the typology of forty-three stores near Calle de l'Arco. This study had already been completed by students from the Universita IUVA di Venezia, who produced a volume compiling their studies in Venice, Migropolis[70]. These students collected data in 2007 and obtained the original use of the location. Using a notebook, we wrote down the categories[71] of all forty-three locations. We will use the change in category of businesses as an indication of the evolution in the economic sector of Venice in a residential area such as the area around Calle de l'Arco.

4.2 Compiling and displaying information about the evolution of the Venetian formal economy and laying a foundation for continuation of this study

In order to do the work outlined above, we had to create a field form that was all encompassing and would remain relevant for future studies. Once we did that, we were able to conduct our fieldwork. After completing our surveys and entering the information into a database, we looked back to past IQPs, as well as the city data given to us. We then collaborated with the Venice Project Center to collect, compile, and display the data aggregated since 2004 in a database that could be viewed and updated in the future.

4.2.1. Standardizing data collection and entry for future projects

After the initial data collection process was completed, we began constructing a functional database that could be utilized in our analysis of the Venetian formal economy. The data collection forms were used to create the basic structure for the database. All columns were kept as is with the exception of the "Merchandise" column. For this, we transformed the raw data into a standardized "Type" column for future use. For the purpose

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[70] Wolfgang Scheppe, *Migropolis: Venice / Atlas of a Global Situation.*
[71] See Appendix B

of clarity during the analysis stage, we added a slightly broader column titled “Category” to serve as an intermediary classification between the economic sector and typology. The initial breakdown of the economic sectors, categories, and types used within this project are displayed in Appendix C. As well creating these columns, we created a column to determine if the location was a chain or not. We defined a chain as a number of stores or restaurants under the same ownership. Microsoft Access was used as the program of choice for creating the database.

4.2.2. Compiling information from past research into one source of data

In addition to the data collected this year, there were two related IQPs completed in 2004 and 2005. The 2004 team was able to obtain information on the entire historic center with the exception of the Giudecca. In 2005, the group performed a similar analysis of Cannaregio, Dorsoduro, and Castello, and was also able to obtain the economic history going back to 1945 based on interviews the students conducted with the residents there. It is important to note, however, that these verbal recollections have yet to be validated with another database provided by the city in 2006. This database contains the opening dates of all Venetian stores since 1927. The city database would have been utilized earlier were it not for the poor structuring of its contents and the vague nomenclature used in the classification of all the stores. The city database had assigned multiple merchandise types with their respective square meter areas for every store under a single column titled “*dati tecnici*”. Before any sort of analysis could be performed, the data under this column had to be manually parsed into two separate columns since there were too many inconsistencies within the string to allow for a program or query to accomplish this task. Once all the necessary fixes had been applied, it was then possible to infer that the only data within the 2005 database suitable for our purposes was the field data recorded from that year.

Once the information had been reviewed, it was possible to use the now standardized nomenclature to normalize the data from past projects with our own. Certain columns had to be omitted from each in order to fully merge the databases as the general focus of each successive project had changed over the years. The end result was a compiled database that encompassed location, typology, and status.

4.3. Devising strategies for future analysis and documentation of the effect of the informal sector and the environment on the formal economy

Because of the city's lagoon locale and its high concentration of services aimed towards tourists, it is important to consider the economic impact of external factors in addition to the status of the formal sector. In particular, the exceptionally high numbers of beggars, flower sellers, and peddlers of illegal wares have had a profound impact on the economy. Tourists are convinced to give money to them instead of to stores because of the vendors' aggressive tactics, severe price undercuts, and overall ubiquity on the streets. Additionally, storeowners face the ever-present threat of their merchandise being damaged or destroyed by regular floods which submerge some areas of the city one or more times a month. Considering these potentially damaging effects, we felt it was necessary to begin exploration into the outlying factors contributing to changes in the city's formal economy.

4.3.1. Locating and quantifying the informal activities

The location and number of informal activities are crucial factors to identify when investigating the impact of the informal economy on the Venetian formal business sector. Although we only conducted our surveys in San Marco and Cannaregio, these two *sestieri* are the most tourist heavy districts of Venice and therefore highly relevant when exploring the effects the informal sector had on the overall economy. In particular, a considerable amount of time was spent around *Piazza San Marco* and the waterfront, where we encountered a very high concentration of flower and bag sellers.

During our survey of the formal economy, any type of informal activity we encountered was recorded in the proper location on our field data form (see Appendix A). The form used held a column for the type (beggar, bag seller, flower seller, etc.), time of encounter, and the number of items for sale.

The type of activity was used to help quantify the various categories of vendors and create a color-coded map of the different forms of informal businesses. By recording the time of day that we saw them, we were able to identify the key times when each type of peddler was likely to be seen. Both type and quantity of merchandise were important for profit calculations.

Additionally, photographs of the vendors and their wares were taken, with an emphasis on capturing a clear frontal view of their faces. This was done on the basis that one could potentially identify the person to avoid double-counting them in the documentation of the informal economy. The photo recognition capabilities of the picture-editing program Picasa were tested on various photos of different members of the team to ensure that such a program could prove useful in identifying different proprietors of informal activity. The test was successful as long as a clear frontal view of the face is present in the picture. The brief time spent investigating the informal sector led us to be able to determine which vendors had multiple selling areas, what paths they might take, and if they had a schedule that they followed. It is important to note that the type of cameras at the disposal of this team were incapable of taking detailed photographs at night which inhibited the ability of Picasa to differentiate the identities of the vendors under these conditions.

After having completed the fieldwork for the formal economy, we used the information gathered on the informal economy columns of the form to map out the peddlers' locations using Google Earth. For the purpose of verifying the high density areas mentioned in section 3.3 of the background, points representing the various vendors and beggars that make up the informal economy were manually inserted into Google Earth. Using a Garmin GPS unit, one member was able to follow two bag peddlers and a flower seller and record their paths throughout the city. The tracks were imported into Google Earth and automatically overlaid onto the map. Each one was named and included a summary that held information specific to the type of informal activity in question. For those informal activities that stayed in one area, a polygonal shape was positioned onto the map and color-coordinated according to type of informal activity; teal for beggars, red for bag peddlers, yellow for other vendors and purple for flower sellers. Each of the polygonal shapes gave a short summary of the activity type, how many sellers, and what merchandise was being sold. In some cases, an extra category of for comments was added if something noteworthy came up.

A polygonal shape was used to mark the location of the sheets used to display their merchandise. In every entry for the squares, a summary is presented stating the activity type, how many sellers were occupying that particular set of merchandise, what merchandise was being sold, the number of merchandise present (if possible), and method of display. The method of display entry consisted of whether or not the merchandise was placed on the vendors' signature white sheet or if there was no white sheet.

After all the data points were positioned, areas were broken up into sections based on how many data points were positioned on that part of the map. The waterfront was divided into three sections since it was so dense with informal activity by added paths around the sections. Each of these sections had 1, 2, 3, or 4 pins located within the area boundary, based on how many types of informal activity was present in the bordered area. With this map, we began identifying the locations with the highest densities of informal activity and were able to determine which locations could most likely affect the surrounding stores.

In this project, we did not estimate profits earned by the informal vendors, but instead focused on how to best set up investigations for future projects. We hypothesized that if an average price per item can be determined throughout field observations, a group can determine how much the sellers can potentially make, and thus how much money is taken away from the formal sector. We were able to estimate an average price for the merchandise sold by the informal sector from our observations. We developed the following equation to help calculate conservative estimates of the profits earned by informal vendors:

Average price per item x *Number of items stocked* = *Potential amount of money seller can earn*

Hopefully, this will help future groups take a more in depth look into the informal sector of the Venetian economy.

4.3.2. Assessing the impact of losses accrued by flooding during high tides

We were fortunate enough to have this IQP occurring during a time in Venice when the frequency of floods is at its highest because we were able to roughly observe the effect these floods have upon the Venetian formal economy. During sweeps through the city, especially around *Piazza San Marco*, there were stores that had been required to move their merchandise or even close for the day during the more severe floods. There were also restaurants that were either forced to stay closed for the day or opened and had no customers to eat there.

Additionally, the Venice Project Center provided us with the doorstep heights (from sea level) of each store in Venice. This information was crucial for examining how the floods affect the formal economy because it gives an exact water height that must be reached to flood the store. When our database was compiled with the others, each doorstep height was matched up with its corresponding address. In Microsoft Access, we filtered the doorstep heights and arranged them in order from lowest to highest. We added another column for our own discretion and converted the doorstep heights, which were in meters, to centimeters.

Since 80 cm and below is approximately a normal tide, we found how many doorsteps were 80 cm or less. Then, we followed this same process for if the tide level was 100, 110, 120, 130, and 140 cm. With these heights, we have determined what parts of Venice will be underwater during a tide that is higher than average, and thus were able to ascertain how many stores will be flooded when the city suffers from *acqua alta*. Using this data, future project groups can better determine the areas that will be more heavily affected and further observe the economic threats these tides bring in with them.

5. Results and Analysis

5.1. Case Studies on Formal Economy of Venice

We collected data for the businesses (retail, restaurants, and hotels) in Cannaregio and San Marco. We also used past data from 2004 and 2005 to show the evolution of the economy. Additionally, there was a case study performed on a small area in Castello to depict the change in types of stores over the years.

5.1.1. Evolution of stores in Cannaregio

We documented 1110 retail stores, 318 restaurants, and 152 hotels in Cannaregio in San Marco. On a *sestiere* level, we documented 384 retail stores, 149 restaurants, and 59 hotels in Cannaregio. In San Marco, we documented 726 retail stores, 169 restaurants, and 93 hotels. We identified 32 stores as closed stores in Cannaregio and 88 in San Marco, for a total of 120 closed stores. Using data from 2004 and 2005 for San Marco and Cannaregio, we created a display of the evolution of the stores over time.

We compared the amount of different types of stores present in Cannaregio in 2005 and 2009. Using the ten different categories, each year was divided into portions of each type (See Figure 21).

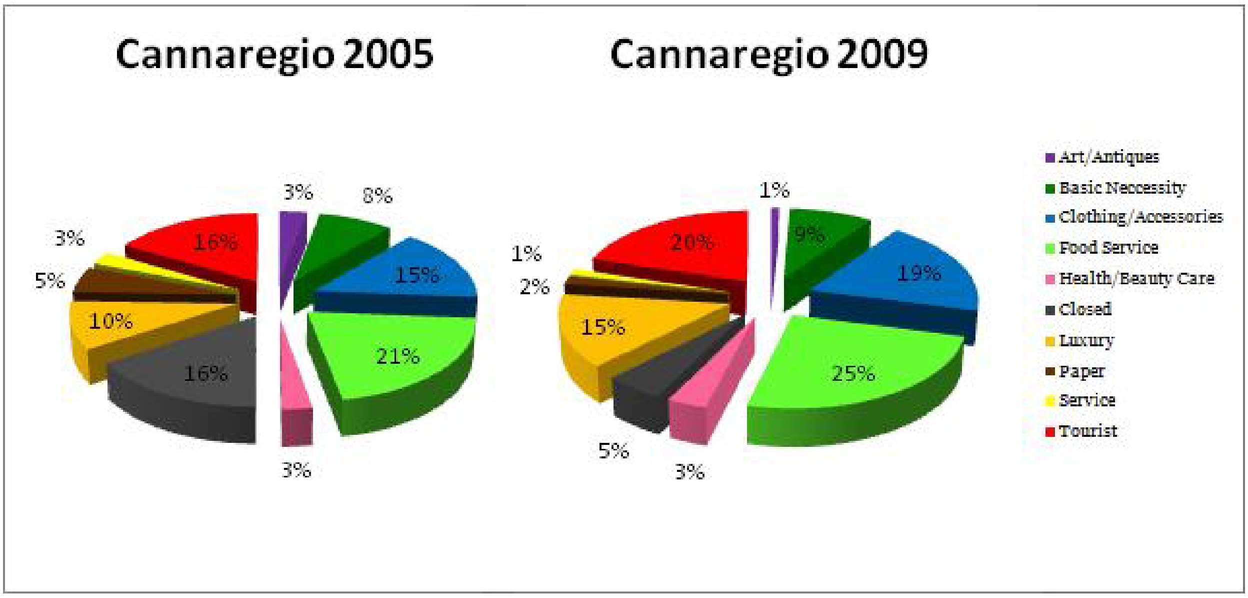


Figure 21: Evolution in Cannaregio Economic Sector between 2005 and 2009.

Between 2005 and 2009, the percentage of stores in the tourist category increased, as well as the percentage of the food service category. Both of these increases appear to correlate to an increase in tourism. The increase in the number of tourist shops is proportionate to the annual rise in tourist arrivals. Food Service also increases with the increase in tourism because of the demand for take away and restaurants. There is a slight increase (of one percent) in basic necessity stores. In 2005, there were 862 stores documented, of which 71 were basic necessity stores. In 2009, there were 624 stores documented, of which 53 were basic necessity stores. So although the overall percentage of this category of store is not decreasing, the overall number of basic necessity stores in Cannaregio has fallen which continues to support the general trends depicted in past research conducted in 2004. Of this category the team was able to identify three latterie amongst the confirmed closed stores in Cannaregio. Specialty stores, such as latterie, have been in sharp decline in recent years, the speculated cause being the recent rise of supermarkets within Venice. The added convenience of providing a plethora of goods in one location gives supermarkets a market advantage over specialty stores, possibly attributing to their sharp decline. There is also a decrease in number of closed stores between 2005 and 2009. Many closed stores have been converted into residences or other facilities so it is more difficult to identify closed stores. Because the number of stores has diminished since 2005, stores have closed between 2005 and 2009.

5.1.2. Evolution of stores in San Marco

Data was not collected for San Marco in 2005, but there is available data for 2004. This data from these two years was also compared by their categories.

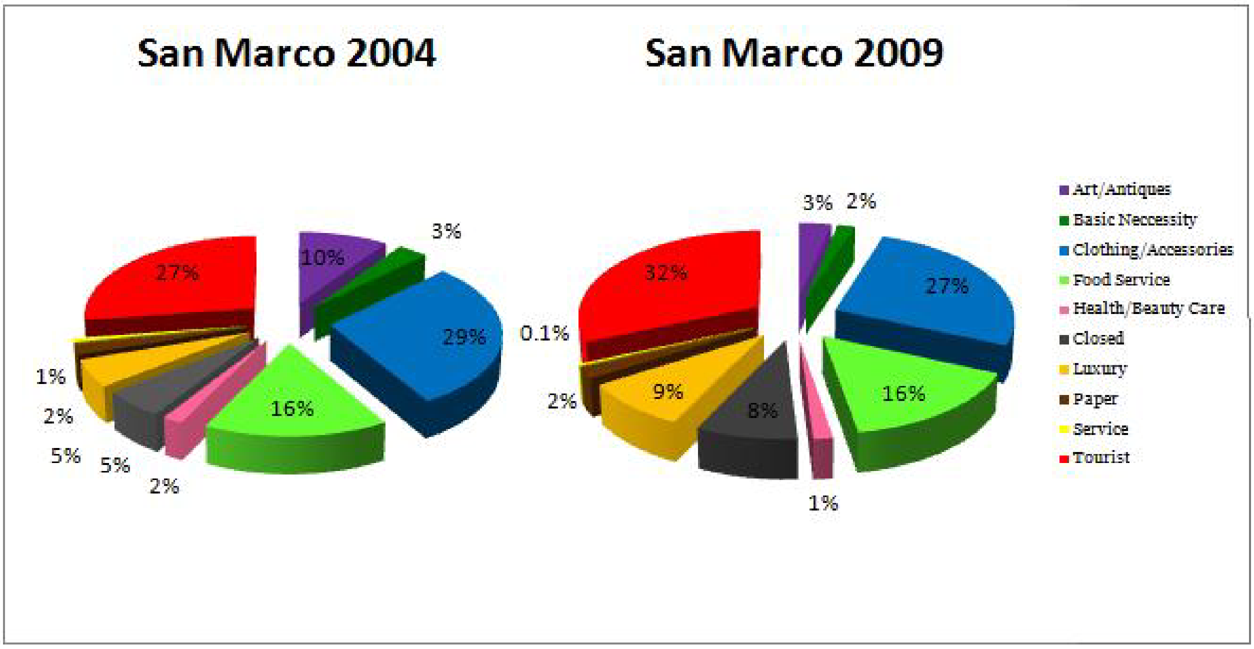


Figure 22: Evolution in San Marco Economic Sector between 2004 and 2009.

The most noticeable change between 2004 and 2009 is the increase in the percentage of tourist shops. The number of tourist shops in San Marco increased from 239 to 340. The economy is shifting to cater more towards tourism because the number of basic necessity is decreasing as the number of tourist stores increase. The number of basic necessity stores decreased from 28 to 19 between 2004 and 2009.

5.1.3. Comparison present day Cannaregio and San Marco

Although there are almost twice as many as stores in San Marco than Cannaregio, 988 in San Marco and 592 in Cannaregio, a comparison can be made between the percentages of each category in the two *sestieri*.

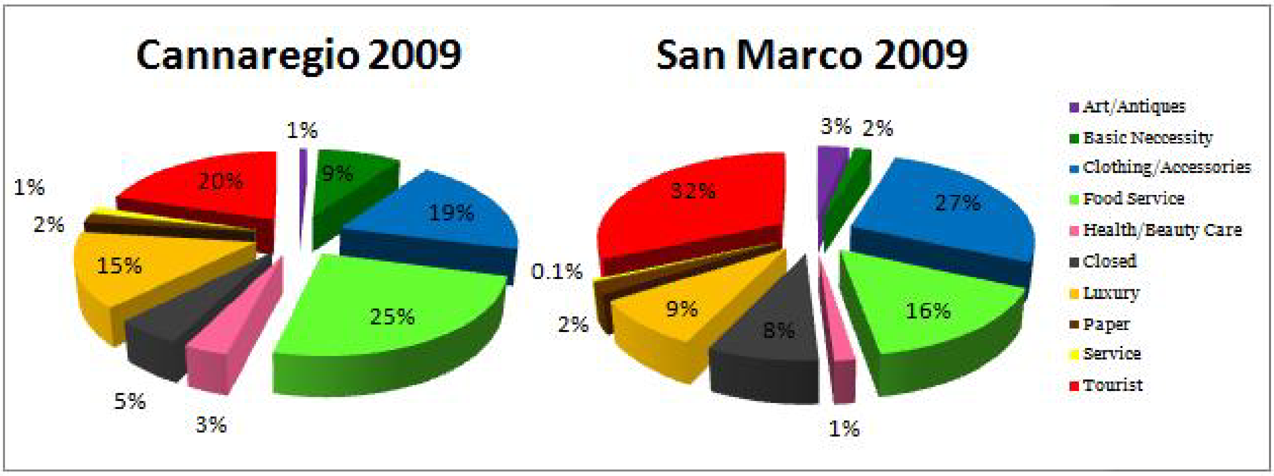


Figure 23: Comparison of Cannaregio and San Marco.

A number of trends can be gathered from the comparison of the business allocations exhibited within Figure 23. The basic necessity stores make up a larger percentage of Cannaregio than San Marco while the reverse holds true for tourist shops. These trends are not surprising as San Marco has always been the central hub for visitors entering the city. The apparent difference in percentages can easily be explained by an additional 34 hotels present within the *sestiere* of San Marco in comparison to Cannaregio. The typological distribution of the businesses in both *sestieri* are relatively similar, with the Food Service, Clothing/Accessories, and Tourist categories vying for supremacy, and the Basic Necessity, Art/Antiques and Paper categories dwindling in popularity. However given that stores provide food services and clothing can be considered to cater to both tourists and residents, it is safe to assume that Cannaregio, with its much larger resident population, could be considered residential while San Marco can be viewed as the opposite extreme when concerning the *sestieri* of Venice. The Service category in our project was insufficient for inclusion in the analysis as the only services taken into consideration were photo stores that provided film development and florists; hence the infinitesimal percentages in both *sestieri*.

5.1.4. Change in Typology of Stores in A Sample Area

After compiling the *Migropolis* data with our data collected, we created maps of the street with the different colors representing each category. These maps show the evolution of the locations from its original use (pre-1970) to 2007 to 2009.

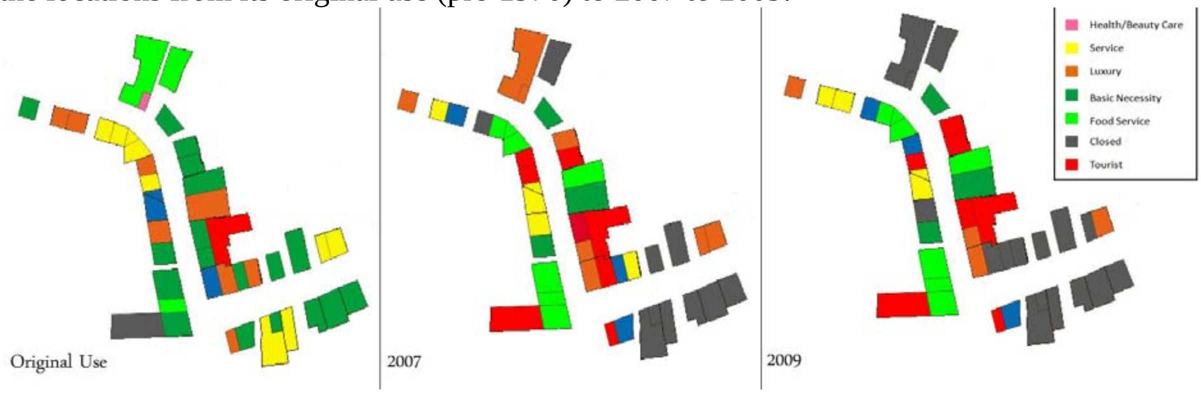


Figure 24: Evolution in the area near Calle de l'Arco.

This evolution demonstrates the decay in a residential neighborhood in Venice. Many streets like this are transforming into a tourist location or becoming overrun with closed stores. As the number of tourist stores increases, the number of closed stores also increases. As the years go on, the number of closed stored increases to 16 closed out of 43 total stores. Many of these closed stores are basic necessity stores. Between the locations opening and 2009, the number of basic necessity stores decreased from 18 to 2. This large change in number demonstrates the evolution of the economy towards catering to tourists over residents. Although this street is not in a high tourist area of Venice, it still depicts the shift. Other data in this study that depicts this same trend is the decrease in services, such as radio and television repair, cobbler, and watchmaker. All of these services cater to residents of the area, therefore, the decrease in the number of services depict the decrease in businesses catering to residents. The opposite is true for tourist-orientated shops. With socioeconomic changes impact, the changes in store typology. The t area has great change in store typology. The types of stores in many locations changed between the original use and 2009.

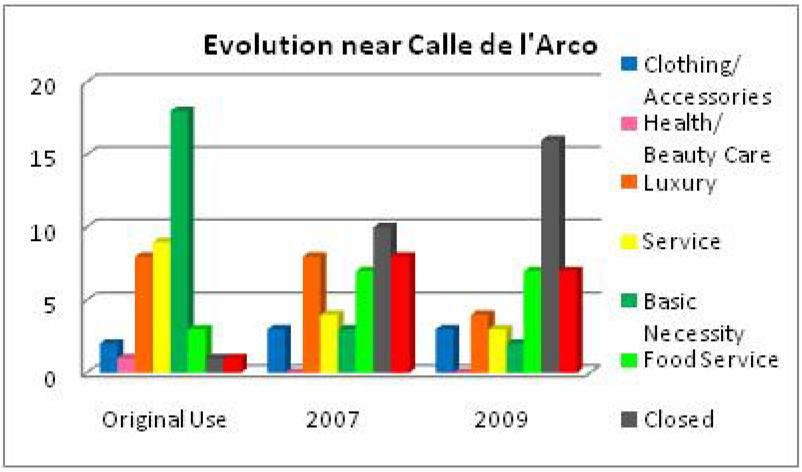


Figure 25: Chart of the number of each type of store for each year.

5.1.5. Analysis of the current franchises in Venice

As stated earlier, there is a decrease in specialty stores because supermarkets are opening in Venice. Some of these supermarkets are chain stores, such as Billa and Coop. These two big names in Italy food sales have multiple locations in Venice. Supermarkets are not the only chain stores in Venice; there are also other chain stores and restaurants. Some well- known Italian labels, such as Prada, Gucci, and Fendi have multiple locations in Venice, as well as other larger companies including Burberry, Guess, and Footlocker. Venice also has two of the largest fast food chains, Burger King and McDonald's. Out of the stores we surveyed in San Marco and Cannaregio, there were 180 chain stores. This includes all chains within Venice, Italy, and other countries. 122 out of the 180 chain stores are in San Marco and the remaining 58 are in Cannaregio.

The chain store can demonstrate the extent of the money leaving the city of Venice because most chains do not have their origins in Venice. A large number of the chains in Venice are chains originating in Italy, but in this case, the money still leaves the city. Most of the remaining stores have headquarters in another country. One largely represented company is the United States with chains, such as Timberland and The Disney Store. Even though the store or restaurant is in Venice, the company's headquarters collects most of the profit made.

5.2. Consolidation and organization of normalized store data past and present

In addition to the data collected in the field in the fall of 2009 there were two databases from the years 2004 and 2005 that were standardized with our own in accordance with the nomenclature devised in section 4.2 of the methodology. The culmination of the Venice Project Center's efforts in the documentation of the retail sector is contained within this section. It is important to note that aside from the analysis performed concerning flood data, the database created as a compilation of all prior databases was not used in the majority of our analysis. At the time of the evolution investigation it was easier to construct an analysis on individual years using their corresponding databases.

5.2.1 Database 2009

Utilizing the data collected over the course of the term it was possible to construct a database that documented the names, addresses, statuses, and overall typological breakdown of the restaurant, hotel, and retail establishments in Venice.

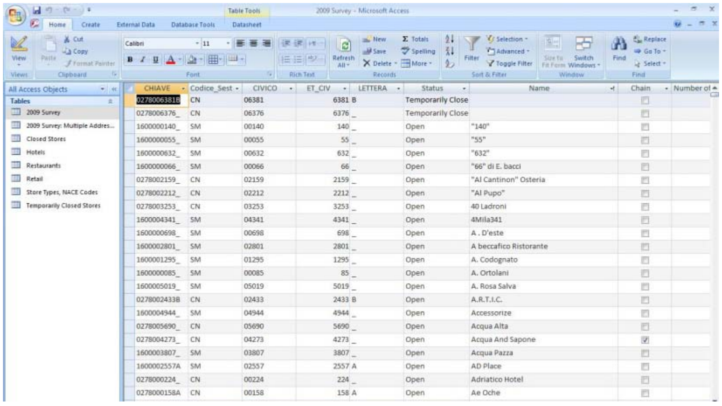


Figure 26: 2009 Database

This database differs from past projects in that it also contains approximations on the depths of stores and the distance between the lowest merchandise and the ground. This allows for future analysts to possibly make use of the data to roughly predict a damage assessment of floods at differing levels, based on the floor heights of the stores. Another aspect that makes this database unique is that the names of stores were also recorded, something that had been ignored in past efforts, which allowed for us to observe chain stores that may not have been noticed otherwise. Recording the names of business establishments that use them will also help future projects perform a more in depth economic analysis of the history of different restaurants and stores as multiple store changes in a single local need not necessarily encompass differing types.

5.2.2. The compilation of normalized store data from 2004 to 2009

After consolidating and standardizing the databases from 2004, 2005, and 2009, we used this compiled database to create an interactive map of Venice with its current and past stores (2004 and 2005).

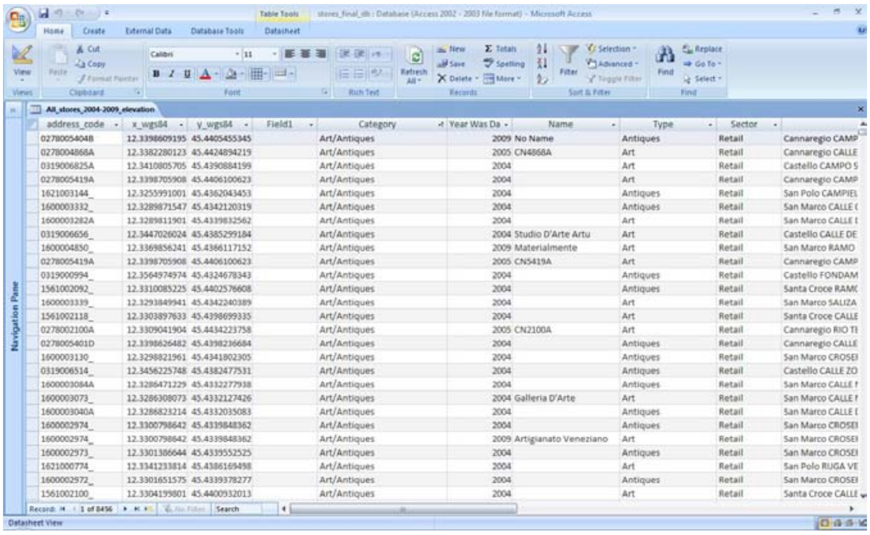


Figure 27: Compilation of Databases from 2004, 2005, and 2009

5.3. Location and quantification of informal activities

In order to determine the prevalence of the illicit activity that occurs on the streets and bridges of Venice, we had to locate and quantify them. The quantification included the numbers of informal activity as well as the possible profit they could make. While locating the informal activities, our group determined a few key places in Venice where one is almost guaranteed to find a peddler or beggar.

5.3.1. Locations and observations of the Informal Sector in San Marco and Cannaregio

Throughout the month of surveys, we noticed a few specific locations that had been selected by beggars and vendors to be regular posts. In San Marco, a beggar woman consistently sat outside the door of the Chiesa Rettoriale di San Zulian (a large church near the piazza) during the morning and early afternoon. The same woman was spotted on multiple occasions walking toward the other end of the *sestiere* in the middle of the day and would sometimes reappear there. Additionally, evening explorations into Piazza San Marco showed that there were an average of two or three flower sellers roaming around the area, rather than moving through the streets.

Figure 28: Beggar at Chiesa Rettoriale di San Zulian.

In Cannaregio, a woman begged at the beginning of Strada Nova, the main street along the Grand Canal in that area. Near her, a small group of bag sellers set up their sheets only a few buildings down from the Venice Project Center. It seemed that the Scalzi Bridge and Strada Nova were the major hotspots for informal activity. Additionally, Strada Nova is the only place where we actively witnessed two beggars walking down the street and begging people for money as customers were sitting down eating at restaurants. All other beggars we have seen in Venice were sitting or laying down on the ground begging. Farther down, there is a favorite spot for the beggars at the corner where Salizada del Pistor meets Strada Nova right before going over the bridge. As for bag sellers and other vendors, they travel up and down that street frequently and set up their bags and other items to sell. The other part of Cannaregio where you can reliably find informal activity is right next to the train station on the Scalzi Bridge. Bag, belt, tripod, and wallet sellers, as well as beggars, populate the bridge as tourists come into the city by train.

On one occasion, a group member observed a bag seller at Strada Nova following a couple who seemed wary about a purchase and goading them until the pair finally bought a bag. Similar techniques were noted for many other bag sellers who set up shop on the bridges of the city.

In addition to these individual observations (refer to Appendix D for a more complete list), there was one specific area guaranteed to be overrun nightly with bag sellers and other vendors. This area spanned from the front of Piazza San Marco down the entire waterfront to the Arsenale boat stop in Castello. San Marco is the largest *sestiere* in relation to number of storefronts, thus it is the stop where tourists migrate. As one of our group members followed a bag seller around, indicated as Bag Seller 1 on the GPS track (refer to Section 5.1.4.), he turned a few times and took notice. He approached our group member and tried selling a bag. He said, "The tourists are the ones who like the bags." Therefore, since the tourists are the ones buying bags and since they spend a lot of time at Piazza San Marco, bag sellers line the waterfront to display their items to sell to those who will buy. Beggars, however, do not tend to hang out in this area. We have spotted them mostly at churches, such as the Chiesa Rettoriale di San Zulian, or sitting along the streets from Campo San Salvador to Strada Nova. Due to the sheer size and regularity of this spectacle, we decided to conduct a more thorough investigation.

In addition to Appendix D, refer to our Google Earth interactive map (refer to 5.3.6.), which is a compilation of all our data on the locations and further observations of the bag sellers, beggars, flower sellers, and other informal vendors.

5.3.2. The observed behaviors of the Venetian informal sector

During our observations, we also took note of the behaviors and mannerisms of the peddlers that we encountered. These patterns of behavior would demonstrate the different techniques that the beggars and vendors employed to get as much money from tourists as possible.

The beggars, who were almost always women, seemed to have some type of rotation system in place, though some of the beggars very clearly chose regular spots that they felt would be most advantageous to their efforts. They tended to come out between the mid-morning to late afternoon and were usually gone by 16:00 (4:00 PM). In addition, suspicions have been raised concerning some of the beggars actually being better off than people are led to believe. For instance, a beggar that was seen almost daily at the *Chiesa Rettoriale di San Zulian* (as shown in Figure 28) was once spotted walking down a street carrying a bag of newly bought items. The bags appeared not to be from fruit stands or grocery stores, but places where luxury food and/or items were sold.

Also, it seems likely that they take a "lunch break" around 11:30, the way other storeowners do. This assumption has not been proven answer, but is a reasonable guess for why they seem to leave their post around this time.

When confronted by the Venetian authority, the beggars either calmly moved away if spotted or were shooed away, only to return to the same place once the officers left the area a few minutes later.

The flower sellers do not seem to come out until dinnertime and circle around restaurants or heavy tourist attractions such as *Piazza San Marco*. The first flower-selling tactic that was observed was to approach romantic couples. By presenting the roses to the women and speaking to them, they try to force the man in the relationship to feel guilty enough to buy a flower for their date. If that does not work, then the flower sellers approach seemingly random people in the area and quite literally shove the flowers in their faces. This behavior can become rather aggressive at times. While one group member followed a flower seller, it was discovered that they had hidden a pile of flowers somewhere near their stalking

Figure 29: Flower Seller's hideaway for flowers in the doorway of San Marco 1225.

grounds. The flowers were kept at San Marco 1225, in the space between the front door and a flood barrier. After replenishing his stock of flowers, he walked back towards the piazza where he resumed sales.

In reaction to Venetian authority, especially in the piazza where there are many police officers usually congregated, the flower sellers quickly walked away whenever they saw an officer, only to return once they were gone.

Some moving bag sellers walked around with bags, sometimes up to a dozen at a time. However, they usually ended up back at a static location to set up their bags on the ground, with or without their iconic white sheet. Once settled, they waited until they saw someone look at the bags. They pester people walking by; asking them if they want to buy a bag. They continue to haggle and bargain with the potential customer until they either make a sale or the person walks off. When sold, it is almost always at a price discounted from the original. The final price of the bag, however, varies depending on the buyer.

Figure 30: Bag sellers on the waterfront getting ready to rush away from oncoming police officers.

When it came to Venetian authority, the bag sellers quickly gathered their bags, either through their arms or bundled in a sheet, and escaped into side streets until the officers passed. Unlike the other vendors, bag sellers sometimes traveled in groups and would occasionally have someone acting as a lookout for the others, to warn their fellows when police were approaching. There were a few times, however, when some bag sellers stayed where they were and the officers did not say anything at all.

The city was full of other, sometimes circumstantial, vendors around the city. The most prominent others were umbrella sellers, belt sellers, wallet sellers, and cornstarch toy sellers. These vendors act much like the bag sellers except they do not often move around the city. One noted exception is that umbrella sellers walk around the city if the rain has cleared up where they previously were. They stay mostly around the waterfront or tourist-heavy areas and respond to the Venetian authority in the same way as the others, leaving for a time and then returning later.

5.3.4. Imported Garmin GPS tracking of the Venetian informal sector

One of the biggest challenges we faced was to pinpoint the locations of moving bag and flower sellers. Most of the bag sellers, we have found, seem to migrate to the waterfront of San Marco and Castello during the early evening. We tracked some of them using a Garmin Global Positioning System (GPS) device and import their paths from the device into Google Earth. This was very helpful because although bag sellers can be pinpointed once they get to the waterfront and set down their bags, flower sellers are constantly on the move, making it impossible to determine where exactly they work.

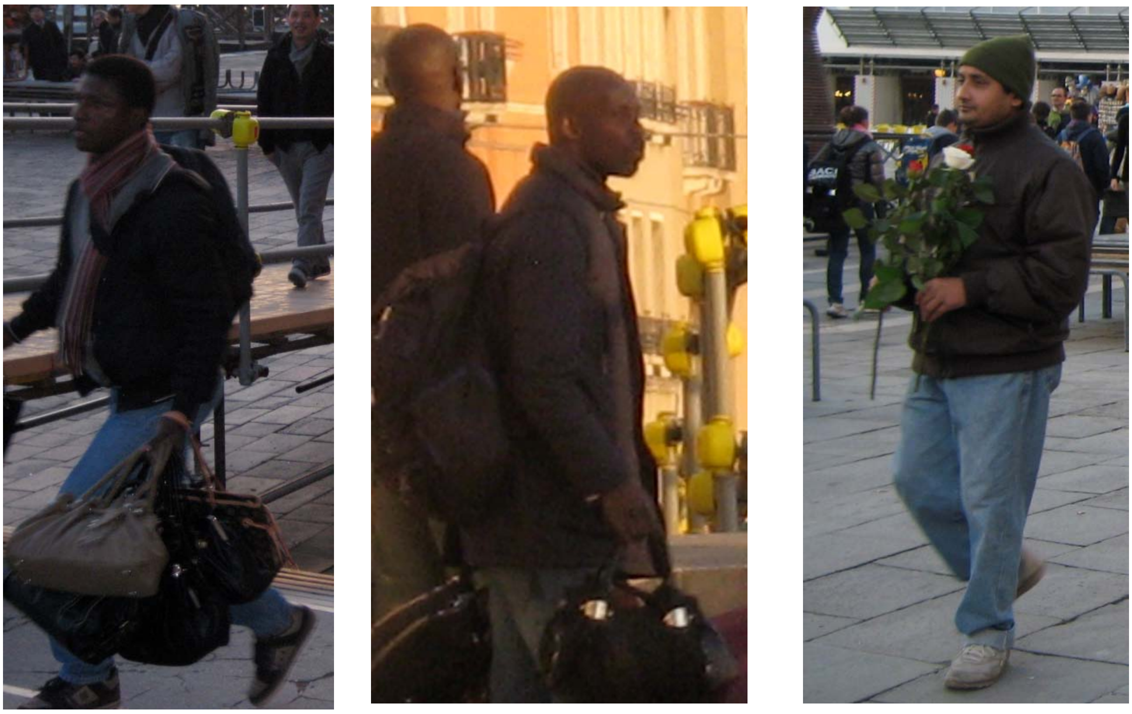


Figure 31: (top left) Bag Seller 1; (top center) Bag Seller 2; (top right) Flower Seller 1

Figure 32: (top) GPS tracks for Bag Seller 1 and 2 and Flower Seller 1.

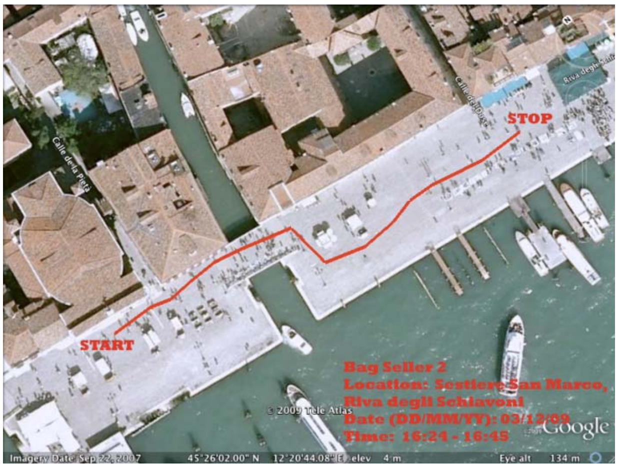


Figure 33: (top left) GPS track close up for Bag Seller 1; (top right) GPS tracks for Bag Seller 2.

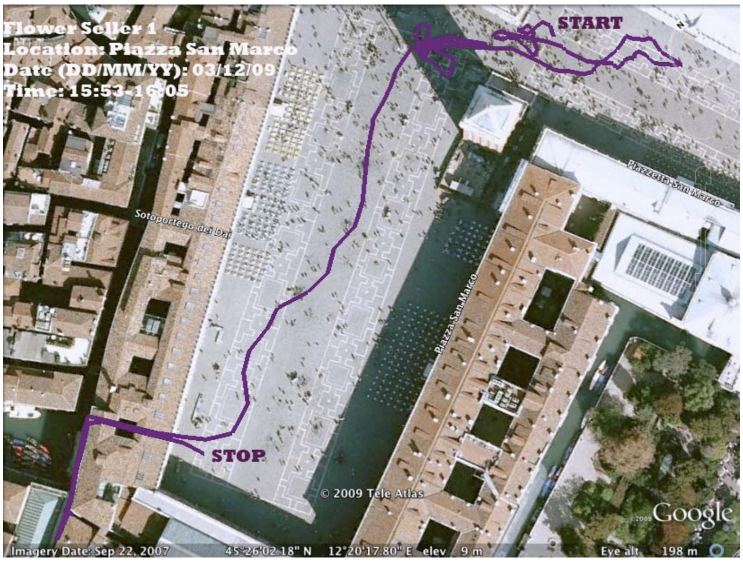


Figure 34: (top) GPS tracks for Flower Seller 1 in Piazza San Marco

5.3.5. Estimate of the quantification of informal economy

Although we have not gathered all the information necessary to fully estimate the profit loss incurred by the formal economy, we have gathered enough information to provide insight on the effect these activities have on the formal economy on a small scale. During our fieldwork, we counted 111 instances of illicit activity in the streets. In order to begin quantifying the cash flow that is diverted from formal vendors and spent instead on illegal goods and services, we have roughly estimated the average asking prices of various vendors. The following are our minimum and maximum estimates per item we have determined by our observations and encounters for each activity.

Type	Minimum Estimate	Maximum Estimate
Bag Sellers	20 €	45 €
Flower Sellers	1 €	2 €
Beggars	0.01 €	2 €
Magician/Street Performer	0.10 €	5 €
Belt Sellers	15 €	30 €
Wallet Sellers	15 €	30 €
Umbrella Sellers	5 €	15 €
Cornstarch Toy Sellers	1 €	2 €
Sunglasses Sellers	7 €	15 €
Tripod Sellers	8 €	15 €

Table 1: Minimum and maximum estimate per item for each type of informal activity.

Using these minimum estimates, we calculated a potential total minimum and maximum profit that could possibly be redirected from the formal economy to the informal economy.

Type:	Total Number Observed	Total Number of Items	Potential Total Minimum Profit	Potential Total Maximum Profit
Bag Sellers	84	234	€4680	€10530
Flower Sellers	2	15	€15	€30
Other Vendors	14	Total: 127 Cornstarch Toys: 27 Belts: 20 Wallets: 15 Sunglasses: 60 Magician: 0 Tripods: 5	Cornstarch Toys: €27 Belts: €300 Wallets: €225 Sunglasses: €480 Magician: €0.01 Tripods: €40	Cornstarch Toys: €54 Belts: €600 Wallets: €450 Sunglasses: €900 Magician: €5 Tripods: €75
Beggars	11	0	€0.11	€22

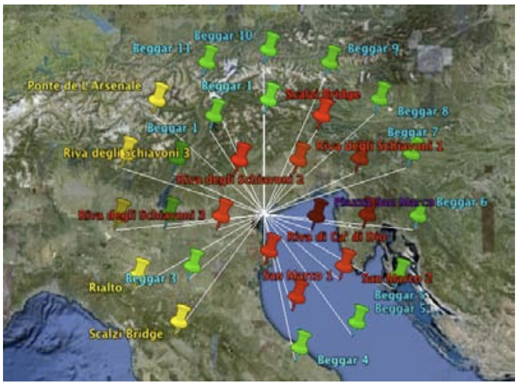
Table 2: Minimum and maximum potential profit for each type of illegal activity.

Overall, on the small scale, the informal sector can take anywhere from €5767.01 to €12666 away from the formal economy. Currently, the U.S.D. fluctuates around $1.5 per euro, means that $8650.51 to $18,999 can potentially be taken away from the formal economy. Even on a small scale, this is a lot of money, thus we can start to see the beginning of the loss of business that the formal economy has because of these illicit vendors.

5.3.6 Informal Sector Location Map on Google Earth

Google Earth is an interactive, downloadable program that enables the user to create maps that zoom into a certain spot on the globe, going as far as a first person street view. After gathering our information on the locations of the informal sector, we used Google Earth to create such a map.

Legend:
Bag sellers are represented by the color red.
Other vendors are represented by the color yellow.
Beggars are represented by the color teal.
Flower sellers are represented by the color purple.



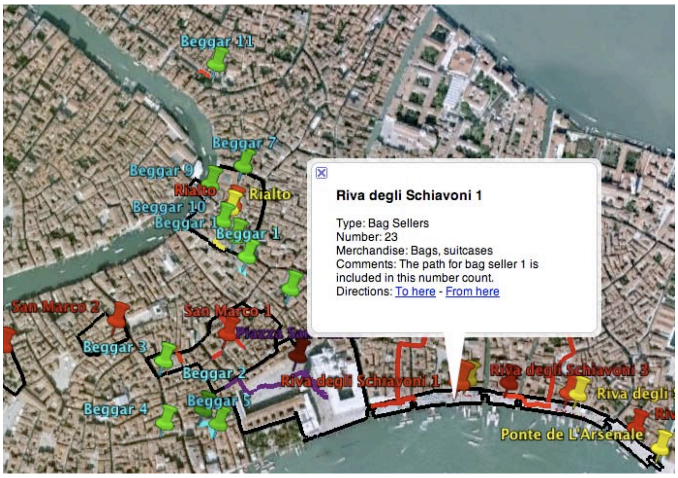


Figure 35: (top left) Zoomed out view of our map on Google Earth; (top right) A top view of our map of Venice, Italy on Google Earth; (left center) An example of what is shown on our map when you click on one of the pins that represents a certain area; (right bottom) An example of what is shown on our map when you click on one of the polygonal figures that represents the location of the merchandise.

5.4. Assessment of the impact of losses accrued by flooding during Acqua Alta

By taking existing data on the door heights and correlating it with this project's amalgamation of store data, it was possible to generate a rough estimate of the number of stores that flood at different tide levels. Additional research of periodicals of some of the major floods in Venice in recent years have also aided in taking the analysis a step further towards the ultimate goal of providing damage assessments or predictions.

5.4.1. Periodical data on the economic impact of floods

After researching Venetian, Italian, and international newspapers, we were able to come up with the different costs and damages of recent floods that will help future groups in analyzing cost effectiveness of different prevention strategies. In October 2006, over 300 thousand Euros worth of damage were reported from both the islands and mainland Mestre because of a flood the previous month that left more than 90 businesses and citizens with damaged or destroyed property.[72] A year later, in September 2007, a massive flood in Venice caused 50 million Euros worth of damage, and nearly destroyed of 100 businesses.[73]

5.4.2. Quantification of stores and restaurants subjected to flooding

One of the most pressing issues in Venice is the increasing frequency of flooding over the decades and the increasing destruction that it leaves behind in its wakes. When the height of the tide comes in at less than 80 cm, the percentage of Venice that is flooded is consistent to a normal tide. As the flood heights increase, the percentage of Venice that is flooded increases to the point when at 140 cm, 90% of the city is flooded.

[72]"Alluvione, risarcimenti per 300 mila euro." *La Nuova di Venezia*
[73]"50 milioni di euro di danni Dopo l'alluvione dobbiamo reagire." *La Nuova di Venezia*

Tide Level (cms above sea level)	% of Venice that is flooded
Less than 80 cm	Normal Tide
At 100 cm	4%
At 110 cm	12% (An emergency sound alert the Venetian)
At 120 cm	35%
At 130 cm	70%
At 140 cm	90%

(left) Table 3: The percentage of Venice Proper that becomes flooded at different tidal heights. [74]**; Figure 36: (right) Flood Levels in Venice Proper in 2001.**[75]

The correlation of existing door height data with the compiled database yielded the following graph which encompasses a rough estimate of the stores and restaurants most affected by tides at certain water levels.

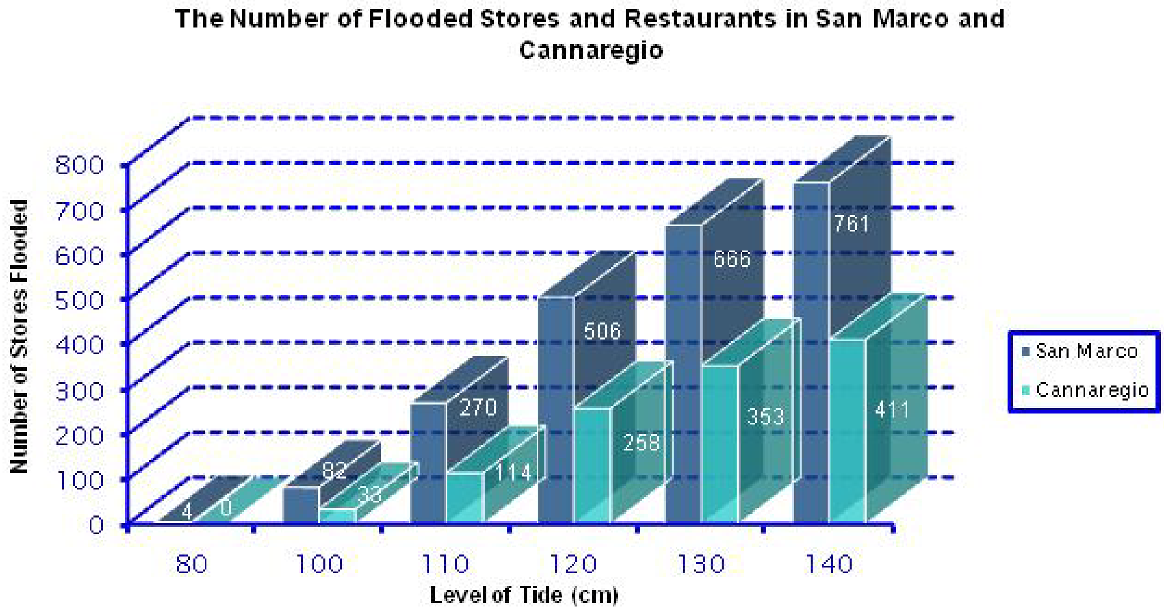


Figure 37: Graph of the number of stores and restaurants affected by flooding in San Marco and Cannaregio.

Of particular note is the number of stores that become flooded at 120, 130, and 140 cm, amounting to 506, 666, and 761 respectively for San Marco, which represents the highest

[74] "Venice Online: High Tides." 2009.http://www.veniceonline.it/HighTides/HighTides.asp (accessed Dec. 13, 2009).
[75] See Appendix E

density of stores in all the sestieri of Venice. This area also correspondence to the lowest point in the entire city, and as the center of Venice's tourist income, the data shows that floods as high as 120 cm can amount to the flooding of 270 stores. While this data gives a good grasp on the number of stores affected at different tide levels it does not display the degree of severity to which they are flooded. More data will have to be collected in order for a proper damage assessment can be predicted of future floods.

5.4.3. Investigation of where the loss of money for the retail stores comes from

Retail stores are constantly at risk due to the risking and more frequently occurring high tides. Other characteristics that we have collected in our database are the merchandise closest to the ground and the height (in cm) that it is above the ground. With these numbers, it is possible to know what items will be the first ones destroyed or moved of retail stores.

Figure 38: (top) An example of a store flooding and the lowest merchandise we recorded being moved to protect it from being damaged; (left) An example of merchandise in a temporarily closed store that is approximately 2.54 cm away from the rising flood level.

While there will be times when the merchandise can be moved to a higher level, merchandise can only be moved so high until the amount of flooding will be too much to prevent it from being damaged. In addition, there are times when the stores either close for the day due to the flood or never opened for the day, leaving merchandise at potential flood level low on the ground since there are no employees there to prevent products from getting damaged. The loss of merchandise from being destroyed or the cost of fixing damaged merchandise, as well as any store equipment, leads to a loss of profit for the retail stores, thus leading to lower potential earnings for the store as a whole. Retail stores will also suffer from the loss of employee hours if the establishment is closed, temporarily closed, or if there is a cut in employees for the day because of the floods. The loss of employee hours will lead to partial loss of income for an employee. The loss of income leads in a decline in spending, which in turn results in a decline in the economy. Of course, in order for such an effect to happen towards the economy, this has to frequently occur. With the knowledge of how many stores have items on the ground, or at a low height, we hope that further groups will be able to come up with an accurate way to estimate the cost of flooding for the formal economy.

6. Recommendations

6.1 Methods for Documenting the Formal Economy

During the two months of our investigation of the hotel, restaurant, and retail sectors, a number of techniques were tried and tested before we finally arrived at the methodology presented within this report. As a result of trial and error it was possible to develop a few suggestions and recommendations that may better serve future endeavors in the study of the Venetian economy.

6.1.1. Field collection forms

Before any data can be collected in the field a proper form must be constructed that can tailor to all the needs of your project. The form displayed within this report is by no means the best and only method for future documentation of Venetian stores; however whatever any subsequent forms may be designed to consist of, it is important to remember that the contents and character of the form will delegate the speed with which the team is able to cover all the businesses within a *sestiere*, and ultimately correlates to how much of the city the team is actually able to analyze. It is generally a good idea to base the field form around the types of analysis you intend to perform, constrain the size to fit to one page, while allowing for maximum data per sheet. In order to keep data organized it is generally recommended that future projects stick to the nomenclature that was designed to normalize the data of past projects. Data collection can even be sped up if one familiarizes oneself with the existing nomenclature and

6.1.2. Coping with obstacles

While in the field, a number of other obstacles such as hordes of tourists, precocious shop owners, and inclement weather can all impede the team's progress and the overall extent to which the city can be covered. While the first two are mere annoyances, the latter can greatly limit the amount of time you can actually be in the field. Recording data on paper amidst torrential rain can prove extremely difficult. Photographs also become next to impossible when umbrella wielding tourists constantly bump and berate you for stopping to record data in the middle of cramped streets. From 12:00pm to 3:30pm a significant portion of Venetian businesses will go on a lunch break for varying periods between these hours. During this time data collection is debatably pointless if any of the fields within the form are dependent upon some aspect concerning the interiors of the stores as many lock up with steel gates that obscure the contents of these businesses. If it floods, it will normally do so in the morning, and in this case businesses may or may not open at all. Stores that were closed earlier in the day will still take their usual breaks between 12:00pm and 3:30pm. For this reason it would be ideal to document Venetian businesses of any type in the summer when everything is guaranteed to be opened. However since it is most likely that further investigations of the economy will continue to be held in the fall, it is important to make the maximum use of a sunny day.

6.1.3. Collecting data in the field

The initial data collection of this project was modeled around the definitions of a retail, hotel, and restaurant sector of the economy. After having looked into possible applications for the data and standardizing databases of the past, it became apparent that these definitions were not inclusive enough as a number of other types of business, albeit not necessarily relevant to the project scope of this year, would have been an excellent addition to the total knowledge base of the Venice Project Center as a whole. Since stores were the main focus of this project, business institutions such as travel agencies and other tourist related services were not recorded. Other service institutions such as barber shops and salons were also excluded from the documentation, as they did not appear under the official government definitions of a hotel, restaurant, or store. For the benefit of future research of the entire economic sector of Venice, it might be better to record any type of business one comes across in the field.

6.2. Possible applications, graphics, or areas of analysis

As of 2009, all past databases that contain data on the locations and evolution of the retail sector have been standardized to the extent that common categories have been assigned to describe the original typology of their stores dating back to 2004. However due to the time consuming process of reorganizing all the past work done at the Venice Project Center regarding the stores in Venice, the team did not have time to make the best of the data that was available. The following section includes some of the ideas we had for possible applications and analysis that could be performed on this data.

6.3 Methods for quantifying and tracking informal vendors

During the investigation into the formal economy, our group was able to quantify a small portion of the informal business through peripheral surveillance. Given the statistics we were able to gather with only cursory observations, we concluded that if substantial time was specifically devoted to observing the informal economy, a well-educated estimate of the growth and evolution of this sector could be devised. For the next group, we recommend investing in a camera that has a decent night vision filter, because some informal vendors (most notably flower sellers) are only prevalent at night. Barring the ability to obtain such a camera, the group proposes simultaneous detailed observations by each member in various points around the city. Either method will ensure an accurate count of beggars and merchants at a given time. Additionally, we advise any future project teams to utilize Picasa's face recognition feature, which we deemed suitably accurate for the purpose of recognizing repeat appearances of specific beggars and vendors.

Another useful strategy for those looking to continue to this study is to obtain a GPS device that has tracking and computer import capabilities (we used a Garmin system), which will be useful for drawing paths and pinpointing locations of activity. Our project chose Google Earth for map creation, a program we highly recommend pending the development of better technology. We feel that a GPS track can help a group understand both the ultimate destination and preferred route of a bag seller, flower seller, or other vendor. Additionally, it would be useful in helping discover possible rotations and established places of business for beggars. These results will then allow for a direct visual comparison to the 2009 data. By documenting information in this way, future groups should be able to begin documenting the evolution of the informal economy in parallel to the formal.

6.3.1. Methods for Organizing Informal Data

Since the focus of our project was mostly geared towards the formal economy, it did not seem feasible to create a second standardized database strictly for informal activities. Due to our limited knowledge of MapInfo and its user-compatibility issues (MapInfo is not a particularly intuitive program), we chose to manually add each instance of informal business into Google Earth. As a more in-depth search into this part of the economy occurred, however, this method of data entry could potentially prove inefficient. As such, we suggest designing a standardized, updatable database and creating maps using one of two strategies. Either learn MapInfo sufficiently to create a map layer of each instance, or develop a program (if one does not already exist) that will allow for the quick conversion of a database into a Google Earth file (extension .kml or .kmz).

6.3.2. A Better Estimation of Funds Diverted to Informal Vendors

Based on our observations, we were able to create a small scale, conservative estimate of the economic impact of informal merchants. Specifically, we developed a rough quantification of the income that could be potentially redirected into the informal economy if a vendor were to sell all of their wares. In the future, we recommend taking the following steps. First, continue gathering important merchandise information, especially typology, number of items, and price ranges and averages. Next, use this data to reconfirm this year's estimated price ranges and expand into any new areas of commerce that may appear in the coming years. In addition, attempt to discretely observe the activities of a beggar or vendor for a full day. If this is accomplished successfully, it will allow for much more accurate calculations regarding illicit profit margins. We suggest that when making these estimates, extrapolate the results to apply both to a specific location and the entire city. Having both frames of reference will allow for detailed, localized investigations as well as a general overview regarding the economic effects of illicit activity.

6.4. Assessing damages due to flooding

The project team was initially able to perform a simple analysis of the percentages of stores in Cannaregio and San Marco that were likely to become flooded at certain water levels. One could potentially take this a step further and create a GIS layer that represented the areas of Venice covered at certain heights based on an existing layer that contains all the door levels. The map would show how many of Venice's stores would be affected by different water levels.

6.4.1. Map Displaying Flooded Stores at Different Tide Levels

Throughout our research, our group compiled data relevant to estimating the effects of floods and *acqua alta* in the business sector. Using the doorstep heights we were provided with (which are displayed in our database), we suggest that the next group create an interactive map with variable tide levels. This display can be combined with the typology map, to create a comprehensive graphic which allows the user to calculate how many of each type of store gets flooded and how often. Additionally, an inquiry into average flood heights would help in calculating a real estimate of how drastically the environment could impact the economy, as opposed to the theoretical situation that the map would display.

7. Conclusions

Throughout our research, fieldwork, and analysis, our group drew conclusions about multiple facets of the project. At the onset of this project, we had hoped to give equal weight to investigations on the formal economy, informal economy, and the economic effects flooding. After arriving in Venice, we quickly realized that doing justice to any of these three objectives requires a separate project. Recommendations regarding these project ideas can be viewed in Section 7. Additionally, we learned that it was completely unreasonable to attempt to cover the entire city in less than 7 weeks, take detailed data on each store, and create a functional database. Instead, we concluded that it would suffice to survey as many full *sestieri* as we could within a reasonable time span of 4 weeks.

In regards to the current state of the formal economy, we documented 592 total stores, restaurants, and hotels in Cannaregio and 987 in San Marco. This suggests that Cannaregio is significantly more residential than San Marco. Furthermore, during both formal survey periods and casual observation, we distinctly noticed that the economy of San Marco depended much more heavily on tourists than that of Cannaregio. To verify that this was the case, we found that there were 169 restaurants and 92 hotels in San Marco compared to 149 restaurants and 59 hotels in Cannaregio. Because these two sectors (especially hotels) reflect a higher tourist presence, it is a fair assumption that the discrepancy in numbers stems from a larger tourist presence in San Marco.

During the compilation of our databases past and present, we identified a few trends that correlated with our identified causes of economic change. A conclusion we drew involved the change in store typology. By comparing recent data to that of 2007, provided by *Migropolis*, we were able to notice a rise in stores in the food service and tourist categories. At the same time, the number of basic necessity and service stores has decreased. This change marks a clear shift from a residential to touristic economy.

Because of our limited time and resources, we were unable to gather any conclusive evidence regarding the impact of either floods or informal vendors on the economy, but we were able to realize some trends. There was a significant presence of beggars and illicit merchants on the streets, even more than we had realized. After only a cursory examination, we documented no less than 113 instances of informal activities, in 10 different categories. Further research into this topic will no doubt yield results. Similarly, we have concluded that a project about floods would be worthwhile given our data on doorstep heights and flood levels. Using both hypothetical simulations and first-hand observations, we discovered that there were a fair number of stores flooded in the city. Additionally, one of the most heavily affected areas was *Piazza San Marco*, which also happens to be the area of highest tourist concentration on any given day. These coinciding facts are bound to form a stable base for future projects.

Overall, we were pleased with our results. Our hypotheses were generally proven, and we gathered a fair amount of data to back our claims. Not only that, but we were able to establish useful foundations for future projects. Our hope is that in the coming years, IQP groups will be able to peruse our methodology and results and use them as starting points for important and substantial work.

Bibliography

"50 milioni di euro di danni Dopo l'alluvione dobbiamo reagire." *La Nuova di Venezia* 5 Oct. 2006. Print.

"Alluvione, risarcimenti per 300 mila euro." *La Nuova di Venezia* 11 Oct. 2006. Print.

Alessandro Santini. *Photo Gallery - Maschere all'Arsenale*2009.

"Background Note: Italy." U.S. Department of State. http://www.state.gov/r/pa/ei/bgn/4033.htm (accessed 10/6/2009, 2009).

Bamber Gascoigne. "History of Venice." HistoryWorld.

Davis, Robert C. and Garry R. Marvin. *Venice, the Tourist Maze a Cultural Critique of the World's most Touristed City*. History e-Book Project; HEB90030. Berkeley: University of California Press, 2005, http://name.umdl.umich.edu/HEB90030; http://name.umdl.umich.edu/HEB90030.

Da Mosto, Jane. *The Venice Report*. Cambirdge UP, 2009. Print.

"DAWN.COM | Front Page | Europe’s Top Tourist Destinations Hit by Global Recession " http://www.dawn.com/wps/wcm/connect/dawn-content-library/dawn/the-newspaper/front-page/europes-top-tourist-destinations-hit-by-global-recession-489 (accessed 9/29/2009, 2009).

Durigan, Frederica. *Turismo a Venezia: Trend, Statistiche, Dati e Indrizzi*. Milano: Libri Scheiwiller, 2005.

Fabio Carrera. *The Harbinger of Alberghi: Hotel Proliferation in Venice*2009.

Fabio Carrera, Andrea Novello, and Alberto Gallo. "Street Performances, the Role of Visual Analysis in the Microzoning of Public Space in Venice, Italy."Massachusetts Institution of Technology; Worcester Polytechnic Institute.

Fletcher, Caroline J. and Jane Da Mosto. *The Science of Saving Venice* Paul Holberton Publishing.

Gherardo Ortalli, Giovanni Scarabello. *A Short History of Venice*. Translated by Amanda MassinghiPacini Editore S.p.A., 1999.

"Global Times - EU Current Account Deficit Falls in Second Quarter " http://business.globaltimes.cn/world/2009-09/467343.html (accessed 9/29/2009, 2009).

"Italy (03/09)" http://www.state.gov/r/pa/ei/bgn/4033.htm (accessed 9/29/2009, 2009).

John Keahey. *Venice Against the Sea: A City Besieged*. 1st ed. New York, NY: Thomas Dunne Books, 2002.

Jonathan Bahlatzis, Sophia D'Angelo, Hamlet Nina, Ilan Shomorony. *Pressing Issues: A Venetian Socioeconomic Overview*. Worcester Polytechnic Institute: 2007.

"LE LEGGI SUL BED AND BREAKFAST: Come Aprire Un B&B in Veneto." http://www.bed-and-breakfast.it/leggi_bed_and_breakfast_veneto.cfm.

Maria Laura Della Croce, Annie Sacerdoti. "The Great Book of Italy." (2004).

"NACE Codes." European Commission. (accessed 10/7, 2009).

"National Statistics Online" http://www.statistics.gov.uk/cci/nugget.asp?ID=194 (accessed 9/29/2009, 2009).

"Overcrowded Venice may Ban Day-Trippers | Gadling.Com " http://www.gadling.com/2009/09/18/overcrowded-venice-may-ban-day-trippers/ (accessed 9/29/2009, 2009).

Paolo Russo, Antonio. "The 'Vicious Circle' of Tourism Development in Heritage Cities." Annals of Tourism Research, no. no. 1 (2002): 165-182.

Penning-Rowsell, Edmund, Peter Winchester, and John Gardiner. "New Approaches to Sustainable Hazard Management for Venice." *The Geographical Journal* 164, no. 1 (Jan-1, 1998): 1.

"Statistiche in Pillole." Citta' Di Venezia. http://www.comune.venezia.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/1176.

Ta Karra Greene, Benjamin Isabella, Freddy Jervis, Danielle Modeste. "Residential Comfort Level: An Analysis of the Venetian Retail Sector." (2005).

Tourism Highlights: 2008 Edition United Nations World Tourism Organization, 2008b.

"U.S. National Debt Clock" http://www.brillig.com/debt_clock/ (accessed 9/29/2009, 2009).

"Venice Events and Festivals; a Calendar | Italy Heaven " http://www.italyheaven.co.uk/veneto/venice/events.html (accessed 10/6/2009, 2009).

Wolfgang Scheppe. *Migropolis: Venice /Atlas of a Global Situation*. Hatje Cantz, 2009. Print.

"Venice Online: High Tides." 2009.http://www.veniceonline.it/HighTides/HighTides.asp (accessed Dec. 13, 2009).

Appendix A

Field Forms

Stations: ____________ Date: ____________ Recorders: ____________

					Retail				Restaurants			Informal			
							Lowest Merchandise		Seats						
Address	Picture No.	Status	Name	Employees	Depth (m)	Merchandise	Type	Ht(cm)	No. In	No. Out	Hotels (X)	Type	Time (24 hr.)	N. of items	Comments

Legend
Status: O = open, C = Closed, T = Temporary Closed (return later)
Employees: Number of VISIBLE employees
Retail: Depth (m) - depth of the store
Retail: Lowest Merchandise: Type of merchandise that is closest to the ground and how high
Restaurants: Seats - How many seats are outside and how many are inside of the restaurant
Hotels: Check box if location is a hotel
Informal: Time - Time the activity is seen
Informal: N. of items- For informal vendors , note how many items are on display

Appendix B

Store Typologies

Economic Sector	Category	Type	NACE Code
Ingnore	Ignore	Ignore	
Closed	Closed	Closed	
Retail	Service	Wood Work	C16.2.9
Retail	Service	Metal Work	C25.9.9
Retail	Basic Necessity	Grocery Store	G47.1.1
Retail	Basic Necessity	Non-specialized Store	G47.1.9
Retail	Basic Necessity	Produce	G47.2.1
Retail	Basic Necessity	Butcher	G47.2.2
Retail	Basic Neccesity	Deli	G47.2.2
Retail	Basic Necessity	Fish	G47.2.3
Retail	Basic Necessity	Bakery	G47.2.4
Retail	Luxury	Wine	G47.2.5
Retail	Luxury	Tobacco Store	G47.2.6
Retail	Basic Neccesity	Dairy	G47.2.9
Retail	Luxury	Textile	G47.5.1
Retail	Luxury	Hardware Store	G47.5.2
Retail	Art/Antiques	Antiques	G47.5.9
Retail	Luxury	Household Goods	G47.5.9
Retail	Art/Antiques	Art	G47.5.9
Retail	Paper	Books	G47.6.1
Retail	Luxury	Office Supplies	G47.6.2
Retail	Paper	Stationery	G47.6.2
Retail	Service	Video Store	G47.6.3
Retail	Luxury	Entertainment	G47.6.3
Retail	Luxury	Toys	G47.6.5
Retail	Clothing/Accessories	Accessories	G47.7.1
Retail	Clothing/Accessories	Clothing	G47.7.1
Retail	Clothing/Accessories	Shoes	G47.7.2
Retail	Luxury	Leather Goods	G47.7.2
Retail	Health/Beauty Care	Pharmacy	G47.7.3
Retail	Health/Beauty Care	Fitness	G47.7.4
Retail	Health/Beauty Care	Health Care	G47.7.4
Retail	Health/Beauty Care	Beauty Care	G47.7.5
Retail	Health/Beauty Care	Cosmetics	G47.7.5
Retail	Health/Beauty Care	Perfume	G47.7.5
Retail	Luxury	Pet Store	G47.7.6

Retail	Service	Florist	G47.7.6
Retail	Clothing/Accessories	Jewelry	G47.7.7
Retail	Clothing/Accessories	Optical Store	G47.7.7
Retail	Clothing/Accessories	Undergarments	G47.7.7
Retail	Luxury	Electronics	G47.7.8
Retail	Luxury	Religious Goods	G47.7.8
Retail	Tourist	Souvenirs	G47.7.8
Retail	Clothing/Accessories	Pawn Shop	G47.7.9
Retail	Service	Post Office	H53.1.0
Hotel	Tourist	Hotel	I55.1.0
Restaurant	Food Service	Café	I56.1.0
Restaurant	Food Service	Pizzeria	I56.1.0
Restaurant	Food Service	Restaurant	I56.1.0
Restaurant	Food Service	Gelateria	I56.2.9
Restaurant	Food Service	Bar	I56.3.0
Retail	Service	Bank	K64.1.1
Retail	Tourist	Exchange	K64.1.9
Retail	Service	Real Estate	L68.3.1
Retail	Service	Photo Store	M74.2.0
Retail	Service	Travel Agency	N79.1.1
Retail	Service	Repair	S95
Retail	Service	Dry Cleaner	S96.0.1
Retail	Service	Barber	S96.0.2
Retail	Service	Hair Salon	S96.0.2

Appendix C

NACE Codes

NACE Codes, which are Statistical Classification of Economic Activities in the European Community, are used by the European Commission to classify store types. The following codes[76] are the ones used in our project.

Code	Description
C16.2.9	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
C25.9.9	Manufacture of other fabricated metal products n.e.c.
G47.1.1	Retail sale in non-specialized stores with food, beverages or tobacco predominating
G47.1.9	Other retail sale in non-specialized stores
G47.2.1	Retail sale of fruit and vegetables in specialized stores
G47.2.2	Retail sale of meat and meat products in specialized stores
G47.2.3	Retail sale of fish, crustaceans and mollusks in specialized stores
G47.2.4	Retail sale of bread, cakes, flour confectionery and sugar confectionery in specialized stores
G47.2.5	Retail sale of beverages in specialized stores
G47.2.6	Retail sale of tobacco products in specialized stores
G47.2.9	Other retail sale of food in specialized stores
G47.5.1	Retail sale of textiles in specialized stores
G47.5.2	Retail sale of hardware, paints and glass in specialized stores
G47.5.9	Retail sale of furniture, lighting equipment and other household articles in specialized stores
G47.6.1	Retail sale of books in specialized stores
G47.6.2	Retail sale of newspapers and stationery in specialized stores
G47.6.3	Retail sale of music and video recordings in specialized stores
G47.6.5	Retail sale of games and toys in specialized stores
G47.7.1	Retail sale of clothing in specialized stores
G47.7.2	Retail sale of footwear and leather goods in specialized stores
G47.7.3	Dispensing chemist in specialized stores
G47.7.4	Retail sale of medical and orthopedic goods in specialized stores
G47.7.5	Retail sale of cosmetic and toilet articles in specialized stores
G47.7.6	Retail sale of flowers, plants, seeds, fertilizers, pet animals and pet food in specialized stores
G47.7.7	Retail sale of watches and jewelry in specialized stores
G47.7.8	Other retail sale of new goods in specialized stores
G47.7.9	Retail sale of second-hand goods in stores
H53.1.0	Postal activities under universal service obligation

[76] "NACE Codes," European Commision, (accessed 10/7, 2009).

I55.1.0	Hotels and similar accommodation
I56.1.0	Restaurants and mobile food service activities
I56.2.9	Other food service activities
I56.3.0	Beverage serving activities
K64.1.1	Central banking
K64.1.9	Other monetary intermediation
L68.3.1	Real estate agencies
M74.2.0	Photographic activities
N79.1.1	Travel agency activities
S95	Repair of computers and personal and household goods
S96.0.1	Washing and (dry-)cleaning of textile and fur products
S96.0.2	Hairdressing and other beauty treatment

Appendix D

Data Collected about informal activity

Date of Observation (DD/MM/YY)	Picture Name (these photos can be found on the CD)	Closest Location	Time (24 hour)	Type	Merchandise	Number of Items
02/11//09	CN_bagseller_4001C_pic1 CN_bagseller_4001C_pic2	CN4001C		Bag Seller	Bags	7
02/11/09	CN_bagseller1_Strada Nova	CN Strada Nova		Bag Seller	Bags	12
05/11//09	CN_bagseller_3929 CN_bagseller_3929_face1 CN_bagseller_3929_face2	CN3929		3 Bag Seller	Bags	11
08/11/09	CN beggar_day1_pic1 CN beggar_day1_pic2 CN beggar_day2_pic1 CN beggar_day2_pic2	CN Strada Nova		Beggar	None	None
11/11/09	Chiesa Rettoriale di San Zulian beggar1_pic1 Chiesa Rettoriale di San Zulian beggar1_pic2	Chiesa Rettoriale di San Zulian (SM)	11:30	Beggar	None	None
12/11/09	Chiesa Rettoriale di San Zulian beggar2	Chiesa Rettoriale di San Zulian (SM)	11:25	Beggar	None	None
12/11/09		SM1007	13:00	Bag seller	Bags	8
12/11/09		SM1065	13:30	Bag seller	Bags	8
12/11/09	3 moving bag sellers_1089_pic1 3 moving bag sellers_1089_pic2	SM1089	13:40	3 Bag sellers	Bags	17
13/11/09	beggar1_pic3 Chiesa Rettoriale di San Zulian beggar1_pic4 Chiesa Rettoriale di San Zulian beggar1_pic5	Chiesa Rettoriale di San Zulian (SM)	-	Beggar	None	None
13/11/09	beggar_1388A	SM1388A	13:32	2 Beggars	None	None
16/11/09	beggar on steps_pic1 beggar on steps_pic2	SM1826	13:30	Beggar	None	None
16/11/09	None	SM1814	15:25	Bag seller	Bags	5

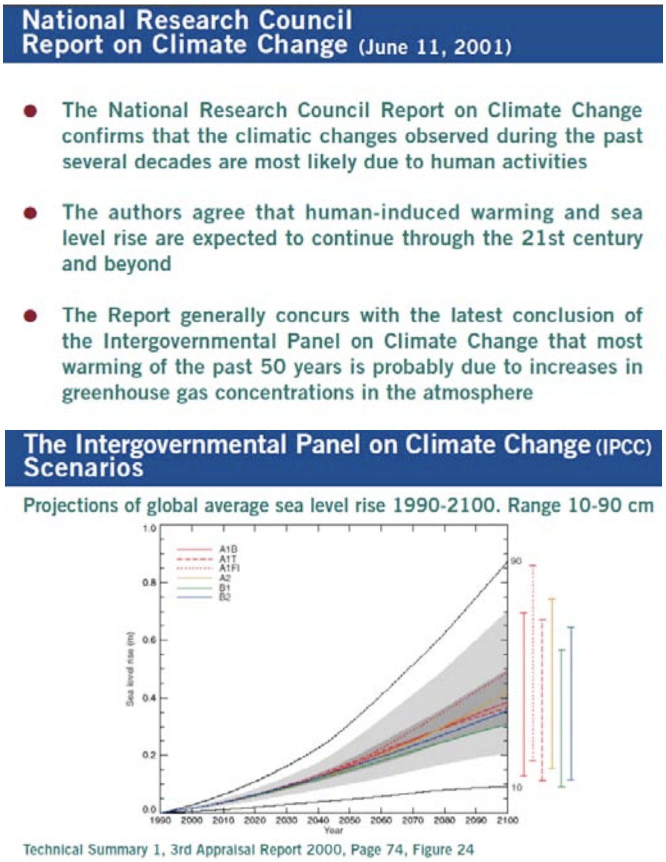
16/11/09	None	SM1857	13:55	Beggar	None	None
17/11/09	None	SM2187	13:59	Beggar	None	None
18/11/09	None	SM3391	15:25	3 Bag Sellers	Bags	A bag full, >15
18/11/09	None	Ponte de la Pieta	16:21	Bag Seller	Bags	
19/11/09	None	SM3718C	16:36	Bag Seller	Bags	7
21/11/09	Cornstarch_toy_guy1_pic1 through pic 8	SM4837	14:25	Other vendor: Cornstarch Toy Seller	Cornstarch Toys	12
21/11/09	None	CN Strada Nova	13:30	2 moving Beggars	None	None
21/11/09	None	SM4919	15:00	Beggar	None	None
21/11/09	Chiesa Rettoriale di San Zulian beggar1 at 4843_1 Chiesa Rettoriale di San Zulian beggar1 at 4843_2	SM4843	11:45	Beggar (the Chiesa Rettoriale beggar)	None	None
22/11/09	Cornstarch_toy_guy1_pic1 through pic 8	SM5029	13:05	Other vendor: Cornstarch Toy Seller	Cornstarch Toys	12
22/11/09	Rialto beggar_SM5159A_pic1 Rialto beggar_SM5159A_pic2 Rialto beggar_SM5159A_pic3	SM5159A	13:40	Beggar	None	None
22/11/09	None	SM5234	14:04	4 Bag Sellers	Bags	16
22/11/09	Post office beggar tapped and walking away with another beggar_SM5541A	SM5541A	15:00	2 Beggars	None	None
22/11/09	beggar_SM5047_pic1 beggar_SM5047_pic2 beggar_SM5047_pic3 beggar_SM5047_pic4	SM5047	13:50	Beggar	None	None
23/11/09	CN_bagseller1_4386	CN 4386		Bag Seller	Bags	4
02/12/09	CN_bagseller2_Strada Nova	CN Strada Nova		Bag Seller	Bags	9

Appendix E

National Research Council Report on Climate Change

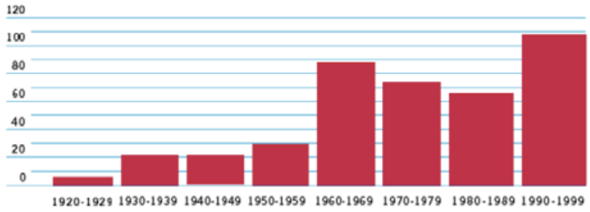
This source is a pdf and cannot be traced by a link. For the online pdf, please do the following:

1. http://google.com
2. Search “Venice flooding strasburgo”
3. Choose entry title “The National Research Council Report on Climate Change”



Increase in the frequency of high water events ≥100 cm

1920 - 2000 sea level rise in Venice
(due to subsidence and eustatism) = 23 cm



High water events ≥ 100 cm in Venice since 1920

Flooding in Venice today

Venice flooded area (%) and frequency of floods (per year)

FLOOD LEVEL ABOVE 1897 CHART DATUM	VENICE FLOODED AREA (%)	FREQUENCY AT PRESENT MEAN SEA LEVEL	FREQUENCY WITH A SEA LEVEL RISE OF 20 CM	FREQUENCY WITH A SEA LEVEL RISE OF 40 CM
100	5	7	43	204
120	30	1	7	43
140	58	1 every 6 years	1	7

Appendix F

Supplemental Information

Trade Organizations

Italy's associations with trade organizations created barriers for which the city of Venice could import and export with. While the associations with the North Atlantic Treaty Organization (NATO), European Union (EU), the Organization for Economic Cooperation and Development (OECD), and International Confederation of Free Trade Unions (ICFTU) technically may not have stilted the Venetian economy, the barriers of who they could trade with might have exclude those whose potential money would be coming into the city. A majority of trade exchange in the country as a whole included other countries with whom Italy was allied with. For example, Italy conducts 60.1% of its total trade with other countries in the European Union. Of this percentage, 12.9% is with Germany, 11.4% is with France, and 5.8% is with the United Kingdom.[77] Despite these location-trading restrictions, the Venetian economy has continued to flourish over the years, which is most likely due to its stature in maritime trading.

Relevant Venetian Legislation

Special Laws for Venice

First special law (1937): involved planning controls on Venetian buildings

Second special law (1948): intended for the development of Mestre on the mainland; part of the drive to continue industrialization in the lagoon as Italy attempted to join in the market for Middle Eastern oil

Third special law (1956): pledged money to help Venetians deal the increasing pollution problem in the lagoon area and to restore buildings that were deteriorating

Fourth special law (1966): provided billions for restorations and improvements; after the flood of 1966, billions more added to repair seawalls

Special Law 171 (1973): declared Venice and its lagoon a problem of "essential national interest"

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[77] "Background Note: Italy," U.S. Department of State, http://www.state.gov/r/pa/ei/bgn/4033.htm (accessed 10/6/2009, 2009).

Special Law 798 (1984): favored a more experimental approach that Special Law 171 for safeguarding the city; called for interventions to protect the lagoon and to develop a plan to restore buildings, preserve the historic town plan, its environment, and its economy[78]

Ordinary Laws for Venice

Law 360 (1991): directed toward finding a solution to the flight of Venetians from the historic center to the mainland

Law 139 (1992): allocated responsibilities for safeguarding Venice's lagoon between the region and central government[79]

Demonstrations and rallies not allowed in San Marco after World War II

In the early 1920s, Communist- led workers from the Giudecca factories and the Fascist *squadristi* participated in uprisings in San Marco. After World War II, all Italian parties vowed not to hold either rallies or demonstrations in this area. While some agreed with this decision, there were some who thought this vow stripped the city of local political life, making Venice different from other Italian cities that were able to publicly demonstrate their political and social affiliations. Those in favor thought that it made San Marco into a Piazza della Pace – a piazza of peace. The fact that the political parties agreed to eradicate the city's political scene for the sake of tourists a serene environment communicates a great deal

Brief description of some Venetian Festivals

The *Carnevale di Venezia*, which takes place in February, is Venice's greatest tourist event. It fills St. Mark's Square with masks, costumes, dancing, and parades. It is a time to indulge before the start of Lent. The word *carne vale* translates to 'farewell to meat.'

The *Festa della Sensa*, which takes place after Ascension Day, is a celebration of the "marriage" between Venice and the sea. The doge (today the mayor) throws a ring (today a wreath) into the waves to symbolize this relationship.

The *Vogalonga*, which takes place on a Sunday in May or June, is a non-competitive race in Venice's lagoon that gives the lagoon, if only for one morning, peace in the water, free from destructive motorboats.

The *Biennale*, which takes place every two years and last 6 months, is a celebration of the arts in all forms from architecture to paintings to film. The 2009 (53rd) *Biennale* is running from the 6th of June to the 22nd of November.

[78] John Keahey, *Venice Against the Sea: A City Besieged*, 1st ed. (New York, NY: Thomas Dunne Books, 2002), 296.
[79] Ibid.

The *Festa del Redentore*, which takes place on the third Sunday of July, is a religious celebration that gives thanks for Venice's relief from the late 16th century plague. It starts with a feast the night before and ends the weekend with a gondola regatta.

The *Venice Film Festival*, which takes place at the end of August or the beginning of September, is a chance to see film in a city where there are not many chances to do so. It attracts important names from the movie world. The *Venice Film Festival* is a part of the *Biennale*.

The *Regata Storica*, which takes place in September, is the largest event of the year. A traditional parade of boats float down the Grand Canal and is soon followed by competitive racing.

The *Festa della Salute*, which takes place every year on the 21st of November, is another celebration for relief from the plague, only this one in the 17th century. A special bridge is built over the Grand Canal connecting to the C*hiesa di Santa Maria della Salute* which Venetian walk over to special masses.[80]

[80] "Venice Events and Festivals; a Calendar | Italy Heaven " http://www.italyheaven.co.uk/veneto/venice/events.html (accessed 10/6/2009, 2009).