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## **Chandler Street Corridor Business and Market Analysis**

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## **Abstract**

Inner cities have faced many problems in the last half century that have resulted from post industrialization as factories that employed the inner city residents moved out. Some of the problems that resulted included unemployment, the reshaping of inner cities into less desirable places to live and many others.

In order to combat these problems, revitalization strategies have been created that try to solve the very complex problems that inner cities face. These strategies have been implemented in different inner cities with varying results.

This study examines some of these strategies in order to understand the differences between them, then takes aspects of them and creates a new model that would be implemented in the Chandler Street Corridor. Research objectives and a methodology are then built around the implementation of these strategies in the corridor.

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## **Introduction**

During the last 30 years, urban centers of many major American cities have undergone considerable social and economic changes. Factories have closed, re-tooled, or moved out of cities to cheaper, suburban locations or out of the country entirely. This has led to massive layoffs which raised unemployment rates for the low to medium skilled workforce of the inner city, and so began the negative impacts of post-industrialization: the depression of inner-city neighborhoods and business districts (Hall, 2002).

According to the US Census Bureau, the City of Worcester has been no stranger to the effects of post-industrialization (Census, 2000). Parts of the city have faced many of the problems that other cities have suffered, including high unemployment rates as factories moved out of the city to other locations. Low income rates have become prevalent as the people that worked in those factories lost their jobs (Census, 2000). The effects of suburbanization also played a role as the affluent members of these communities moved out to suburban areas.

One area in particular that has been affected is the Piedmont Neighborhood in Downtown Worcester. Beginning in the late 1960's, the Piedmont Neighborhood in general and Chandler Street in particular, have fallen into a state of rapid decline as the factories that supported the area left. Some effects of deindustrialization include lower households income (\$17,754-\$19,599) compared to the city's average of \$35,623, high unemployment rates and high crime rates. As a result, 31.9% to 32.76% of the families in the neighborhood are living below the poverty line (Census, 2000).

There are many factors responsible for these disturbing trends. One of the most obvious is the lack of job opportunities in the Piedmont Neighborhood. A shortage of jobs is mainly caused by a lack of business employers in the community. The absence of businesses is in part, a function of a lack of available marketing data and reports. While these reports are readily available to major chains and franchises, like Dunkin Doughnuts and Subway for example, there is very little if any access to this sort of information for the small, independently owned and operated businesses that reside along the Chandler Street Corridor. Through our research, data collection, analysis and reporting, our project



goal has been to level the playing field with regards to marketing information between the small Chandler Street businesses and the large corporations.

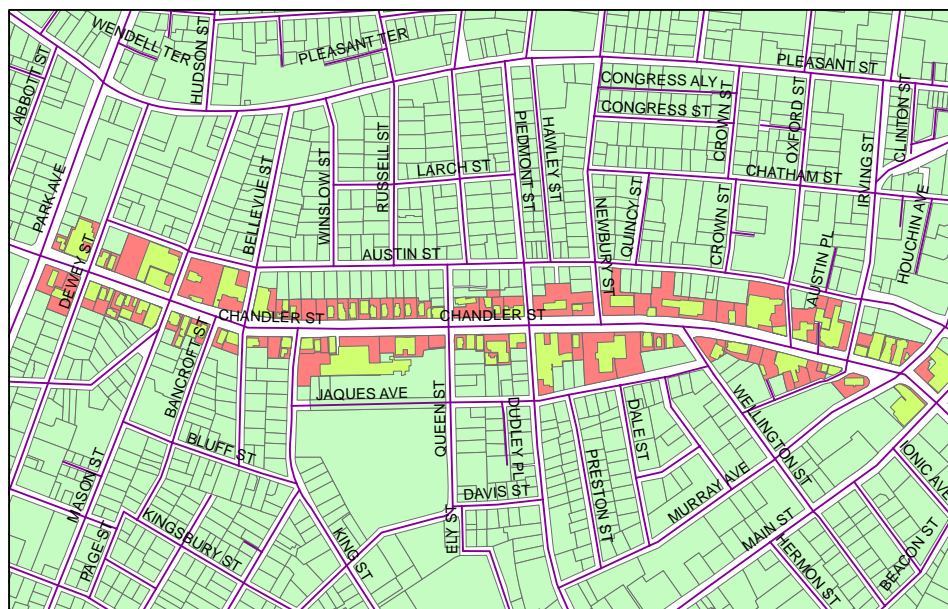
The performance of a market analysis is a first step toward the successful implementation of a local neighborhood revitalization strategy. Various approaches exist, such as business improvement districts, empowerment zones, cluster developments and “Main Street” programs that promise to bring prosperity back to inner-city neighborhoods. Each of these approaches has something to offer the Chandler Street Corridor revitalization project, but on their own, none of them are sufficient. Through the course of this study we will examine these strategies and design and begin implementation of a specific approach for the Chandler Street Corridor.

The specific goal of our project was to analyze the local economy, specifically the present physical and business conditions in the Chandler Street Corridor. In order to accomplish this goal, we have 1) identified and cataloged the community’s physical assets, 2) prepared a market analysis and 3) recommended a method of analyzing the mix of business. Our first objective was to collect data on the physical aspects of the community and store it in a database. The database provided us easy access to the data to see what physical trends are present and what changes can be made. Our second objective was to survey the business owners to discover their needs and the current market trends in the Corridor. We have also made use of ArcGIS maps through out the report to find trends and analyze results of these data. The knowledge gained through our research and completion of our objectives allows us to make recommendations that we believe will work specifically for the economic development of the Chandler Street Corridor. These recommendations can be used and implemented by Worcester Common Ground and other similar community development corporations in the future.

# **Background**

This chapter examines three major topics related to the Chandler Street Business and Market Analysis Project. The first section describes the Chandler Street Corridor which is the project’s object of analysis. The second section examines four neighborhood revitalization strategies that have been implemented in different locations around the country. Since none of these strategies have been applied to the Chandler Street Corridor, there different aspects must be understood in order to determine which specific strategy or which aspects of these strategies could be successfully applied to the area. The third section involves the synthesis of these strategies into a specific strategy that we believe will boost the economic development of the area which is in conjunction with the goals of the project sponsors.

## **I. Chandler Street Corridor: Past and Present**



**Figure 2.1a: The Chandler Street Corridor**

For over one hundred years, Chandler Street (see figure 2.1a) was a major part of the city of Worcester’s business district. A huge, commanding five-storey luxury hotel

called the Warner stood between Chandler and Piedmont streets and served as a physical and cultural icon of the neighborhood's success. There were also several notable factories on the street, including a textile plant and steel fabrication factory. Chandler Street does in fact predate the invention of the motorcar. In the late 1800's, horses and wagons traveled up and down the dirt version of Chandler Street. By day, people could go to work on the street's several factories, plants and offices while others could shop in the many high-end retail outlets or dine in the fancy, exclusive restaurants and executive clubs that the early 20<sup>th</sup> century Piedmont Neighborhood had to offer. At night, residents would retire to their various stylish, upscale houses, some of which are the triple-decker houses still standing on the street today. Of course now they have been long since been converted over to three family homes, but when they were conceived and first built, they were huge single-family luxury homes for the neighborhoods successful and wealthy businessmen (Worcester City Website, 2005).

Currently, the Piedmont Neighborhood and the Chandler Street Corridor are facing major social and economic problems that need to be addressed. Seventy percent of residents in the City of Worcester are Caucasian, but 60-75% of the population in the neighborhood are African-American, Latino or Asian (Census, 2000). Almost one-fourth of the total crime in Worcester took place in the Piedmont Neighborhood (Census, 2000). Poverty is also prevalent because the household income of the area ranges a mere \$17,754-\$19,599, compared to the city's average of \$35,623 (Census, 2000). As a result, about 32 percent of the families in the neighborhood live below the poverty line, and 4.8%-6.7% are unemployed (Census, 2000). As seen from these figures, there are high unemployment rates, high crime rates, and high rates of immigrants and minorities in the area.

## **II. Strategies of Revitalization**

There are several urban revitalization strategies that can be used to effect positive changes in the Piedmont Neighborhood. We examined four that relate to inner cities. These include Business Improvement Districts (BIDs), Clusters, Housing and Urban Development Empowerment Zones (HUD EZ), and Main Street Programs. In a BID, the business owners in an area come together and take the initiative of promoting economic

development. Using the cluster model, industries and firms that have similar products, and are actively supported by key common entities such as suppliers, universities and trade associations, are identified and policies are implemented to help these businesses prosper. In a HUD EZ, a federal program that uses tax incentives to attract new businesses into the area is enforced with the hope of increasing employment. Finally, in a Main Street Program, initiative is taken on by the community to help develop their area. In the sections that follow, we briefly describe the details of each approach in turn.

### **Business Improvement Districts**

A Business Improvement District (BID) is created when a group of business owners located within a predefined geographical area of a city agree to impose an additional tax assessment upon themselves for the implementation of various neighborhood services. Agreement is reached when a predefined majority such as 75 percent of the business owners sign a petition although this can vary from state to state (Gross, 2005). The amount of this tax is determined by an *assessment formula* which considers many variables some of which are square footage, proportion of benefits to be received, or amount of store frontage, and is typically between one and three percent of the value of the business. Residents, on the other hand, are not taxed and play no role in the activities of BIDs (Mitchell, 2001). This special, self-imposed business tax is collected by the local government, then handed directly back to the BID to use for various services (Gross, 2005). These services can include, but are not limited to, retail marketing, street and sidewalk cleaning, management of special events, tourist assistance, security and policing, city planning, and urban outreach and homeless programs (Mitchell, 2001).

Although they sometimes go by different names, BIDs exist all over the nation, including places such as New York, Philadelphia, Washington, Wisconsin, Oregon, Missouri, and New Jersey (Mitchell, 2001). There is even a BID in Springfield, Massachusetts (Springfield, 2005). In fact, there are currently about 1,000 to 2,000 BIDs active in the country, and this number of BIDs increases on a monthly basis (MacDonald, 1996).

Overall, there are many positive and promising aspects to the notion of creating a BID for the Chandler Street Corridor. Increased advertising and marketing for local business, street cleanup, crime reduction, attraction of affluent consumers into the community, and increased commercial and residential property values are all quite possible with the proper implementation of a Business Improvement District in the Piedmont Neighborhood. Before we can jump headlong into a recommendation, however, we need to further examine the elements and goals, as well as the critiques of Business Improvement Districts.

### Elements, Goals and Case Studies of Business Improvement Districts

The primary goal of a Business Improvement District is to spur some positive changes in urban communities. For example, in certain cities, old, formerly run-down neighborhoods are slowly turning into trendy and desirable places once more. Business and the local economy are improving in some inner cities, right along with the outside images of the area. No longer do some places, such as Philadelphia or the Grand Central Station district of New York, carry with them a reputation of grime and crime. This is due in large part to the efforts of BIDs. While there are limitations to what BIDs can do, they often bring to the table the creativity and resources of the private sector, which has shown great promise in establishing both novel and creative solutions to the urban problems the public sector has been facing since the beginnings of post-industrialization (MacDonald, 1996). What follows is a description of the services and solutions provided by many BIDs nationwide. It is easy for one to envision the positive and lasting effects these services could have on the Piedmont Neighborhood of Worcester, Mass.

Of all of the myriad services that BIDs can provide, they are most likely to focus on ones that improve the profits of the businesses in their area. One of the most effective ways they can do this is by providing participating businesses with additional consumer advertising. This can take the form of traditional advertising, such as radio, television and newspaper ads, to novel and creative approaches such as street banners and festival retailing. No matter what method is used, the goal is the same: to advertise or sell not just one specific business or product, but an image of the neighborhood itself as a safe, clean and trendy place to shop and/or live (Mitchell, 2001).

However, to promote the image without actually creating the image would not do anyone any good. Therefore, another area in which most BIDs are actively involved is that of street and sidewalk cleanliness and area security. In particular, it has been found that, "simple things-such as keeping sidewalks clean and safe matter enormously to the urban quality of life. A city that has lost the will to control seemingly minor offences such as trash and graffiti only invites further disorder" (MacDonald, 1996, p11). In fact, many BIDs focus so intently on cleanliness that their environments can realistically be compared with the virtual spotlessness of Disneyland.

BIDs can also go a long way toward reducing crime. For example, the Grand Central Station BID in New York City has reduced crime in that area by sixty percent (MacDonald, 1996). By making the city's streets clean and safe once more, certain BID neighborhoods are once again starting to thrive with city strollers, tourists and shoppers after decades of decline and despair (Frieden, 1989).

#### Critiques Of and Practical Problems with Business Improvement Districts

The first and most common critique of BIDs is that they are essentially the private sector performing tasks the government itself should be doing. The examples of sanitation, landscaping, and policing/security are the areas that are the most obvious, as are social services, and neighborhood outreach programs. These are services that BIDs can, and do often, provide to their communities (Mitchell, 2001). While some take the position that the city itself should provide these services anyway with the existing tax revenue, others cite the inherent conflict of interest of the private sector taking on public functions. After all, the primary goal of the private sector is to make money, which can and often does come into direct conflict with the traditional role of the public sector, namely to look after the good of the people. This is seen by some as a reflection of "impure" motives and therefore renders the person or persons implementing the BID to be unqualified to engage in public functions (MacDonald, 1996).

Another major issue is the lack of governmental oversight of operations, practices and finances of BIDs. While it is common for there to be much interaction between BIDs and local governments during the BID's creation process, there is very little if any interaction after they are established and operational. This invites the

possibility of all sorts of wrongdoing if the position of managing a BID is placed in the wrong hands. For example, the entire board of the BID in Jamaica Mall, New York was slapped with a \$1 million lawsuit in 1994 "which alleged serious mismanagement and fraud. Furthermore, the Jamaica Mall property owners have had to spend over \$80,000 of their assessment on legal fees to resolve these issues" (NY Exec Report, 2004). Even if the intentions of the manager are good, which most often they are, a BID can unknowingly do public harm through the institution of a poorly informed policy. After all, most persons who serve on the BID's board of directors are owners of businesses within the BID itself. As business people, they are most often not trained in public policymaking or social services. This invites the potential of managers doing harm while thinking they are helping. Also, in a recent survey of BIDs in New York City, it was found that, "many board members are prominent members of the business community and could provide real management assistance, yet do not contribute enough time to the BID" (NY Exec Report, 2004, p2).

There is also a serious lack of standards and methods for the performance measurement of BIDs. As such, it is impossible to come to a clear conclusion as to their effectiveness. For example, parameters such as crime rate changes, new business establishments, public opinion polls, cleanliness of streets and sidewalks, pedestrian traffic and graffiti activity that could be used to measure a BID's performance "have not been approached in any systematic manner" (Mitchell, 2001). Furthermore, if someone does happen to notice a lack of performance in a BID, there is often no way of reporting it to the BID itself. Some BIDs have been found to have no complaint resolution system at all. In fact, eighty-five percent of the BIDs in New York City "resolved complaints informally without compiling written documentation. As a result, it is impossible for the City Council or any other outside entity to know how many complaints have been made against the BIDs" (NY Exec Report, 2004). Clearly, it would not be a good idea to establish a BID on Chandler Street if the voices of the businesses owners and residents go continuously unheard.

Another drawback is that there is often very little, if any, democratic process involved with BIDs. For example, the local businesses that pay the assessments to the BID are very often unable to vote on, or have any say whatsoever about who is on the

board of directors of the BID. There are also ambiguous rules and regulations regarding the dissolution of BIDs. In New York, for example, BIDs cannot be dissolved if the BID has any outstanding debt (NY Exec Report, 2004). This could open the possibility of an unscrupulous manager keeping a BID in debt to preserve its existence, even if a vast majority of the assessed business owners wanted its dissolution.

BIDs have been frequently criticized for their implementation of social policies. One noteworthy example is The Grand Central Station Social Services Commission (GCSSC), a BID in New York City. They allegedly acted as "goon-squads" in ridding their community of the homeless and were subsequently hit with two \$5 million fines. The first involved a GCSSC security officer who threw a homeless person through a plate glass window. The second involved a GCSSC worker who poured boiling hot water on another homeless individual. Of course, the money to pay these fines came from the assessed business owners within the BID. In addition, the GCSSC provided grossly inadequate resources for taking care of the homeless that were displaced by their security staff (NY Exec Report, 2004). While some may see this as the "one bad apple" case, it serves as a reminder that social good and business self-interest can sometimes mix like oil and water. Since we do not want the residents of the Piedmont Neighborhood to feel left out or the homeless being harassed in the name of businesses and profits, we must make sure that any social work within the community does not step on the toes of the residents.

### Summary

While Business Improvement Districts have enormous potential to “channel private-sector energy toward the solution of public problems”, they also have enormous potential to bring along the greed and self-interest of the private sector as well (Mitchell, 2001, p48). Therefore, the Piedmont Neighborhood could be economically, culturally and socially revitalized by the proper implementation of a BID. However it could also be destroyed and/or corrupted by an improperly or naively managed BID. Therefore, we must carefully consider what aspects of BIDs would be potentially beneficial for Chandler Street, and which aspects could be harmful and should be avoided.



## **HUD EZ**

Another method to combat post-industrialization is the creation of United States Department of Housing and Urban Development's Empowerment Zones (HUD EZ). Created by the United States Congress, the purpose of the Urban Empowerment Zones is to allow for a public-private partnership in order to create economic development in the most troubled urban communities of the United States. These areas often experience high unemployment and lack affordable housing. The first six of the current 30 Urban Empowerment Zones were created in 1994. The program is based on incentives to attract businesses to the inner city. These new businesses would allow for rebuilding of a community. In 1998, the Initiative began a second round by adding 15 new zones and updating two Supplemental Empowerment Zones to the full EZs status. In 2000, HUD received 35 Empowerment Zone applications from urban communities around the United States. Chosen Empowerment Zone Applicants satisfied a selection process that met population and poverty criteria and had a strategic plan for the community. This began the third round of the program (Sullivan 2002).

### Elements, Goals and Case Studies of HUD EZ

The program is based on four key objectives: "Economic Opportunity, Sustainable Community Development, Community-based Partnerships and Strategic Vision for Change" (Key Principles 2005). The first objective is to create jobs and work for residents of the community. This provides a base for residents to become independent and revitalize themselves. The second supports physical, environmental, human and economic development. This allows for safer streets, cleaner environments and available services. Community-based Partnerships add private and nonprofit support. The Government also works to make sure programs and resources are used to aid in the community's plan. The vision for change is a plan for revitalization. It builds on the community's assets and discovers what the community needs. It looks at economic, physical, environmental, community and human development so that people of the communities can work together. It also sets goals and measures progress on revitalization (Key Principles 2005).

The Boston Massachusetts Empowerment Zone is run by Boston Connects, Inc. Its strategic plan includes providing education, training and job placement for residents. The residents of the zone contain a rising population of ex-offenders. The community offers reintegration for ex-offenders, Youth Summer Jobs Program and a Fatherhood Initiative. It provides economic opportunity in the area by the development of office spaces, hotels and Boston Tea Party Ship and Museum. Boston Connects, Inc. has provided workshops to assist small non-profits, is a part of the “Weed and Seed” program and has made free technology education and training available. All of these sustain community development and provide for Community-based Partnerships (Boston, Massachusetts Enterprise Community/Empowerment Zone 2005).

The Empowerment Zones offer relief and tax breaks to help local businesses provide more jobs and promote revitalization. Empowerment Zones use wage credits, tax deductions, bond financing and capital gains to stimulate economic development and job growth. These are customized to meet the needs of the different businesses and let these companies create a larger work force. Wage credits are good for businesses trying to grow. These businesses can hire zone residents and apply for credits against their federal taxes. Businesses that are located in the Empowerment Zones will have “up to a \$3,000 credit for every newly hired or existing employee who lives in the EZ” (Sullivan 2002). Businesses that hire from a group that normally has high unemployment rates or other special employment needs receive *Work Opportunity* credit which offers up to \$2,400 for each employee. Businesses that hire long-term welfare recipients can receive *Welfare to Work Credits* which gives up to \$3,500 in the first year of employment and \$5,000 in the second year. Tax deductions allow for businesses to save when expanding. Under *Section 179* of the tax code, “businesses located within EZs may claim increased expensing deductions up to \$35,000 for depreciable property such as equipment and machinery acquired after December 31, 2001”(Sullivan 2002). Businesses can also deduct the cost it takes to clean up brown fields. Bond Financing allows for further growth. *Tax-Exempt Facility Bonds* help Empowerment Zone businesses when financing property, purchasing equipment and developing business sites within the communities. This allows for these businesses to receive lower-cost loans. *Qualified Zone Academy Bonds* let state and local governments match no-interest loans with private funding

sources in order to finance public school renovations and similar programs. Businesses located within Empowerment Zones can postpone or only partially recognize profit on the sale of certain resources. This benefit significantly reduces the capital gains tax on businesses (Sullivan 2002).

### Critiques Of and Practical Problems with HUD EZ

Empowerment Zones offer many benefits for local businesses. Unfortunately, the Empowerment Zone program has flaws. The program itself might be unattractive to businesses because of all the paperwork involved. There is a lengthy process in obtaining the benefits of the program (Wallace 1999). The program also offers benefits that the businesses can choose to use. The program can create more jobs but the businesses are not forced to employ the people of the area. The program also lacks help to those of minority background. Businesses of non-minority owners tend to employ those of non-minority (Wallace 1999). They can hire from other locations and obtain the benefits only if they chose. If these businesses do hire from the Zone residents, often they can pay those employees less because the cost of living is less and unemployment is so high. The Empowerment Zones really only help businesses of the manufacturing, wholesale and distribution because these are the businesses that hire numerous people. It does not affect those of retail businesses as much (Wallace 1999).

### Summary

Establishing an Empowerment Zone in the Chandler Street Corridor would bring in much needed new business that would employ more neighborhood residents and thereby strengthen the local economy, The Chandler Street Corridor contains many small minority-owned retail businesses; it is filled with family owned shops and retail businesses that meet the demand of the local community. These existing businesses would not receive the benefits of this program if it were started in the area. If anything, it would drive these family businesses out of the area. “EZ programs that do not address the needs of minority-owned small businesses will not have significant effect on increasing minority employment” (Wallace 1999). The Empowerment Zone would not add on to the already built community.

## **Main Street Program**

The Main Street program is based on community development through the leadership of the people that reside in the community. In 1977, the National Trust for Historic Preservation began the Main Street Program. The original project took three years and included three different cities. It studied the causes of downtown failure and developed a strategy to save historic commercial buildings. In 1980, the National Trust created The National Main Street Center in order to spread the accomplishments of the original project. In the spring of 1980, the Center chose 30 towns to join in the project. Many of which were successful in growth. The Center has continued to grow and today there are more than 1,600 communities in 41 states (History of the National Trust Main Street Center 2005).

## **Elements, Goals and Case Studies of Main Street Program**

The Center has a specific process by which they promote revitalization. This is called *The Main Street Four-Point Approach* namely: Organization, promotion, design and economic restructuring (Four-Point Approach 2005). Organization means getting everyone in the community involved to achieve the same goal. Organization establishes a board, standing committee, a paid program director and volunteers to provide for leadership in the community. Promotion creates interest in the downtown area for the residents and businesses and also advertises the area's unique characteristics to attract interest to the area. These activities improve consumer and investor confidence in the district and encourage commercial activity and investment in the area thereby increasing economic activity in the area. Promotion of the area is directly run by volunteers in the community, making it even more important for dedicated volunteers. Design refers to the shape and physical layout of the area which includes the improvement from landscape to street signs to sidewalks and everything in between. The goal is to make the downtown area as pleasing to the eye as possible. The Main Street program is known for improving the design of a community by restoring its historic landmarks and buildings. Economic Restructuring takes the communities existing businesses and finds new complementary businesses to add that can be successfully added to the current business mix. This ensures the entire community's needs are met (Four-Point Approach 2005). Again,

restoration and conversion of old businesses to new ones are often used. The Main Street program uses resources already contained in the community.

Along with The Main Street Four-Point Approach, the Center has *Eight Principles of Success* to emphasize their Four-Point Approach. The Eight Principles are comprehensive, incremental, self-help, partnerships, identifying and capitalizing on existing assets, quality, change and implementation (Eight Principles 2005). These explain the need for local leaders, a strong single voice, recycling of resources, change and relationships in and out of the community.

The Center has had much success over the years. The Mission Hill Main Street located in Boston has been with the Main Street Program since 1997. Main Street has made it possible for many smaller improvement programs over the years. Some of the more successful ones have been the Façade Improvement Program which provided design assistance for improvement to over 30 businesses in the area. Mission Hill has been selling calendars of twelve local businesses. It provides for advertising of the business and also as a fundraiser for Mission Hill. One of their newer programs is the Elder-Friendly Business District, which addresses issues of the area that concern the areas older residents (Mission Hill 2005). The program has proven successful in bringing in new businesses and capitalizing on existing resources while allowing the people of the area to have a voice in their own community.

#### Critiques Of and Practical Problems with the Main Street Program

Although the program has had much success, the Main Street Program is not for every community. The community must have a traditional business district and strong core of businesses remaining in the area. The people of the community must be involved. “It's not unusual for a local Main Street program to have 40-60 active volunteers among its board, committees, and projects” (Right Approach 2005). The community needs to understand that change takes time and takes place in doses. The community also needs to be able to agree on issues concerning the project. They should be interested in preserving and recycling the resources that are in the community. Not only is the physical setup of the community important, the people of the community really need to take charge of the entire project. And finally, there needs to be a balance between public and private

participation especially in funding (Right Approach 2005). Without these community aspects, the success of the program is hindered.

### Summary

The Main Street Program may be an appropriate approach for revitalization of the Chandler Street Corridor. Not only would the program improve the perceptions of the area, it could possibly bring in new businesses that complement the businesses that are already there. The streets would become clean and maintained and new life could be brought into the area. The people of the community themselves are those who would be running the program. Leadership in the residents of the community is needed for this program to even begin and there also needs to be many volunteers throughout the community who are willing to work to ensure the success of the program. A centralized voice, which due to the difference in the make-up of the community, would be hard to find. Based off the types of businesses in the community, many residents and business owners seem to have different views for the area. Diverse viewpoints may delay the success of the program.

### Clusters

The last revitalization strategy to be explored is the cluster. “A cluster is a geographically proximate group of interconnected companies and industries that serve particular customers, have similar products, and are actively supported by key, common entities. These include specialized suppliers, industry-knowledgeable universities, trade associations, legal and financial experts and government agencies” ([www.icic.org](http://www.icic.org)). The Institute for a Competitive Inner City, the non-profit organization that uses the cluster strategy in inner cities identifies clusters at three geographical levels: the regional, city, and inner city levels.

### Elements, Goals and Case Studies of the Cluster model

There are three primary cluster groupings that the geographical areas mentioned above can fall under; these include traded clusters, local clusters, and natural resource-driven industries. The main characteristic that distinguishes these three cluster groupings

from each other is the regional area that they serve. For example, traded clusters usually service areas beyond their regional location while local clusters mainly meet local demand and natural resource-driven industries depend on the availability of scarce resources. Examples of industries that fall under each category would include automotive, footwear and wine for traded clusters; local personal services, local retail, local construction for the local clusters and mining, oil and natural gas exploration and forestry for the natural resource-driven industries. Other distinguishing characteristics of the cluster groupings are shown in Figure 2.2.4a.

	<b>Traded Clusters</b>	<b>Local Clusters</b>	<b>Natural Resource-Driven Industries</b>
<b>Share of Employment</b>	<b>31.6%</b>	<b>67.6%</b>	<b>0.8%</b>
<b>Employment Growth, 1990 to 2001</b>	<b>1.7%</b>	<b>2.8%</b>	<b>-1.0%</b>
<b>Average Wage</b>	<b>\$46,596</b>	<b>\$28,288</b>	<b>\$33,245</b>
<b>Relative Wage</b>	<b>133.8</b>	<b>84.2</b>	<b>99.0</b>
<b>Wage Growth</b>	<b>5.0%</b>	<b>3.6%</b>	<b>1.9%</b>
<b>Relative Productivity</b>	<b>144.1</b>	<b>79.3</b>	<b>140.1</b>
<b>Patents per 10,000 Employees</b>	<b>21.3</b>	<b>1.3</b>	<b>7.0</b>
<b>Number of SIC Industries</b>	<b>590</b>	<b>241</b>	<b>48</b>

Note: 2001 data, except relative productivity which is 1997 data.  
Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

**Figure 2.2.4a: Cluster Groupings**

Economic analysis using the cluster model can be developed in a two-step approach. In the first step, regions, states, and cities determine concentrations of similar firms that sustain their economies and then secondly determine what resources in the area provide these firms with competitive advantages. Resources can range from infrastructure like airports, and cultural attractions to research universities and a skilled work force. Using this strategy, economic development policies can be better directed based on the results of these analyses (Waits, 2000).

In Maine, a study was performed to examine the use of clusters in seven industries identified by the state. Examples of these industries include information technology, biotechnology, forest products, marine and aquaculture, and precision

manufacturing. An eight-element framework based on literature reviews and results of interviews was created to determine which specific industries could be assessed using the cluster model; the elements considered were

- Innovation
- Regional business functions
- Entrepreneurship objectives
- Financing, relationships
- Location advantage
- Market potential
- Economic performance

The industries were then tested on a scale of 1 to 3 using the above elements in order to determine the strength of the cluster characteristics each industry possessed. Based on the results of the study, recommendations were made as to which industries would best be looked at using the cluster model. Recommendations were also made as to how these clusters could be encouraged to develop (Ziona, 2000).

#### Critiques Of and Practical Problems with the Cluster model

The cluster strategy has been used in geographic areas that are larger in size and greater in population than the Chandler Street Corridor. This strategy has been used in states, metropolitan areas and inner cities. This would make it seem an inappropriate strategy to directly apply to the Corridor. This strategy would seem inappropriate because it assumes that there is in existence a proximate group of companies, suppliers, organizations, government agencies and universities in the region. This is not exactly the case within the Corridor.

However, there are aspects of this strategy that can be applied to the Corridor; these aspects include the methods of analysis used in determining industries that support a regional economy. This model for analysis can be used in the Corridor to identify which business categories drive its economy and what ways these businesses can be strengthened and complimented.

#### Summary



The cluster strategy for revitalization involves the identification of industries that support a regions economy and the entities like suppliers, universities, and government agencies that serve these industries. Once clusters are identified, economic policies that help develop these clusters are implemented. This strategy has been used in bigger regions than the Chandler Street Corridor which would make it seem inappropriate. However, there are aspects of this strategy such as the methods of analysis that can be applied to the corridor.

### **III. Recommended Model for Chandler Street Corridor**

The four community revitalization strategies examined include Business Improvement Districts, Clusters, HUD EZ and Main Street programs. As mentioned in the previous sections, these strategies all have aspects that could be successfully implemented in the Chandler Street Corridor. This section reviews the aspects of the mentioned strategies that could be used in the Corridor.

All the strategies examined in the previous section recommend an analysis of the physical condition of the area. It is important to know the current state of the area before recommending what improvements and changes can be made to it. In order to collect data on the physical conditions of Chandler Street, a physical evaluation form was created that recorded the conditions of the assets in the corridor. The information that was collected was stored in a newly created database.

The Main Street and BID strategies recommend making contact with the business owners to determine what their needs, concerns and challenges are in running and operating a business. This information is important to have because the revitalization efforts can then address the concerns of the business owners. The way that this kind of information is gathered is typically through interviews, surveys and focus groups. In order to collect this information, a business survey was created that had a list of questions for business owners to answer. Some of the other information collected included what recommendations for corridor wide improvements could be made and what complimentary businesses could be added to the corridor. This information was also stored in the database.

Using the information collected through the business survey and physical evaluation forms, a market analysis was performed. The clusters and Main Street programs in particular perform market analyses that try to determine current trends in demand and supply, what complimentary businesses would suit the area and what corridor wide improvements could be made. Using the data collected in the physical analysis and business survey forms, a market analysis report for the corridor was created.

The strategies examined in the previous sections and the various aspects mentioned have all been used in various disadvantaged inner city areas like the Corridor. They have not only changed the image and perceptions of these areas but have also helped the inner city residents. The Corridor too can be turned around with the implementation of strategies that would meet the areas needs. This chapter has sought to find out revitalization strategies exist and what aspects of these mentioned strategies could be implemented in the Corridor in order to help the neighborhood businesses and residents.

## **Methodology**

This chapter covers three major topics physical observations of Chandler Street, the creation and distribution of the business survey and finally the database design and creation. In the physical observation of Chandler Street, we discuss how the observations were done and the forms that were used to collect the data. In the second section, we discuss about the survey of business owners that was performed on the street and lastly in the last section we cover details about the database that was designed and programmed to hold the data collected from the physical observations and the business surveys.

### **I. Physical Observations**

Physical observations of the Chandler Street Corridor had been previously recorded and stored by a prior team of students that worked in the Worcester Community Project Center in 2002. The team collected the information using a physical observation form that they created. Using this form, they collected information on conditions of the physical assets on Chandler Street. The data that was collected were stored in a database that they created using Microsoft Access.

The physical observation form used had two main sections: long term conditions and short-term conditions. In the long-term conditions section, they recorded information about that would not change easily over time such as the map block lot number (a unique identifier of each parcel of land) of the lot, the address of the building, the land use code and other such information. In the short-term conditions section, they recorded information that could change easily with time such as the name of the business, the type and condition of the fence, conditions of the yard, lot surface and the lighting around the area. The form that was used in the physical observations is attached in Appendix F.

Since part of our project required information about the physical conditions of Chandler Street, we decided to use the data that were collected in 2002. Before incorporating this data in our database, we first decided to verify that it was accurate since the observation had been made 3 years ago. Thus, twenty random samples out of the eighty in their database were chosen. We decided that if the twenty were accurate then we would use the rest of the information collected. However, if the twenty were not

an accurate representation of the present conditions, then the physical observations of the entire street would be done over again. After performing the verification, we found that the data we collected did not completely match the data collected in 2002. During the verification process we found that many changes had occurred and some improvements had been made. Thus, we decided to redo the physical observations of the corridor.

During the verification, we found some ways that the physical observation form that was used could be improved and better structured. Before we embarked on these changes, we first decided to do some research trying to find physical observation forms that were used by professionals. During our research, we contacted property assessors, house inspectors, different city offices and the Worcester Regional Research Bureau. Through the research, we came across many different styles of physical observation forms that were used by these professionals. Using some of the ideas found through our research, we created a new physical observation form and incorporated the changes that we had in mind to the old form.

The new physical evaluation form has five main sections namely lot, building, parking, signs, and unit (see Appendix E.) In the lot section, the specific aspects covered include the type and condition of the fence, type and amount of litter, and the yard conditions. The building section covers number of floors, building material, façade type and condition, accessibility, and the number and condition of windows. The parking section details the number of spaces and the type and condition of the surface. Lastly, the sign section covers the location, type and the condition of the business signs if any.

Using this form, data on the physical conditions of the lots on Chandler Street were collected. The data were filled out into the form, pictures of the buildings were taken and then the data was entered into a new database created for this project. The physical conditions recorded accompanied with the pictures of the buildings ought to give the user of our database a pretty accurate representation of the physical conditions of the assets on Chandler Street.

## **II. Survey**

In order to perform an accurate market analysis for the Chandler Street Corridor, it is important to have a correct understanding of not only the physical assets of the street but also the business environment. There are many ways that one can arrive at this understanding but probably the most effective way would be to derive it from the very people conducting business on the street.

This objective required us to be visible in the neighborhood and to come in contact with the business owners. Using the newly collected physical assets of the corridor as a foundation, we knew what businesses existed in the neighborhood and how to get in contact with them. A business survey of the owners was created and distributed to all the owners that we could get in touch with.

### **Survey Design**

The format and questions of the survey were based on a Wisconsin Main Street Program Survey (Barman, Todd 2005). This business survey was modified in order to make it specific to Chandler Street and our project needs. Some of the modifications made included adding open-ended questions so that the business owners would have an opportunity to address issues in more detail. In the survey, we also added questions just related to Chandler Street. Once the survey was completed in English, it was then translated into Spanish because we noticed a fair number of businesses owned by Spanish speaking people as we did the physical analysis. The English survey can be viewed in Appendix C and the Spanish version is included in Appendix D.

The survey was separated into three sections: needs and opportunity assessment, business and workforce, and lastly market and marketing. In the needs and opportunity section we concentrated on discovering the community's problems and what resources the community would find most useful. In the business and workforce section, we asked about local employment, business size and profitability, while in the market and marketing section, we sought to find out about their competition, customers and complementary businesses that they would benefit the corridor.

### **Distribution and Collection**

With the business surveys in hand along with letters of introduction, we traveled up and down Chandler Street trying to get in touch with the business owners of the various businesses. Overall, we were able to speak with over eighty business owners on the street. Upon arrival, we introduced ourselves as WPI students, explained to them the reason for our visit and handed them two letters of introduction and a business survey.

The first letter of introduction explained in more detail the research that we were performing and also made reference to the second letter. The second was a copy of the letter that was sent out by the District Four Worcester City Councilor Barbara Haller to all the business owners on Chandler Street on our behalf about a month prior. In the letter (see appendix A) she introduced the initiative by the Chandler Street Business Association and our project sponsors Worcester Common Ground to create a Neighborhood Revitalization Strategy Area (NRSA). She also introduced us as the researchers that would be doing part of the research associated with this initiative.

After all the introductions and explanations, we made appointments with the business owners to return and pick up the survey. Very often when we returned at the appointed time to pick up the surveys, we were told to return later because either the owners had forgotten about it, or they were too busy and did not have the time to fill it out. In this case, another appointment was made for pick up. For a couple of the businesses, we had to come back up to three or four times before we got the surveys. This was by far the most time consuming portion of our project.

### **III. The Database Server**

Collection of the relevant data was indeed a very important part of the work that needed to be done, but another important piece to the project was the proper storage and analysis of the data that we collected. With the extremely large volumes of data that are present within the geographical area of interest, keeping the data in filing cabinets to be later analyzed by humans would be an exercise in futility. It was clear almost from the beginning that a suitable means of storing, maintaining, accessing and analyzing the data electronically would be needed.

While there are many commercially available solutions to this problem, their target market is mainly large corporations with deep pockets who need large, feature rich database servers and database applications to store and manage volumes upon volumes of data. This would be ok for use by this project if the cost of entry was within budget. However, it was quickly discovered that for even a basic, entry level application from certain well known database software vendors such as Oracle and Sybase, was very expensive.

On the other end of the spectrum, programs such as Microsoft Access and Excel, while being relatively cheap (a few hundred dollars) did not provide nearly the efficiency, speed, robustness or ease of use that was desired for our project's database application. This, of course, made both options totally unacceptable. An alternative approach was therefore needed.

While we obviously could not afford to purchase and maintain such a large system as an Oracle database management system (DBMS), we nevertheless decided not to settle for the flat, non-relational, insecure and cumbersome Access/Excel database architecture. To put it simply, there was far too much data to be stored accurately and reliably in Access's one-table, non-relational flat files. This is in addition to the licensing costs of several hundred dollars that is necessary to purchase such a software package. We therefore began research into the field of relational database management systems (RDBMS) that would have the features we needed to inexpensively and effectively collect and analyze our data. This led us to several important discoveries. In the mid 1990s, personal computers were becoming as fast if not faster than the large, corporate mainframe computers of the 1970s and 1980s. This allowed users of smaller, less expensive systems to have the power to run larger, more complex, and more feature rich applications. With the mainstreaming of the Internet, it also allowed small business owners and nonprofits to run small to medium scale servers on their computers. This was a major boon, giving them a foot in the door to a technological realm that was previously dominated solely by corporate giants.

Although commercial software developers simply neglected and/or abandoned plans to make an entry into the Mid Range database server market, the Open Source

community jumped on it. Indeed, once we looked at the offerings by the open source community, a suitable database engine quickly emerged: MySQL. It was discovered that this database server was indeed relational and implemented the features of SQL that we needed to make our database system robust, fast, reliable, and accessible via the web. To make the situation even better, both of these systems are licensed under the GNU Open Source Software License, meaning that they are free to acquire, distribute and use.

This allows small businesses and nonprofits to have access to database engines that rival (and in some cases outperform) the large, expensive corporate database management systems. In addition, these midrange servers can be easily installed on a PC, and take up relatively little computing resources such as hard drive space and CPU time (queries on indexed columns in MySQL are very fast). This was also critical because we did not have access to any mainframes or large servers. In other words, it had to all fit on one PC. It is through the knowledge gained through this research that we quickly decided that the open source midrange database system, MySQL, was by far the best choice for the Chandler Street database application: It makes vast, significant improvements over the past database architecture used by the previous IQP group (MS Access), while at the same time being free.

### **The User Interface To The Database**

While it is an important goal of the project to collect, store, and analyze data, we discovered that our project would be the first of perhaps many IQPs that were going to focus on the Piedmont Neighborhood. This created two additional requirements: 1) The user interface to the database had to be intuitive so that people not familiar with database administration could easily use it and 2) The user interface had to be flexible enough to allow for the inevitable future changes, additions, and modifications of not only the data, but the structure and organization of the database itself. We therefore decided to build a web based HTML style interface, because most people are already familiar with how to use the web and as such requires very little time for a new user to learn. This choice has the added bonus of allowing the application to be made available over the public Internet in the future, if so desired.

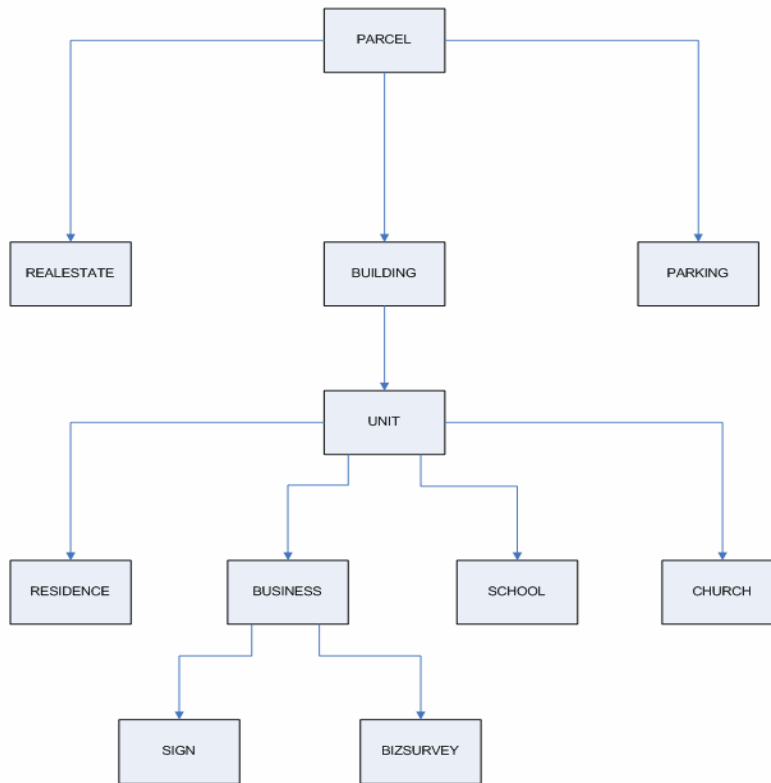


Since the database was to be accessed via the web, a suitable web server was therefore needed. Once again, we were able to find a very acceptable offering from the open source software community called Apache Web Server (<http://www.apache.org/>). In fact, over 65 percent of all web sites in the world use the Apache server. Since so many people and organizations have been using it for many years, there is a tremendously wide range of software (called modules in the Apache world) that has been developed that can be plugged into the server to implement almost any sort of HTTP feature imaginable. For our purposes, however, we would only need a module to implement a suitable Common Gateway Interface (CGI); a server side application that implements webpages, and the Secure Socket Layer (SSL) module, to make data transfer over public networks as secure as possible.

### **The CGI Application**

Although the database server and the web server could be acquired relatively easily, the specific web based interface to the database would need to be developed in house. What was needed was a user friendly way for people to create, access, and modify not only the data in the database, but also the structure (or schema) of the database itself.

The structure or schema that we built our database around and the relationships of the different tables is shown in the figure below. The database contains 11 tables and the attributes of these tables are listed in Appendix I



**Figure 3.3.2a: Database structure**

The database schema definition is stored within the database so that CGI programs could be made to have control over the schema by use of web based forms. Thus, an ordinary user with little or no background in relational database management has the power to create tables, add or remove columns within the tables, and add or remove relationships between the tables.

The create\_table page which is shown and described in more detail in the user manual in Appendix H, gives the user the ability to create new tables in the database. Through this page, one can also add or remove columns in those tables. The user simply comes up with a name for the new column, chooses an appropriate data type, writes an optional brief description of the new column, and clicks on a submit button. The create\_table page automatically generates the necessary SQL statements to send to the database to affect the desired changes. It is with similar ease that a user can drop a

column that is no longer necessary from a table. This opens up new realms of possibilities, because the acts of database administration that have traditionally been performed only in the back room can now be performed by anyone over the web.

The `create_rel` CGI program (also shown in Appendix H) allows you to create and delete relationships between the tables, another task that has been traditionally reserved only for database administrators. Currently supported relationship types include one-to-one, one-to-many, many-to-one, and many-to-many. All the user needs to know is how to pick the appropriate relationship he/she wants to create from a simple drop down box, choose the two tables involved, and click OK. This entire transaction can be performed in less than about 10 seconds.

With the features that this application offers, one can have almost full administrative control over a relational database without any knowledge of SQL or database programming whatsoever. In addition, since the schema is stored in the database with the rest of the data, it can be backed up with the rest of the data as well. Thus, if the machine the database server is running on fails, the schema as well as the data contained within it can be quickly and easily restored via the backup disks.

Although the administrative interface opens up entirely new realms of possibilities to the average computer user, the real power of the application developed during this term is its automatic generation of data entry forms, and its automatic generation of query (search) forms. When the database schema changes, the forms used to input data dynamically alter themselves to be consistent with the new schema. For example, if a column is added to a table, the form that is used to enter data (rows) into that table automatically has a new field for the new column.

Similarly, when a new table is created, a new web form is automatically created and formatted to insert and update data within that table. This is very important to us as well as future IQP teams because the CGI program does not need to be modified and/or re-written every time the schema is changed, or a new schema is created, as is the case when working with traditional web-database applications. In addition, in the search form that involves the table that has been altered, a new search option automatically appears to allow users to select, and apply conditions (WHERE clause) on that new column.

In the same way, when a new table is created, the appropriate search form for the new table is created on demand, totally behind the scenes without any human intervention necessary. It is in this way that entire databases can be created, linked together, populated, and searched without any specific knowledge whatsoever of the underlying database system or CGI programs, a task that traditionally requires a team of administrators and web programmers to accomplish. This has significantly streamlined our data collection and analysis, and hope it will provide a sound platform for future teams to use if necessary.

Another feature of the database application that will be extremely beneficial to future project teams is its ability to automatically update itself. During this term, we created a program that mines the online data source of the City Of Worcester's website for financial information relating to the parcels and buildings of interest within the Corridor. This information includes the property and building values, property taxes for the last three years, street, water and sewer assessments for the last three years, property liens, back taxes, interest and late fees.

All of this data is extracted automatically from the website via a HTML code parsing application called `restate.java` and is inserted into the "realestate" table in the local database. Each parcel is dynamically updated on a property by property basis simply by issuing one command from the command line. This saves the user of the system vast amounts of time and effort that would ordinarily be spent manually entering the data. It also provides an easy means of keeping this data fresh, because it comes directly from the IRS database via the city's website. This is important because financial, tax related data is very dynamic in nature and can literally change anytime.

A user's manual to the database (in Appendix H) explains in detail how to use the database application that we created and mentioned above. It runs through specifics regarding how to input data, change tables, use the query forms to generate data and the many other functions within the database.

#### **IV. Conclusion**

This chapter covered three major aspects of what was done during the project. In the first section, we covered the first step taken towards performing a market analysis for

Chandler Street; cataloging the physical aspects of the street. In this section we examined the forms that were used to collect data and the actual data that was collected. The second section mentioned the survey of business owners that was performed on the street, the section covered in detail the survey forms that were used and the types of questions asked. The last and final section of the methodology looked at the database that was designed and created to hold the data collected from the physical observations and the business survey.

# **Results and Data Analysis**

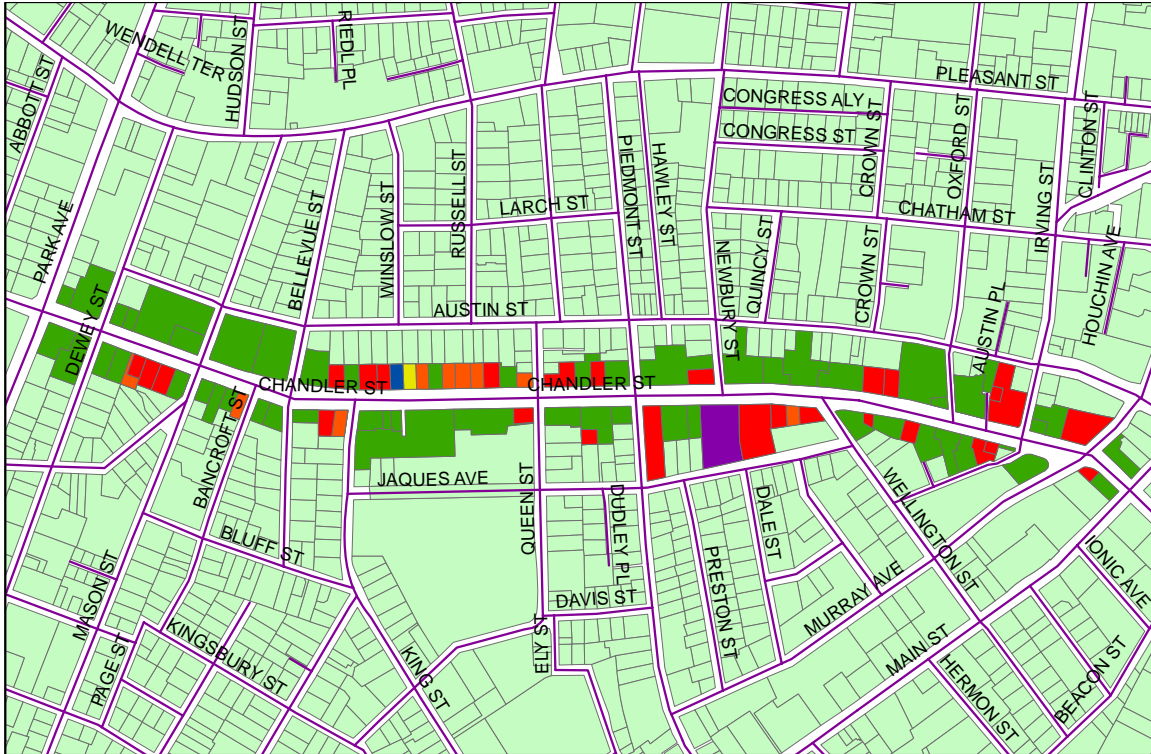
## **I. Physical Analysis**

The physical analysis covers the general assessment of Chandler Street, the lot assessment, the building assessment, parking assessment and the signage assessment. In the general assessment section, we consider Chandler Street as a whole, we show using GIS the locations of the assets, the uses of the assets and track the changes in the values of the assets. In the lot assessment section we examine the conditions of the lots, likewise in the building, parking and signage assessments; we cover the building, parking and signage conditions respectively.

### **General Assessment: Overview of Chandler Street**

The strip of Chandler Street covered in this analysis is the section between Main Street, Worcester and Park Avenue, Worcester. This section of Chandler Street falls in the zip code areas of 01602 (for the businesses on the corner of Chandler and Main), 01609, and 01610 (for the businesses on the corner of Chandler and Park). This area of Chandler Street also falls in between three Census tract areas namely 7317, 7314, and 7315.

This area of Chandler Street contains businesses of various kinds and sizes, non profit organizations, residences, a school, and a couple of churches. The map below shows the locations of these assets and their functions.



## Legend

### Parcel Use

- <all other values>
- type**
- <Null>
- apartment
- business
- church
- house
- school
- Worcester Centerline
- Worcester Parcels

**Figure 4.1.1a: Parcel Use**

### Lot Assessment

This section analyses the data collected in the lot section of the physical observation forms. Specifically, we analyze the zoning regulations of the different lots, the fence types and fence conditions, the yard types and yard conditions and the litter conditions of the lots on Chandler Street.

City officials regulate how the land is used in different areas, for example, some parcels of land are reserved for residential uses, some for business and others for manufacturing. There are several codes used in identifying and defining these zones. The majority of parcels on Chandler Street are marked under code BG-3.0 meaning that the parcels of land can be used both for business and residential purposes.

During the physical observation of the assets on Chandler Street, we observed the kind and condition of the fences on the parcels. We recorded the type of fence and the general condition of the fence. Of the eighty one parcels of land observed on Chandler Street, only thirty one were found to contain fences and the other 50 parcels did not have any fences.

The thirty one parcels with fences only had four different kinds of fences namely; chain link fences, iron fences, wire and wood fences. The majority of these i.e. 87% had chain link fences, only 3 parcels had wood fences, 2 parcels had iron fences and only 1 parcel had a wire fence. The table 4.1.2a summarizes this information.

Of the 31 parcels that had fences, 61% (19 parcels) of the fences were recorded as being in good condition, 26% (8 parcels) were found to be in fair condition and 3 parcels had fences that were recorded to be in a poor condition. The condition of one of the fences in the database was not recorded. Overall, the majority of parcels on Chandler Street that contained fences were in a good or fair condition.

<b>Type of Fence</b>	<b>Number of fences</b>
Chain link	25
Iron	2
Wood	3
Wire	1
<b>Condition of fence</b>	<b>Number of fences</b>
Good	19
Fair	8
Poor	3
Not recorded	1

Table 4.1.2a: Type and condition of fences



Using the physical observation form we also recorded whether the parcels of land on Chandler Street had yards, what the yards contained whether trees, flowers, grass, shrubs, etc and also the condition of the yards. Only 20 of the 81 parcels had yards on, in general, the yards were located either to the side or in the back of the buildings. The majority of the yards were very small compared to the parcel of land that they were located on.

Of the parcels that contained yards, 55% of them were in fair condition, 35% were in good condition, and 10% we regarded as being in poor and unkempt condition. A summary of the results is shown in table 4.1.2b

<b>Contents of yard</b>	<b>Number of parcels</b>
Yards with trees	11
Yards with shrubs	7
Yards with flowers	0
Parcels without yard	61

<b>Condition of yard</b>	<b>% of parcels</b>
Good	35
Fair	55
Poor	10

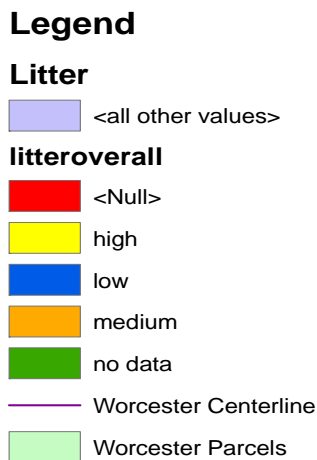
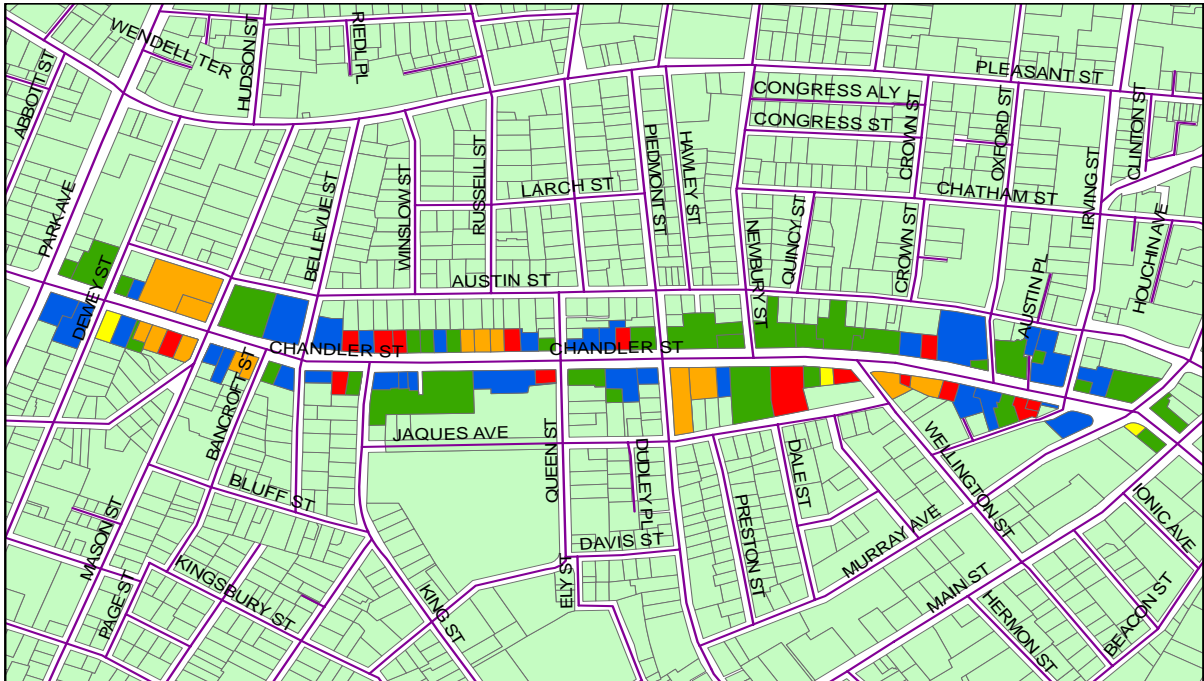
Table 4.1.2b: Summarizing yard analysis

### **Litter Assessment and Conditions**

During the physical observations, we recorded the types of litter we found on the parcels and the amount or level of litter. In general the types of litter found were glass, plastic and paper waste; the levels used to record the amount included low, medium, high or none.

Of the eighty one parcels in our database, 28 of them were recorded as not having any litter, 35 were recorded as having a low amount of litter; mainly paper and or plastic waste. 15 of the parcels were recorded as having a medium amount of litter and three were regarded as having a high level of litter. The map below summarizes these results.

In general, the parcels on Chandler street were relatively clean and well kempt with the majority having little or no litter at all. It was mainly the lots that were abandoned or the buildings that were vacant that had levels of litter that were moderately high.



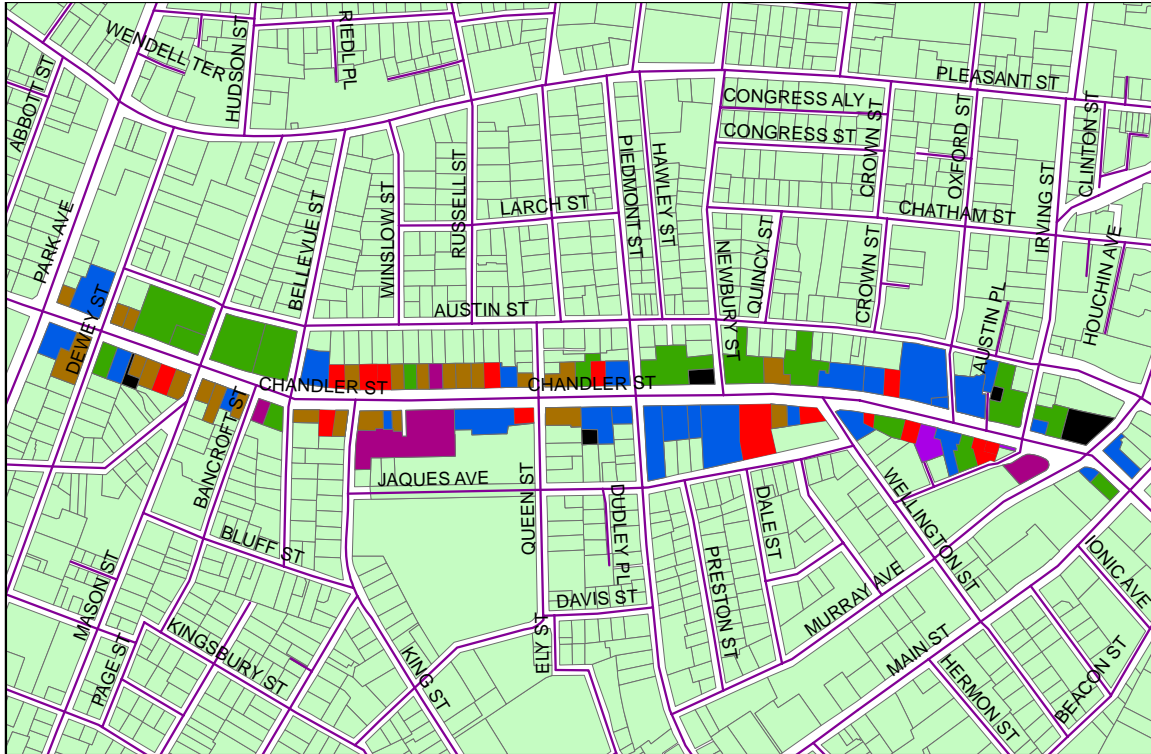
**Figure 4.1.3a: Levels of litter**

**Building Assessment**

In the building section of the physical analysis, we tracked the facade types on the buildings, the facade conditions, windows and window conditions.


During our observations, we found that the buildings on Chandler Street had one of five facades namely; aluminum, brick, cement, stone and wood. 4 of the 81 buildings surveyed had aluminum facades, 29 had brick facades, 4 had cement facades, 16 had stone facades and 26 had wood facades. The map below shows the locations of the parcels with different façade types. The map below shows the types of facades and their location on Chandler Street.

We also recorded the condition of the facades based on what we could observe from the outside. In general we found that the majority of the buildings were in a good to fair condition and that only a few were in a poor condition. Specifically, 70% of the buildings were in a good condition, 25% in a fair condition and only 5% in a poor condition.




## Legend

### Facades

 <all other values>

### facade

 <Null>

 aluminum

 brick

 cement

 no data

 stone

 wood

 Worcester Centerline

 Worcester Parcels

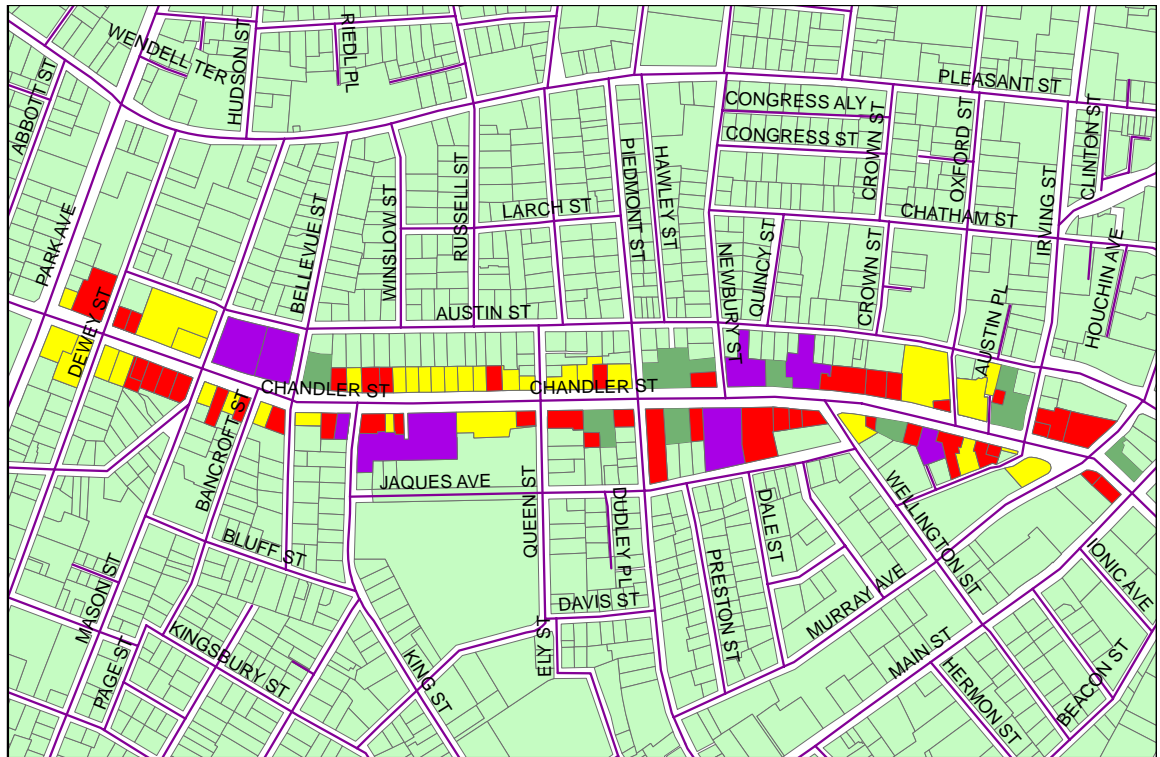
**Figure 4.1.4a: Façade types on Chandler Street**

## **Parking Assessment**

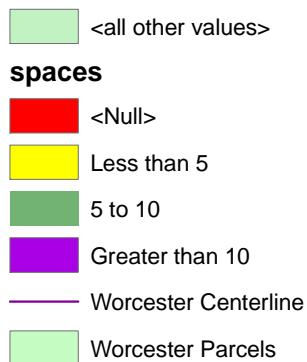
During the data collections, we also observed and recorded data with regards to the parking conditions. We tracked whether the parcel of land had parking available on it and if so the number of parking spaces, we also tracked the surface type and surface conditions.

In general, we found that 53 of the 81 lots had parking spaces on them and that the majority of the surface lots were made out of asphalt. Of the 53 lots with parking spaces, 34 of them had 5 or fewer parking spaces on them, 9 lots had between 6 and 10 spaces on them and 8 lots had more than 10 parking spaces on them. The map below shows the number of parking spaces on the lots.

Of the 53 lots with parking spaces on them, 47 had asphalt surfaces, 2 had concrete surfaces, 2 had gravel, 1 cobblestone and 1 unpaved surface.



### Legend



**Figure 4.1.5a: Parking spaces on the lots of Chandler Street**

The surface conditions tracked included sizes of cracks and potholes, and the overall condition of the surface lot. The majority of the parking lots in the database had

either small or no signs of cracks and potholes. In fact only eight of the parking lots had medium to large cracks and potholes and were in a poor condition.

### **Sign Assessment**

During the physical observations of Chandler Street, we also recorded our observations of the signs. Specifically, we recorded the location, type, size and conditions of the signs of the businesses on Chandler Street. 117 signs were evaluated according to the criteria listed above.

Of the 117 signs evaluated on Chandler Street, 31 of the signs were not located on the buildings themselves. The rest of the signs were located on the building, either above the entrance way into the business or on top of the building.

We recorded 5 types of signs during our observations: these were animated signs, lighted signs, signs with individual lettering, painted signs and printed signs. We also recorded the size of the signs, we separated the signs into three categories; small medium and large. Under the conditions, we marked the signs as being in a good, fair or poor condition. The majority of the signs were in a good condition and only a few we recorded as being in a fair condition, none of the signs were in a poor state. The table below summarizes the results of our observations.

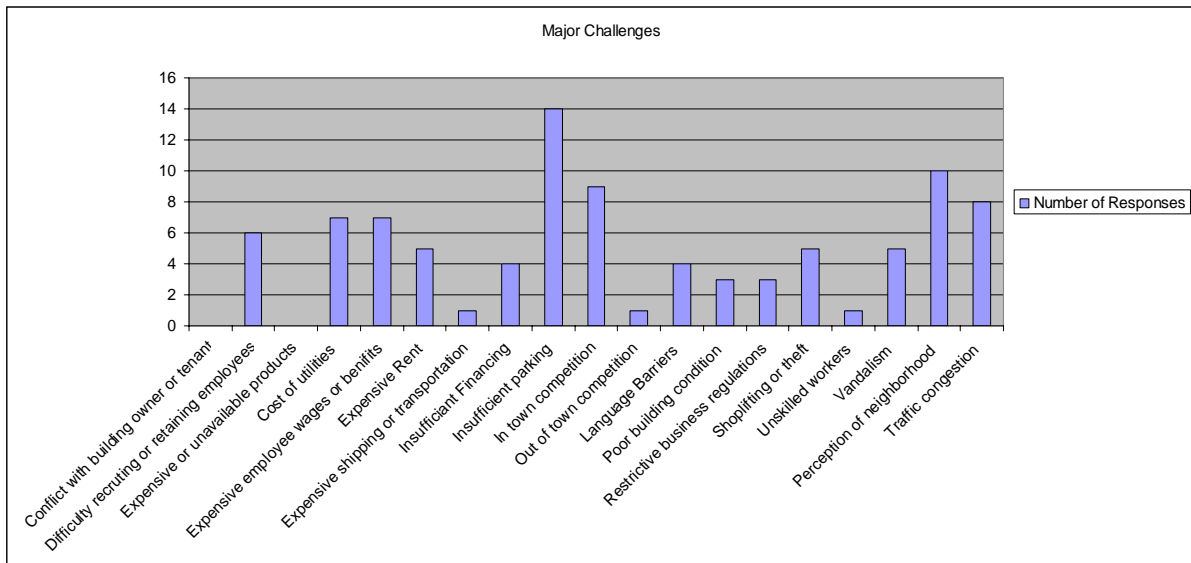
## **II. Survey Analysis**

We conducted our survey from Main Street to Park Ave. along Chandler Street. Our physical survey compiled 94 businesses in the area. We were able to speak with over 80 for-profit business owners and explain the reasoning for our research. Thirty-two businesses said that they would not complete the survey. These businesses had many excuses such as: “It’s not worth my time”, “It’s the busy time of the year”, “These questions are too personal”, “The city shouldn’t be spending money on this”, “I’ve done this before and nothing has happened”, “The owners on vacation.” There was also a language barrier that prevented effective communication among 12 businesses. Due to the lack of time and procrastination by some business owners, only 25 businesses returned the survey. This represents 27% of the businesses in the corridor.

The survey included both open and closed-ended questions and was separated into three sections: needs and opportunity assessment, business and workforce, and finally market and marketing.

**Needs and Opportunity**

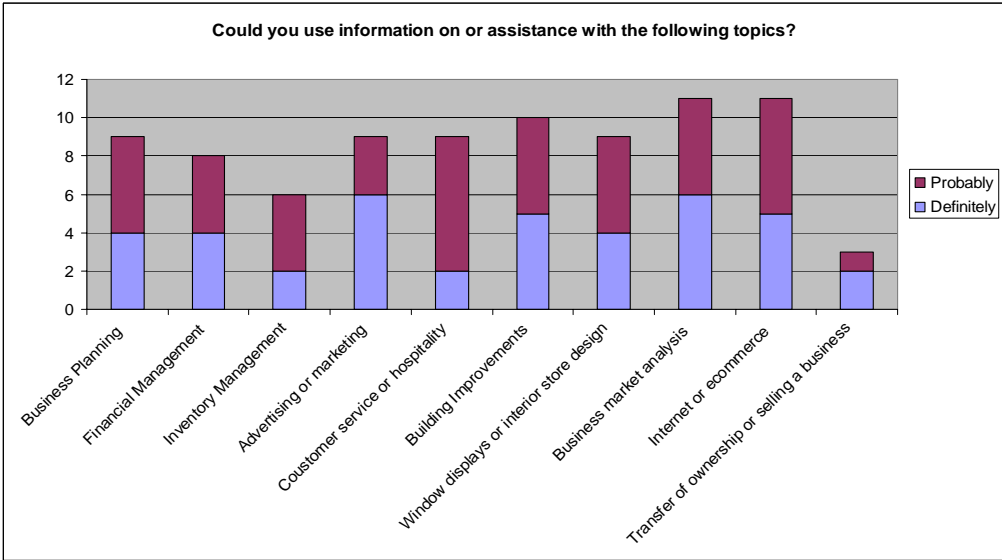
When examining the needs and opportunities of the Chandler Street Corridor, we wanted to identify the major challenges of running a business in the area. In the survey, we gave the business owners 19 possible challenges for them to describe. After compiling all the responses, 56% of business owners ranked insufficient parking as a major challenge in the corridor. The next highly rated major challenges were the perception of neighborhood, in town competition, and traffic congestion.



**Figure 4.2.1a: Major Challenges**

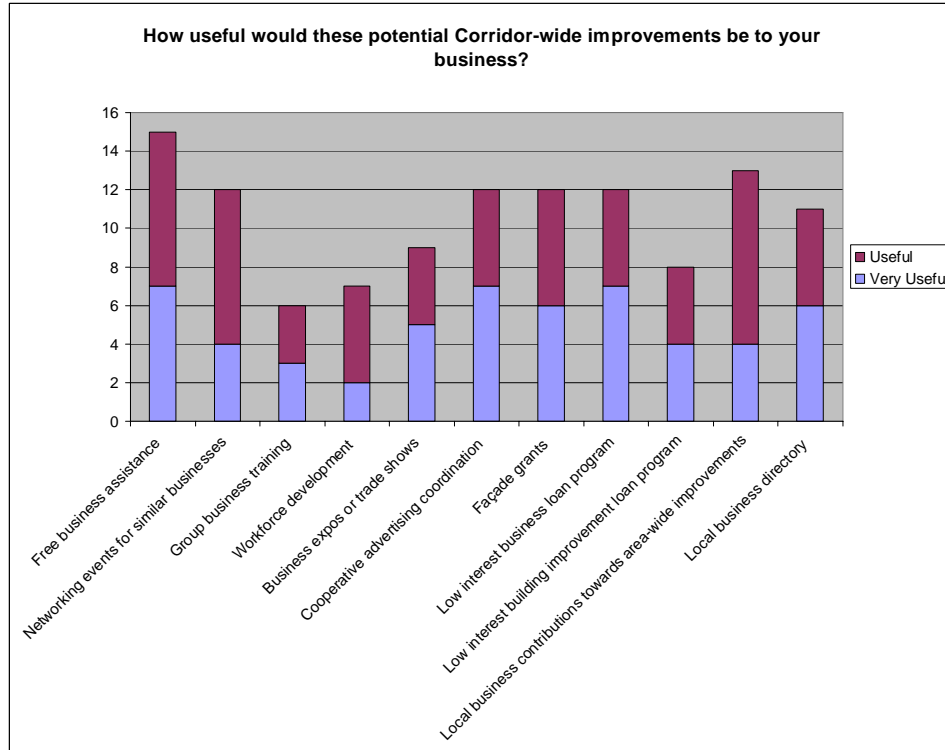
We also wanted to determine what topics businesses could use assistance with or benefit from by having more information. Many businesses answered positively, either definitely or probably, on assistance with internet or ecommerce (44%), market analysis (44%), building improvements (40%), business planning (36%) and advertising (36%).





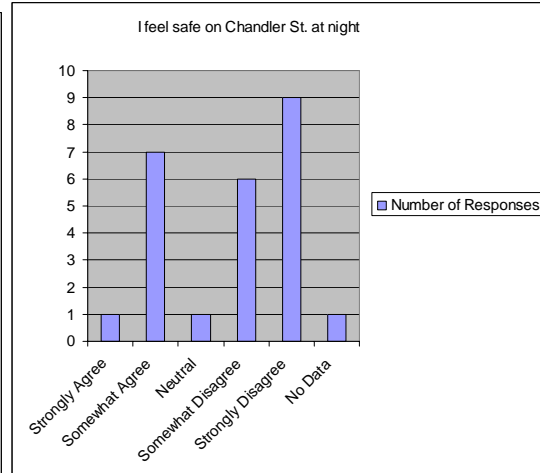
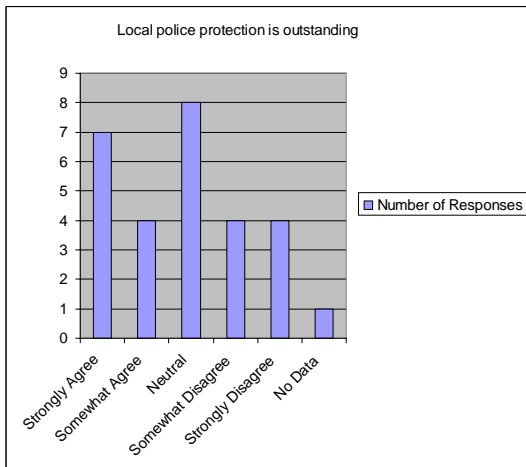
**Figure 4.2.1b: Business Assistance**

Along with assistance, we proposed some corridor-wide improvements that could be made. These improvements all came from the BID, HUD EZ, Cluster and Main Street strategies. The improvements that were positively ranked the highest, either very useful or useful, were free business assistance (60%), local business contributions towards area-wide improvements (52%), networking events (48%), cooperative advertising coordination (48%), and façade grants (48%).



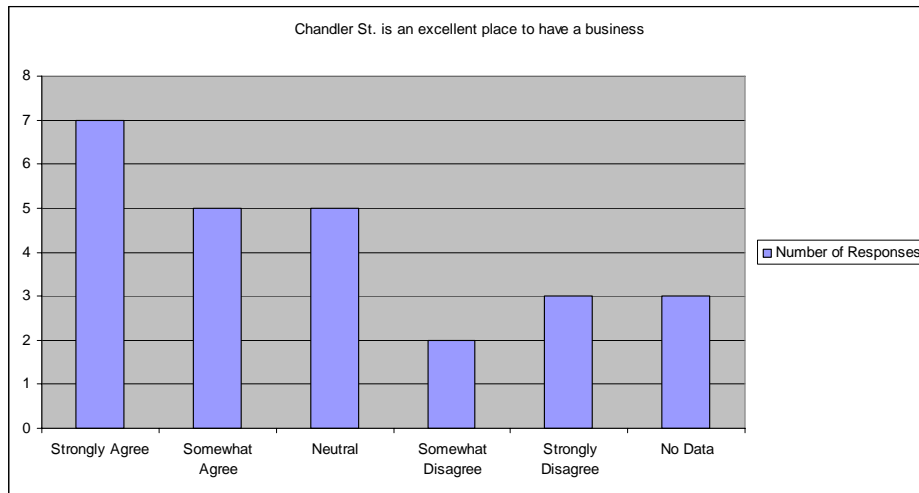
**Figure 4.2.1c: Corridor Improvements**

We asked the business owners their attitude toward the corridor. While 44% of business owners positively agreed that local police protection is outstanding and 56% agreed that local fire is outstanding, 60% did not feel safe at night on Chandler St (see figure 4.2.1d). Owners positively agreed (60% for both) that they always try to buy products and services from other Corridor businesses and always direct customers to other Corridor businesses. Also, 48% of business owners positively agreed that Chandler St. is an excellent place to have a business. When asked about their present location, only one responded that they planned to move.



**Figure 4.2.1d: Police protection**

**Figure 4.2.1e: Safe at Night**

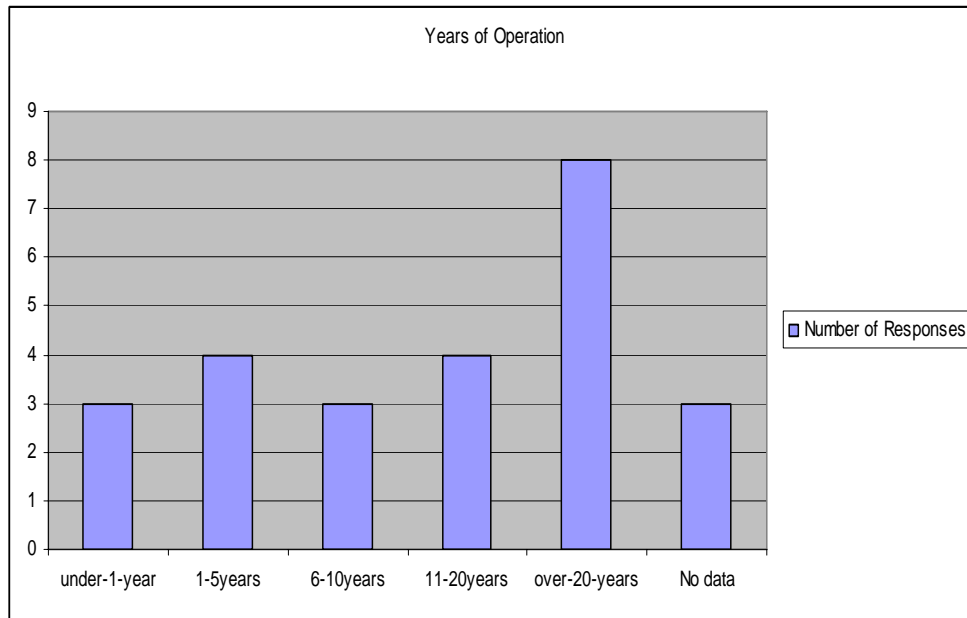


**Figure 4.2.1f: Place for Business**

**Business and Workforce**

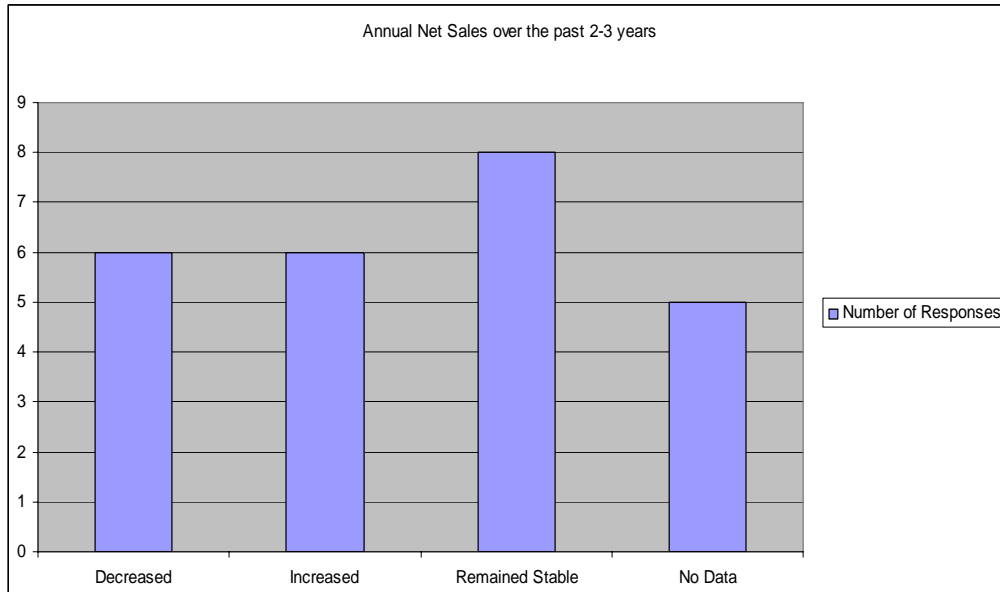
The businesses surveyed represent all generations of the Chandler Street Corridor. Thirty-six percent of the businesses have operated for over 20 years and 24% have been in the corridor for 1-5 years. Only 32% of businesses own the space that their business operates in. As said before, insufficient parking is a major problem in the corridor. Fifty-two percent of businesses do not have a parking lot for their customers, requiring them to park on the busy street. Thirty-two percent of businesses even require their employees to park on the street, some one to two blocks away. Local employment is not

very prevalent because 48% of businesses have zero employees that live in the corridor and only one business is made up of 100% of local residents.

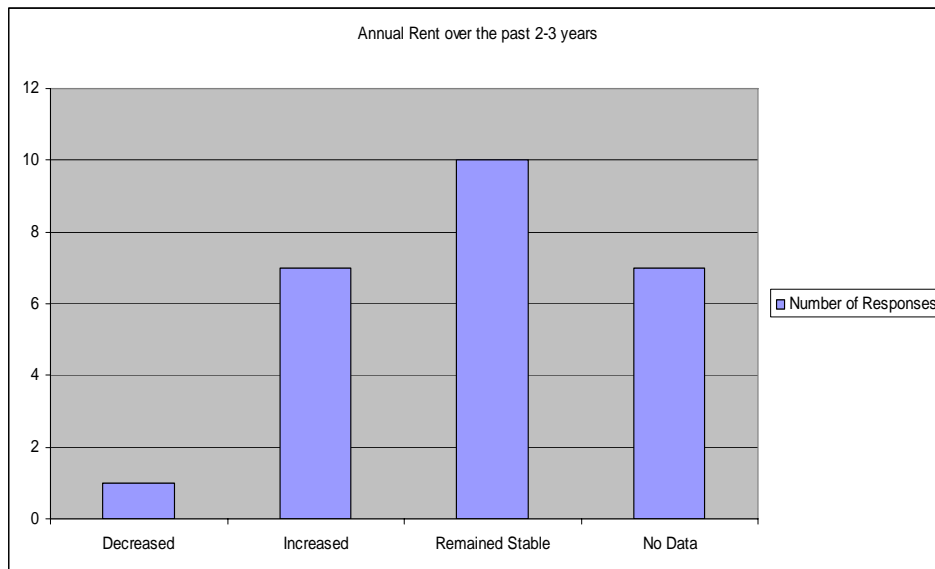


**Figure 4.2.2a: Years of Operation**

Over the past 2-3 years, annual net sales have remained stable for 32% of the businesses and annual rent has also remained stable for 40% of businesses. We asked the business owners for their annual net sales and annual rent with hopes to estimate local consumer spending and how much is captured by Chandler Street businesses. Unfortunately, only 12% answered these questions. We were therefore not able to do these analyses. Many business owners stated that that information was too personal and did not see the benefit of providing it.



**Figure 4.2.2b: Annual Net Sales**

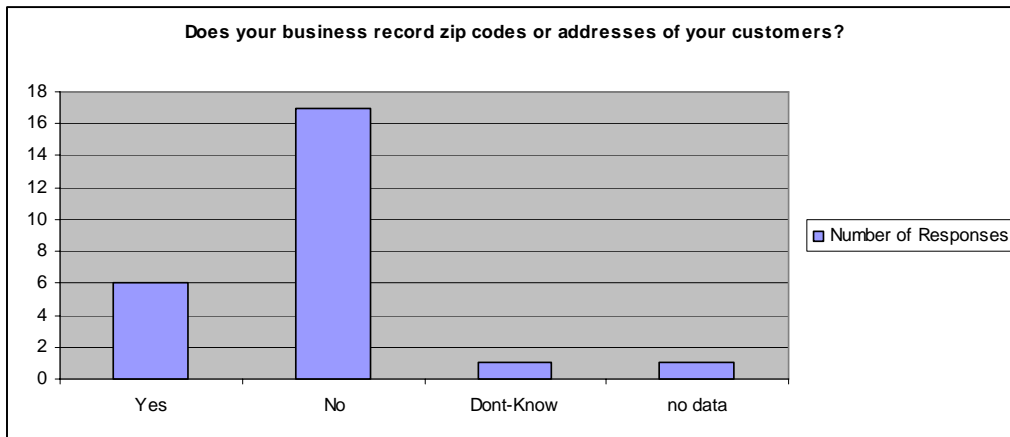


**Figure 4.2.2c: Annual Rent**

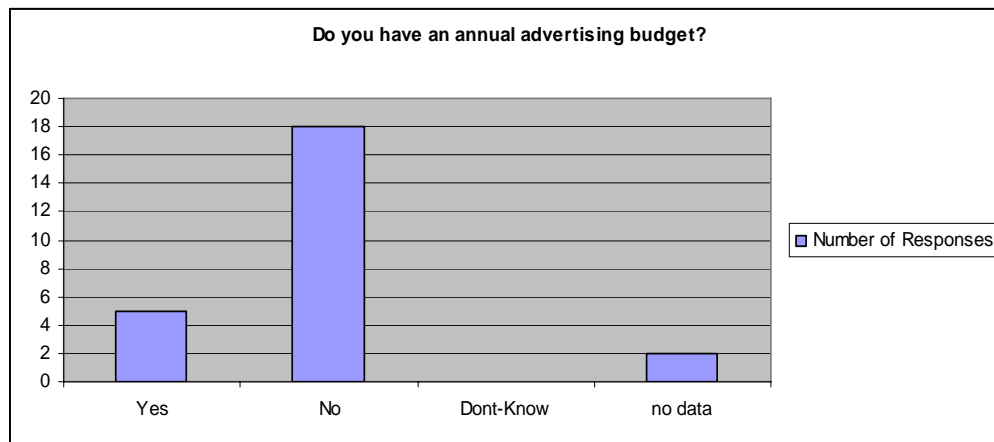
**Market and Marketing Data**

The daily hours of operation vary per business but all businesses were open Monday through Friday and some open on the weekends. The slowest months of out the year for the corridor were January, February and March. We wanted to be able to map customer locations and market demographics for each business but only 24% kept track of their customers' addresses or zip codes. Many business owners were looking for

assistance with advertising and would like a cooperative advertising coordination. This explains why only 20% of the businesses advertise. The businesses who do advertise tend to use only a single medium, mainly mailings. The target market for businesses range genders, all ages and all incomes. All businesses target price point is average to low-end.



**Figure 4.2.3a: Location of Customers**



**Figure 4.2.3b: Annual Advertising**

We included open-ended questions at the end of the survey to allow for further comments or ideas. Sadly, less than 50% did not take the opportunity to express their thoughts. The ones who did answer credited “High traffic”, “On the way to and from work” and “They live here and nearby” as reasons people patronize the Chandler Street Corridor. They also credited “Crime”, “Poor Parking”, and “Perception of neighborhood

and Appearance” as reasons why people do not patronize the Chandler Street Corridor. Business owners would like to see more “clothing businesses”, “fast food” and “big name chains” in the corridor. We asked “What community assets would you like to see developed?”, only ten responses were given. Out of those ten, six mentioned expanding parking and four mentioned expanding green space/cleanup of area.

## **Conclusion and Recommendations**

This chapter covers the conclusions to the project and the recommendations made from the data analysis. Specifically, we make recommendations based on the data that was collected and our experiences through out this project. This chapter has three main sections, 1) recommendations from the survey, 2) recommendations from our experiences doing this project, and 3) recommendations for the database.

### **Survey**

The data received from the survey has indicated what improvements should be made from the most important people in the Corridor, the local business owners. There were five major concerns that stood out in the survey. They were parking, advertising, appearance, safety and complementary businesses.

### **Parking**

Fifty-six percent of business owners surveyed ranked insufficient parking as a major challenge for running a business. There are twenty-eight lots, some containing multiple businesses, which require their customers to park on the street because their lot does not have parking spaces. Only eight lots had ten or more spaces in the Chandler Street Corridor. We recommend taking one of the vacant lots in the corridor and making public parking available for all patrons of the Chandler Street Corridor.

### **Advertising**

Twenty percent of the business owners surveyed said that they have an annual advertising budget. Thirty-six percent ranked advertising as a major challenge. Forty-eight percent said that a cooperative advertising coordination would be either useful or very useful. The lack of advertising in the Corridor was noticeable when speaking with business owners. Many did not know what services were available in the Corridor. We recommend a Corridor-wide advertising campaign to increase business of the entire area. This will bring in new patrons from other areas and inform old patrons of other services



available in the corridor. Even something as simple as a business directory would be useful to allow more business owners to patron other businesses.

### Appearance

Perception of the neighborhood and appearance were issues discovered in our open-ended questions. Many business owners felt that these were the reasons people did not patronize their businesses. To counter these perceptions, forty percent of the business owners surveyed mentioned expanding green space or cleaning up the Chandler Street Corridor. These efforts would increase the image of Chandler Street itself. Forty-eight percent of business owners surveyed stated that façade grants would be a useful improvement to the area. The resources for these local improvements could come from the business owners themselves. Fifty-two percent surveyed said local business contributions towards area-wide improvements would be useful to the area.

### Safety

The outside perception of a neighborhood also deals with safety and crime. According to the Worcester Police Department's website 24.8% of all incidents in the city occur in the area that contains the Chandler Street Corridor. The next highest in an area is 15.7% (Worcester Police Department, 2004). Although 44% of business owners positively agreed that local police protection is outstanding, 60% disagreed that they felt safe at night. Many business owners would like to see more police presence in the corridor to deter crime from happening. Some had even suggested that officers patrol up and down the corridor on foot. Along with police presence, more lighting along the corridor could increase visibility make individuals feel safe. This will also make the corridor look more appealing for patrons at night. A few business owners had stated that the PIP shelter, which is close to the corridor, should be moved. They believed that the residents of the shelter were the ones who caused the most incidents.

### Complementary businesses


The top six most common businesses in the corridor are charted by NAICS codes on the map below. They are (in order of most common): restaurants, grocery stores,

salons, auto repair shops, used car dealers and computer repair stores. The business owners asked for more “clothing businesses”, “fast food” and “big name chains” in the survey. While these types of businesses would add to the business mix in the area, certain big name chains could take away business from the local family owned stores.




Common NAICS codes

**wpi\_par selection**


 <all other values>


**kind**

 <Null>      *Other business*


 Grocery store

 Salons

 auto repair

 computer repair

 restaurant

 used car dealer

**General Project Recommendations**

The major recommendation that we would make for this project is ensuring that there is a high response rate from the survey. We think that this is important because if the recommendations for revitalization of Chandler Street are going to come from the business owner survey, there needs to be a higher response rate so that accurate analyses and thus accurate recommendations can be made.

During the seven weeks that we had to complete this project, we had a 27% response rate from the business survey which is relatively low. There are several reasons

that this response rate is low (some of which are mentioned in the survey analysis section under the data analysis chapter) but the main reasons are the short amount of time that we had to do this, the language barrier between us and some of the business owners and the time period when the survey was done.

Some of the recommendations that we suggest include picking up the reminder of the business survey that we were not able to collect because of lack of time on both our part and that of the business owners. We also suggest involvement from community leaders and other interested parties when making further contact with business owners. We think that this is important because the community leaders and neighborhood residents will continue making contact with the business owners and the owners will not have to see a new face every seven weeks. Making the initial contact and building the trust and relationships will go a long way in ensuring the success of this project.

We would also suggest that when the business owners are surveyed again, that it be at time that is not their busiest. Many of the business owners we contacted sighted a lack of time as the reason why they were not able to complete the survey in a timely manner. In fact, from the responses received, the majority of the business owners marked September, October and December as their busiest times and January through March as relatively slower.

When the surveying of business owners is done again, we would also recommend that efforts be made to bridge language gaps. There are several businesses in the corridor that are owned by people whom English is not a first language. We encountered many owners that spoke Spanish and some that spoke Portuguese. Thus we would recommend having surveys translated into the appropriate languages and having a translator on hand that will be able to facilitate communication.

Along with the collection of the survey, we had issues with using GIS software. GIS is a very powerful resource to have at your disposal. We recommend becoming familiar with the GIS software and obtaining any necessary layers as soon as possible. This familiarity will make creating maps much easier and quicker. There also was time wasted updating information from the City of Worcester Department of Administration and Finance's website, when the same information was found in the GIS layers provided

to us from the Department of Planning. This information was extremely important to our project and could have been obtained in the matter of minutes instead of days.

### **Database Recommendations**

The connection of the Chandler Street database to the Worcester City IRS Database proved to be enormously powerful. Indeed, the more data sources that a database is supplied with, the more accurate and fresh the data will be. This is not to mention the incredible amount of time that is saved mainly in two ways: The first is that he/she doesn't have to spend hours at a computer terminal entering data and the second is that he/she doesn't have to wade through tremendous amounts of unrelated data to find the relevant data to his/her project. For example, the Worcester IRS database is extremely large, and contains vast amounts of information about vast amounts of properties and their owners. However, with the use of the restate crawler application described earlier, the computer automatically queries the IRS database for the relevant MBL's, then updates our local database with the desired information of property taxes, building and property values, liens, and fees to have available on disk.

It was found out through the course of this project that the Worcester Regional Research Bureau (WRRB) maintains a database containing extensive details as to street and sidewalk conditions, building facade conditions, and other interesting physical-oriented data for Worcester. Periodically, a team from the WRRB will walk along a pre-defined route within the city and record the observed physical conditions into a palmtop computer to be later exported into a relational database. We recognized striking similarities between her database and ours, and made minor adjustments to our schema such that it is (in the physical sense) precisely compatible with the WRRB database. This makes the conditions prime for connection of the database designed during B term to that database. With such an incredible opportunity for two non profits to share information with each other and develop a working relationship across multiple neighborhoods, it is hereby recommended that future code be implemented to link the two databases up to each other.

Another key improvement that would be quite useful is coordinating with DPW database to report newly discovered city infrastructure problems. When a physical survey is taken and the results put into the database, GIS map(s) could be created that identifies potential DPW issues such as street and sidewalk (potholes, unevenness, dangerous intersections, etc), lighting (bulbs out, exposed wires, missing base plates), graffiti, litter, or any other potential hazards that were noted in the survey. While this creation of GIS Maps was done by this project team, no channel existed for reporting our findings to the DPW or any other agency that has the capability to affect improvements in the area. Something that would be very nice to have in the future is coordination between organizations such as WPI's Worcester IQP Research Teams, WRRB, etc. and the government agencies such as DPW and the Office of City Planning. One very efficient and fast way to do this is electronically, through sharing of database information. In this way, DPW database could be updated with newly discovered problems, while our database could be updated with the city's time schedule for fixing those problems. This information could then be provided to local residents and business owners, reinforcing the idea that their voices are being heard by the government.

A connection with databases kept by local businesses would give incredible amounts of insight into consumer buying habits and local consumer market conditions and needs. However, it was discovered during the project that a very, very small number (perhaps as small as one or two) of business owners actually keep databases of their customer's zip codes and buying behaviors. This could be a focus of a future project: Sending teams of WPI students to help businesses that are interested set up and maintain computers at their stores to gather consumer-oriented marketing data. This data could then be combined with the existing data in the database to create a much more in-depth analysis of the economic conditions, consumer buying habits, and insight on when and where to advertise, just to name a few.

Another feature that would be quite useful, both to future IQP teams as well as local business owners, would be the creation and maintenance of open, online forums for business owners in the community to discuss their concerns, ideas, and comments about the conditions in the local area. For example, discussion boards (BBS) could be started with topics such as corridor-wide improvement suggestions, business concerns, local

needs, events, advertising, and liaising with owners of other complimentary businesses (a "restaurants" or "hair and fingernail salon" board could be created within the BBS, for example) In addition to giving the local business owners a place to voice their opinion, it will also provide future project teams with a data source to examine to identify improvements and recommendations that are the most popular or most in demand by the local businesses. This would supplement the business survey data, as the survey would be a formal measurement of opinion whereas the BBS would be an informal and ongoing one.

In addition to a forum where local business owners can share common concerns or ideas, another nice feature to implement would be a public website that allows businesses to advertise their products and services directly to consumers. This could come in the form of implementation of a searchable online business directory, picture and print advertising, retail events promotion, and online shopping and ecommerce. This could be done by linking to existing for-profit websites that perform similar functions (such as townonline.com) or the development of an entirely new, not for profit website that would give all business equal access to advertise and reach their target consumers. Indeed, this potential improvement could be extended to the regional level, encompassing not only the Piedmont Neighborhood but perhaps the entire city of Worcester, or at least select neighborhoods and communities within the city of Worcester.

While this project focused mainly on the development of a working database infrastructure for collection of physical and marketing data, including advanced data entry tools and user-friendly query tools, a nice feature to add would be the capability to perform in-depth, advanced statistical analysis of the data. Our project only required relatively simple statistical analysis. In the future it might be nice to have tools such as KDD (Knowledge Discovery Database) run on top of the existing database to perform pattern recognition and automatic electronic recommendations based on the available data. This option, however, will require the database to be populated with at least several years of data, to make the statistical analysis and pattern recognition more stable and accurate. As such, this is a recommendation for projects way in the future, perhaps as much as 4-5 years.

During the IQP, it was discovered through research of the extant literature that a vast majority of residential property owners are what is known as absentee landlords. This means that someone buys a property, such as a triple-decker house, converts it into apartments, rents the apartments and lives somewhere else, perhaps many miles away from the neighborhood. As such, many of the residential property owners have little or no interest in the maintenance of their property's image. This has, over time, contributed significantly to the degradation of the overall appearance of the Chandler Street Corridor.

One way to reverse this process is to get more local businesspeople to invest in the residential properties. In this way, a business owner can supplement his income by additional revenue streams in the form of rental income, while at the same time improving the physical appearance and harmony of the Chandler Street Corridor in which her business resides. To provide accurate information as to the residential real estate market to local potential property investors, it is recommended that the database schema be revised and extended to contain more real estate data, such as physical locations of apartments, bedrooms and bathrooms, recent real-estate transactions, and apartment units and houses that are for sale or rent. This sort of data, when combined with the already existing data involving appraised values, remodels, liens, back taxes, fees, acreage and land values and zones would make a very powerful tool for speculation into the local real estate market. This information, in turn, could be supplied to local investors that are interested in purchasing and maintaining residential property.

Improvements to the back-end database application infrastructure would also be very useful, especially if this project expands in breadth and scope in the future. During this project, the data set, and performance requirements were small enough that one single 733 MHz computer sporting a whopping 128MB of RAM could easily handle the load. However, once the data set expands and more users want to connect, this one PC architecture will obviously become a serious bottleneck. Fortunately, there are many strategies that can be employed to effectively circumvent this impending disaster. The most critical thing to do is to place the server(s) on a reliable network. The network (namely the router on that network) at the Worcester Project Center is very, very fond of crashing, usually of course at the most inopportune times. To drastically improve reliability it is strongly recommended that the server be connected directly to the internet

using a static ip address with a suitable, publicly available hostname (domain name). If this option is unreasonable and the server must be fire walled, it should be behind a very reliable firewall and employ dynamic DNS (such as that service available at dyndns.org), which is a domain name that remains the same even when the server's IP address changes.

The last and most obvious recommendation for improvement of the database application is improving the cosmetic appearance of the web pages. This was not a priority for this project, but even the naked eye of an untrained observer can easily spot room for improvement. While cosmetic improvements are mostly wasted if the application is only going to be seen by administrators in the back room, it will become a very important feature to have if and when the application is made available to the public. So, if future projects have the time and desire to do so, cosmetic improvements to the user interface would indeed be very welcome.

Over the past seven weeks, we were able to create a dynamic database filled with pertinent information of the Chandler Street Corridor. We completed a physical survey of the neighborhood and documented the location and conditions of the assets in the neighborhood. We were also able to represent this information diagrammatically using the database we created and GIS Maps. We completed a business survey that created relationships and gave a voice to the business owners in the area. We were able to complete the goals that we set out to achieve. We hope that the work we have done will set a foundation for others to build upon to complete the revitalization of the Chandler Street Corridor.



## **References**

Austrian, Ziona (2000) Cluster Case Studies: The Marriage of Quantitative and Qualitative Information for Action Economic Development Quarterly. Sage Publications: Santa Clara, California.

Barman, Todd (2005), Retrieved October 25, 2005 from  
<http://www.uwex.edu/ces/cced/dma/3.html>

Boston, Massachusetts Enterprise Community/Empowerment Zone. (2005), Retrieved September 18, 2005 from  
<<http://www5.hud.gov/urban/perms/printReport.asp?report=793>>

Business Improvement District Of Springfield (2005). Retrieved Sept 15, 2005 from  
<<http://www.springfielddowntown.com/>>

Colgan, Charles and Baker, Colin (2003) A framework for assessing Cluster development Economic Development Quarterly. Sage Publications: Santa Clara, California.

Commonwealth Of Massachusetts (2005) “MGL Chapter 40, Sections 1-3” Boston, Mass.

Eight Principles (2005) Retrieved September 18, 2005 from  
<<http://www.mainstreet.org/content.aspx?page=2358&section=2>>

Executive Summary, City Of New York (2004). Retrieved Sept 15, 2005 from  
<<http://tenant.net/Oversight/BID/bidsum.html>>

Four-Point Approach. (2005). Retrieved September 18, 2005, from  
<<http://www.mainstreet.org/content.aspx?page=47&section=2>>

Frieden, Bernard J. (1989) Downtown Inc - How America Rebuilds Cities MIT Press: Cambridge, Mass.

Gross, Jill Simone. (2005) "Business Improvement Districts in New York City's Low-Income and High Income Neighborhoods" Sage Publications: Santa Clara, California.

Hall, Tim (2002) "Urban Geography, 2nd Edition" Routledge: London and New York.

Initiative for Competitive Inner Cities (2005). Retrieved September 2005 from <http://www.icic.org>

History of the National Trust Main Street Center (2005). Retrieved September 18, 2005, from <http://www.mainstreet.org/content.aspx?page=1807&section=1>

Key Principles. (2005), Retrieved September 18, 2005 from [http://www.ezec.gov/About/4\\_keys.html](http://www.ezec.gov/About/4_keys.html)

Lederman, Robert (2005) "BIDs Harass Street Artists?" Retrieved Sept 15, 2005 from <http://hellskitchen.net/issues/bids/artist.html>

Lombardi, Kristen (1998) "Taking It To The Streets" Worcester Phoenix: Worcester, Mass.

MacDonald, Heather (1996) "Why Business Improvement Districts Work" City Journal.

Mission Hill. (2005), Retrieved September 18, 2005 from <http://www.missionhillmainstreets.org/initiatives.html>

Mitchell, Jerry (2001) Business Improvement Districts and the 'New' Revitalization of Downtown Sage Publications: Santa Clara, California.

Porter, Michael (2000) Location, Competition, and Economic Development: Local Clusters in a Global Economy Economic Development Quarterly. Sage Publications: Santa Clara, California.

Right Approach. (2005), Retrieved September 18, 2005 from  
<<http://www.mainstreet.org/content.aspx?page=1989&section=2>>

Sullivan, Brian. (2002), Retrieved September 18, 2005 from  
<<http://www.hud.gov/news/release.cfm?content=pr02-008.cfm>>

US Census (2000). Retrieved September 15, 2005 from  
<<http://www.census.gov/main/www/cen2000.html>>

Wallace, Sherri Leronda. (1999) A Case Study of the Enterprise Zone Program: “EZ” Avenue to Minority Economic Development? Economic Development Quarterly. Sage Publications: Santa Clara, California

Waits, Mary Jo (2000) The Added Value of the Industry Cluster Approach to Economic Analysis, Strategy Development, and Service Delivery Economic Development Quarterly. Sage Publications: Santa Clara, California

Worcester Police Department (2004) Retrieved September 15, 2005 from  
<http://www.ci.worcester.ma.us/wpd/home.html>

Worcester Regional Research Bureau (2004) Benchmarking Municipal and Neighborhood Services in Worcester: 2004. Center for Community Performance Measurement.

## Appendix A



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October 20, 2005

Dear Chandler Street Business Owner:

I write this letter to tell you of an opportunity that is too good to pass up.

As small business people in our urban core, many you on Chandler Street face stiff competition from others: large discount stores, suburban commercial strips, regional shopping centers, and Worcester merchants in other neighborhoods. Likewise, many of you also lack the market research support available to big retailers and shopping center developers.

Recently, the City of Worcester approved Worcester Common Ground and the Chandler Street Business Association's proposal to create a Neighborhood Revitalization Strategy Area (NRSA) for the Downtown Chandler Street Business District. As part of this new initiative, a team of researchers from Worcester Polytechnic Institute (WPI) will bring resources and expertise that may help you and other Chandler Street business owners better compete in today's market.

I urge you to take advantage of this opportunity and join in the effort to revitalize Chandler Street and expand your customer base.

The WPI team will be interviewing business owners over the next few weeks to assess the needs of the business community along Chandler Street - to learn more about the challenges you face in running a business, and to find out what corridor-wide improvements you would find most useful. The interviews are part of a comprehensive market analysis WPI is undertaking to help Chandler Street businesses better identify market trends, local and regional consumer demand for your products or services, and opportunities for you to reach more customers.

Once the assessment is completed, you will receive a copy of the report and be invited to a presentation with your fellow business neighbors. (FYI: The team has already determined that there is some \$26 million in purchasing power in the neighborhood around Chandler.)

Businesses along the Chandler Street Corridor have a unique opportunity to be heard. I realize that time is money and that you are very busy running your business, however I urge you to take this opportunity to participate. For more information on this initiative please contact Professor Rob Krueger 508-831-5110, Professor Bob Hersh (508-831-5522), or contact me directly.

Sincerely,



Barbara G. Haller

***Moving forward together.***

## Appendix B



44 PORTLAND STREET  
WORCESTER, MASSACHUSETTS 01604  
508.831.5110  
(F) 508.8315485

### WORCESTER COMMUNITY PROJECT CENTER

Dear Chandler Street Business Owner,

About a month ago, you received a letter from City Councilor Barbara Haller informing you of a new initiative by the City of Worcester, the Chandler Street Business Association and Worcester Common Ground to develop a Neighborhood Revitalization Strategy Area. As part of this initiative, WPI is conducting a survey of business owners along the Chandler Street Corridor.

The survey should take you about 15-20 minutes to complete. In the survey, we ask questions about what corridor wide improvements you would like to see, the constraints you face as a business owner, and market conditions. Our research is designed to benefit business owners like you in a number of ways. Through the survey, we will:

- 1) Identify corridor-wide improvements
- 2) Estimate local consumer spending and how much is captured by Chandler Street businesses
- 3) Map customer locations and market demographics for each business
- 4) Create a business directory to promote Chandler Street to a wider market.

We recognize that some questions in the survey ask for proprietary information, such as sales data and customer location. We assure you that your answers to the survey will remain confidential. In our reports we will discuss the data in a way that will not link responses received to individual businesses. Our findings will be presented in an aggregate form (that is, percentages, statistical means, etc) so the information cannot be used to identify any particular business.

We understand that you are very busy, but we urge you to give us 15-20 minutes of your time to fill out this survey. The answers and the comments that you provide will enable us to develop an accurate market analysis that can help your business. A final report with our findings will be available upon request.

If you would like more detailed information about the work that we are doing, or how the information we collect will be used, please do not hesitate to contact us. We can be reached at 508-756-8585. Thanks again for your time.

Ryan McGlone (rmcglone@wpi.edu)  
John Furman (jwf@wpi.edu)  
Bernard Kaswarra (kaswarra@wpi.edu)  
Telephone: 508-756-8585

Appendix C

# Business Concerns in the Chandler Street Corridor



**Business Owner's Questionnaire**

**Study Conducted By**

**Worcester Community Project Center**

**Worcester Polytechnic Institute**

**November 2005**

## **PURPOSE OF THIS STUDY**

The purpose of this study is to analyze the current business conditions in the Chandler Street Corridor. The knowledge gained through your completion of this survey will allow for the creation of recommendations that will work exclusively for the economic development of the Chandler Street Corridor. These recommendations can be used and implemented by the Chandler Street Neighborhood Revitalization Strategy Project.

You were selected for this questionnaire on the basis of where your business is located. Your responses to this questionnaire will not be revealed in any way that identifies you or your employees. Each questionnaire has been given a random number identifier for office use only. Your confidentiality is assured.

## **PROJECT SPONSORS**

This study is being conducted on behalf of the Chandler Street Neighborhood Revitalization Strategy Project.

For additional information about this questionnaire or the project, please contact Professor Robert Krueger, Professor Robert Hersh, Ryan McGlone, Bernard Kaswarra or John Furman. *Email:* [rmcglone@wpi.edu](mailto:rmcglone@wpi.edu).

**NEEDS AND OPPORTUNITIES ASSESMENT**

We want to know your thoughts on operating a business in the Chandler Street Corridor.

**1. Please rate the degree to which you are facing the following business challenges? (● mark ONE answer for the each item)**

	Major Challenge (-3)	Minor Challenge (-2)	Don't Know (-1)	No Challenge (0)
Conflict with building owner or tenant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty recruiting or retaining employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expensive or unavailable products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of utilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expensive employee wages or benefits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expensive rent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expensive shipping or transportation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient parking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In-town competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Out-of-town competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language barriers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor building condition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restrictive business regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoplifting or theft	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unskilled workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vandalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perception of neighborhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traffic congestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**What are your three main challenges for doing business? Explain.**

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**2. Could you or your employees use information on or assistance with the following topics? (● mark ONE answer for the each item)**

	Definitely (2)	Probably (1)	Don't Know (0)	Probably Not (-1)	Definitely Not (-2)
Business planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inventory management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertising or marketing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer service or hospitality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building improvements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Window displays or interior store design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business market analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Internet or E-Commerce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transfer of ownership or selling a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3. How useful would these potential Corridor-wide improvements be to your business? (● mark ONE answer for the each item)**

	Very Useful (3)	Useful (1)	Don't Know (-1)	Useless (0)
Free business assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Networking events for similar businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group business training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workforce development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business expos or trade shows	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperative advertising coordination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facade grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low interest business loan program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low interest building improvement loan program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local business contributions towards area-wide improvements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local business directory	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Are there any other improvements that you would like to see made in the Chandler Street Corridor?**

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**4. We want to understand your attitudes about the Chandler Street Corridor. How strongly do you agree with the following statements? (● mark ONE answer for the each item)**

	Strongly Agree (2)	Somewhat Agree (1)	Neutral (0)	Somewhat Disagree (-1)	Strongly Disagree (-2)
Local police protection is outstanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel safe on Chandler St. during the day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel safe on Chandler St. at night.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local fire protection is outstanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always try to buy products and services from other Corridor businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always direct customers to other Corridor businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The existing Corridor business mix helps my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The feel and look of the Corridor helps my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My building facade draws customers to my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My window and store displays help my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My advertising helps my business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My business is open when customers want to shop.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Housing for employees is readily available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Childcare for employees and customers is readily available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chandler Street is an excellent place to have a business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. How satisfied are you with the present location of your business? (● mark ONE)

- Very Satisfied     Satisfied     Neutral     Unsatisfied     Very Unsatisfied     Plan to Move

Why? \_\_\_\_\_

6. Do you have plans to expand or reduce operations for your business in the foreseeable future? If so, what are they?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. What building or storefront improvement projects are you or the building owner considering?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**BUSINESS AND WORKFORCE DATA**

*We want to learn about the history of your business, your employees and use of space in the Corridor.*

8. If known, can you please provide your business or professional activity code? (NAICS) \_\_\_\_\_

(Enter the business code from your 2005 federal tax return)

9. How long has your business been in operation? (● mark ONE; include time at this & any previous locations)

- under 1 year     1-5 years     6-10 years     11-20 years     over 20 years

If you know the date your business was established, please list it here (MM / YY) \_\_\_\_\_

10. How long have you been the owner of your business? (● mark ONE)

- under 1 year     1-5 years     6-10 years     11-20 years     over 20 years

11. Does your business own or lease the space in which it is located?     Own     Lease     Lease, want to purchase

12. For your business, how many estimated square feet are devoted to the following?

- a. \_\_\_\_\_ sq. ft. Sales Space  
b. \_\_\_\_\_ sq. ft. Production Space  
c. \_\_\_\_\_ sq. ft. Office Space  
d. \_\_\_\_\_ sq. ft. Storage Space  
e. \_\_\_\_\_ sq. ft. Unused Space  
f. \_\_\_\_\_ sq. ft. Total Space

13. Where do your customers typically park?

(● mark ONE)

- On the street    In a private parking lot  
 In a public parking lot    Other \_\_\_\_\_

How far do customers typically have to park from your business? (● mark ONE)

- Near entry    2 blocks away  
 ½ block away    3 blocks away  
 1 block away    4 blocks or more

\_\_\_\_ If you own a parking lot, how many parking spaces are available for customers (not employees)?

14. Where do you and your employees typically park?

(● mark ONE)

- On the street    In a private parking lot  
 In a public parking lot    Other \_\_\_\_\_

How far do you and your employees typically have to park from your business? (● mark ONE)

- Near entry    2 blocks away  
 ½ block away    3 blocks away  
 1 block away    4 blocks or more

\_\_\_\_ If you own a parking lot, how many parking spaces are available for employees (not customers)?

15. What percentage of your employees live here in the Piedmont Neighborhood \_\_\_\_\_ %

16. How many people, including owners, does your business employ in each of the following categories?

(Full-time = 32 or more hours/week)

Full-time year-round\_\_\_\_ Part-time year-round\_\_\_\_ Seasonal\_\_\_\_ Total\_\_\_\_

17. Over the past 2-3 years, your annual net sales has  Increased    Decreased    Remained Stable

What are your annual net sales? \_\_\_\_\_

18. Over the past 2-3 years, your annual rent has  Increased    Decreased    Remained Stable

What is your annual rent? \_\_\_\_\_

**MARKET AND MARKETING DATA**

*We want to discover the mix of businesses in the area to be able to make recommendations to bring in new businesses complementary businesses.*

**19. What are the hours of operation for your business?**

Monday from \_\_\_\_\_ to \_\_\_\_\_

Tuesday from \_\_\_\_\_ to \_\_\_\_\_

Wednesday from \_\_\_\_\_ to \_\_\_\_\_

Thursday from \_\_\_\_\_ to \_\_\_\_\_

Friday from \_\_\_\_\_ to \_\_\_\_\_

Saturday from \_\_\_\_\_ to \_\_\_\_\_

Sunday from \_\_\_\_\_ to \_\_\_\_\_

**What are your thoughts on store hours?**

- I am open all the hours I need to be
- I can't be open more hours for personal reasons
- I should be open more hours, but can't afford the staff
- I should be open more hours, but can't find good staff
- I would be open more hours if I were sure of sales
- I would be open more hours if everyone else were

**20. During a typical week, what are the seven busiest times for your business? (● mark up to SEVEN times total for the week)**

	Before 11:00 a.m.	11:00 a.m.- 2:00 p.m.	2:00 p.m.- 5:00 p.m.	After 5:00 p.m.
Monday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saturday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sunday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**21. What are the three busiest months of the year for this business? (● mark up to THREE)**

- |                               |                                |                                 |
|-------------------------------|--------------------------------|---------------------------------|
| <input type="radio"/> January | <input type="radio"/> February | <input type="radio"/> March     |
| <input type="radio"/> April   | <input type="radio"/> May      | <input type="radio"/> June      |
| <input type="radio"/> July    | <input type="radio"/> August   | <input type="radio"/> September |
| <input type="radio"/> October | <input type="radio"/> November | <input type="radio"/> December  |

**22. How many customers/clients visit your business per week during the summer months of May to October? (● mark ONE)**

- none, all business via phone, Internet, etc.     less than 50     50-250     250-500     Over 500

**How many customers/clients visit your business per week during the winter months of November to April? (● mark ONE)**

- none, all business via phone, Internet, etc.     less than 50     50-250     250-500     Over 500

**23. Does your business record zip codes or addresses of your customers?  Yes  No  Don't Know**

**Would you be willing to share this information and allow us to create trade area maps based on customer location?**

- Yes     No     Don't Know

**24. Do you have an annual advertising budget?  Yes  No**

**If so, how is it allocated?**

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25. Please describe the target market of your business.

Gender  Male  Female  Both

Age  under 18  18-24  25-44  45-54  55-64  Over 64

Annual household income  under \$15,000  \$15,000 - \$24,999  \$25,000 - 34,999  \$35,000 - \$49,999  \$50,000 - \$74,999  \$75,000 - \$99,999  \$100,000 - \$149,999  over \$150,000

26. What is the toughest competition for your business? (specify up to THREE competitors by name)

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

27. To what degree do the following traits help make your business more competitive versus the competitors listed above? (● mark ONE answer for each item)

	A Lot	A Little	Not At All
Your Location	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Parking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Name Brands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Selection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Please list the six products and/or services that best differentiate your business from the competition.

\_\_\_\_\_  
\_\_\_\_\_

29. Relative to other businesses in your trade, what price point do you target? (● mark ONE)

low-end  average  high-end

30. What three Corridor businesses complement your business the most? (specify up to THREE businesses by name)

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

**31. In your view, what are the reasons people patronize businesses and services in the Corridor? (i.e. specific establishments, attraction or activity)**

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**In your view, what are the reasons people do not patronize businesses and services in the Corridor?**

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**32. What types of businesses would you most like to see available in the Corridor? Why?**

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**33. With your business in mind, what community assets (i.e. expanded "green space", expanded public parking, housing stock) would you most like to see developed?**

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**34. Is there anything that we did not ask that you think we should have? Please feel free to add any additional comments about this survey.**

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Appendix D

# Inquietudes de los dueños de negocio en la periferia de la calle Chandler



**Cuestionario para el dueño del negocio**

**Estudio Conducido  
por**

**Worcester Community Project Center  
Worcester Polytechnic Institute  
noviembre 2005**

### **Propósito de este estudio**

El propósito de este estudio es analizar las condiciones de los negocios existentes en la periferia de la calle Chandler. El conocimiento obtenido con este estudio permitirá la creación de recomendaciones para el desarrollo económico exclusivamente de los negocios de la periferia de la calle Chandler. Estas recomendaciones se pueden utilizar y poner en ejecución por Chandler Street Neighborhood Revitalization Strategy Project.

Usted ha sido seleccionado para completar este cuestionario debido a la localización de su negocio. Sus respuestas a este cuestionario no serán reveladas de ninguna manera; así como tampoco lo identificaremos a usted o a sus empleados. A cada cuestionario se le ha dado número de identificación al azar para el uso exclusivo de nuestra oficina. Esto asegura la confidencialidad de su identidad.

### **Patrocinadores del proyecto**

Este estudio es conducido a petición de Chandler Street Neighborhood Revitalization Strategy Project.

Para información adicional sobre este cuestionario o el proyecto, favor de contactar a los profesores Robert Krueger, Robert Hersh, o a Ryan McGlone, Bernard Kaswarra o John Furman. *Email:* [rmcglone@wpi.edu](mailto:rmcglone@wpi.edu).



**NECESIDADES Y OPORTUNIDADES**

Queremos saber sus pensamientos al operar un negocio en la Periferia de la calle Chandler Street.

1. Clasifique, por favor, cuál es el grado en cual usted está experimentando desafíos en su negocio (● marque UNA respuesta para el cada artículo)

	Desafíos Grandes (-3)	Desafíos Menores (-2)	No Sé (-1)	No Desafíos (0)
Conflicto con el dueño o el arrendatario del edificio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Empleados de reclutamiento o de retención de dificultad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Productos costosos o inasequibles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilidades costosas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salarios o beneficios costosos del empleado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alquiler costoso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Envío o transporte costoso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financiamiento escaso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estacionamiento escaso	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competencia dentro del pueblo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competición fuera del pueblo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Barreras lingüísticas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pobre condición del edificio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulaciones restrictivas del negocio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hurto o robo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trabajadores inexpertos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vandalismo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La percepción del vecindario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Congestión del tránsito	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Otro _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

¿Cuáles son sus tres desafíos principales para su negocio? Explique.

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2. ¿Podría usted o sus empleados utilizar la información sobre o la ayuda con los asuntos siguientes? (● marque UNA respuesta para el cada artículo)

	Definitivamente (2)	Probablemente (1)	No Sé (0)	Probablemente no (-1)	Definitivamente no (-2)
Planificación de empresas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gerencia financiera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gerencia de inventario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Publicidad o comercialización	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Empleado que emplea o que entrena	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Servicio al cliente u hospitalidad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mejoras del edificio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exhibiciones de ventana o diseño interior del almacén	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estudio de mercadeo del negocio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transferencia de la propiedad o de venta un negocio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Otro _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3. ¿Cuán útiles serán estas mejoras o cuál será el potencial para su negocio y los demás negocios que están en su periferia?**  
( ● marque UNA respuesta para el cada artículo)

	Mucho útil (3)	Útil (1)	No Sé (-1)	Inútil (-3)
Ayuda gratis para su negocio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impuesto local para mejorar la comunidad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entrenamiento grupal para los negocios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desarrollo de una fuerza laboral	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exhibiciones de negocios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordinación cooperativa de publicidad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revitalización de las fachadas de los negocios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restauración local	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Programas de préstamos de bajo interés para negocios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Préstamos de bajo interés para mejoras de edificios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Directorios locales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contribuciones de los negocios del área para mejorar la periferia de la calle Chandler	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

¿Hay otras mejoras que usted quisiera ver en la calle Chandler?

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**4. Deseamos entender sus actitudes sobre la periferia de la calle Chandler. ¿Cuánto considera como convenientes las declaraciones siguientes?** ( ● marque UNA respuesta para el cada artículo)

	Conveniente Fuerte (2)	Conveniente Algo (1)	Neutral (0)	Discrepo Algo (-1)	Discrepo Fuerte (-2)
La protección local de la policía es sobresaliente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo me siento seguro en Chandler St. durante el día.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo me siento seguro en Chandler St. de noche.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La protección local de los bomberos es sobresaliente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yo siempre trato de comprar los productos y los servicios localmente.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Dirijo siempre a los clientes a otros negocios del vecindario.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La mezcla existente de negocios en el vecindario ayuda a mi negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La percepción y la vista del centro de la ciudad ayuda a mi negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mi fachada del edificio atrae los clientes a mi negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mis exhibiciones de ventana y del almacén ayudan a mi negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mi publicidad ayuda a mi negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mi negocio está abierto cuando los clientes desean hacer compras.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La cubierta para los empleados está fácilmente disponible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
El cuidado de niños para los empleados y los clientes está fácilmente disponible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
La calle Chandler es un lugar excelente para tener negocio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5. ¿Cuán satisfecho está usted con la actual localización de su negocio? (●marque UNA)**

- Muy Satisfecho    Satisfecho    Neutral    Insatisfecho    Muy Insatisfecho    Planeo moverme

¿Por qué? \_\_\_\_\_

**6. ¿Usted tiene planes para ampliar o para reducir las operaciones para su negocio en el futuro próximo? ¿Si es así cuáles son?**

\_\_\_\_\_

\_\_\_\_\_

**7. ¿Qué mejora física del edificio o de la fachada de su negocio desea tener usted o la está considerando ya el dueño del edificio?**

\_\_\_\_\_

\_\_\_\_\_

**DATOS DEL NEGOCIO Y DE LA MANO DE OBRA**

*Deseamos aprender sobre la historia de su negocio, de sus empleados y del uso del espacio en el vecindario.*

**8. ¿Si sabe cuál es, puede usted proporcionar, por favor, su código del negocio o de la actividad profesional? (NAICS) \_\_\_\_\_**

(Escriba el código de negocio de su declaración de impuestos federal para el año 2005)

**9. ¿Cuánto tiempo su negocio ha estado en operación? (● marque UNA; incluya el tiempo en esta y cualquier localización anterior)**

- bajo 1 año    1-5 años    6-10 años    11-20 años    sobre 20 años

Si usted sabe la fecha en que su negocio fue establecido, escribala, por favor, aquí (MM / YY) \_\_\_\_\_

10. ¿Cuanto tiempo usted ha sido el dueño de su negocio? (●marque UNA)

- bajo 1 año    1-5 años    6-10 años    11-20 años    sobre 20 años

11. ¿Posee o arrienda el espacio en el cual está situado su negocio? (●marque UNA)

- Poseer    Arriend    Arriendo, Deseo comprar

12. ¿En su negocio, cuántos pies cuadrados estima se dedican a lo siguiente?

- a. \_\_\_\_\_ sq. ft. Espacio de ventas  
b. \_\_\_\_\_ sq. ft. Espacio de producción  
c. \_\_\_\_\_ sq. ft. Espacio de oficina  
d. \_\_\_\_\_ sq. ft. Espacio de almacenaje  
e. \_\_\_\_\_ sq. ft. Espacio que no se utiliza  
f. \_\_\_\_\_ sq. ft. Espacio total

13. ¿Dónde estacionan sus clientes usualmente?

(●marque UNA)

- En la calle  
 En una porción privada del estacionamiento  
 En una porción pública del estacionamiento  
 Otro \_\_\_\_\_

¿Cuán lejos tienen que estacionar sus clientes usualmente? (●marque UNA)

- Cerca de la entrada    2 bloques  
 ½ bloque    3 bloques  
 1 bloque    4 bloques o más

\_\_\_\_ ¿Si usted posee una porción del estacionamiento, cuántos espacios del estacionamiento están disponibles para los clientes (no empleados)?

14. ¿Dónde usted y sus empleados estacionan usualmente?

(●marque UNA)

- En la calle  
 En una porción privada del estacionamiento  
 En una porción pública del estacionamiento  
 Otro \_\_\_\_\_

¿Cuán lejos estacionan usted y sus empleados?

(●marque UNA)

- Cerca de entrada    2 bloques  
 ½ bloque    3 bloques  
 1 bloque    4 bloques o más

\_\_\_\_ ¿Si usted posee una porción del estacionamiento, cuántos espacios del estacionamiento están disponibles para los empleados (no clientes)?

15. ¿Qué porcentaje de sus empleados vive en la vecindad de Piedmont? \_\_\_\_\_ %

16. ¿Cuánta gente emplea su negocio (incluyendo a los dueños) en cada uno de las categorías siguientes?

(a tiempo completo = 32 o más horas/semana)

A tiempo completo a lo largo de todo el año \_\_\_\_\_ A lo largo de todo el año por horas \_\_\_\_\_ Temporero \_\_\_\_\_ Total \_\_\_\_\_

17. Sobre los últimos 2-3 años, sus ventas netas anuales han  aumentado  disminuido  seguido siendo estable.

¿Cuáles son sus ventas netas anuales? \_\_\_\_\_

18. Sobre los últimos 2-3 años, su alquiler anual han  aumentado  disminuido  seguido siendo estable.

¿Cuál es su alquiler anual? \_\_\_\_\_

### DATOS DEL MERCADO Y DE MERCADEO

Deseamos descubrir la mezcla de negocios en el área para poder hacer recomendaciones para atraer negocios complementarios y nuevos negocios.

#### 19. ¿Cuáles son las horas de la operación de su negocio?

lunes de \_\_\_\_\_ a \_\_\_\_\_

martes de \_\_\_\_\_ a \_\_\_\_\_

miércoles de \_\_\_\_\_ a \_\_\_\_\_

jueves de \_\_\_\_\_ a \_\_\_\_\_

viernes de \_\_\_\_\_ a \_\_\_\_\_

sábado de \_\_\_\_\_ a \_\_\_\_\_

domingo de \_\_\_\_\_ a \_\_\_\_\_

#### ¿Qué piensa sobre el horario de su negocio?

- Estoy abierto todas las horas que necesito
- No puedo estar abierto más horas por razones personales
- Debo estar abierto más horas, pero no puedo pagar al personal
- Debo estar abierto más horas, pero no puedo encontrar buen personal
- Estaría abierto más horas si estuviera seguro de las ventas
- Estaría abierto más horas si todos los demás lo están

#### 20. ¿Durante una semana típica, cuáles son los siete tiempos más ocupados para su negocio? (● marque hasta SIETE veces la suma para la semana)

	Antes 11:00 a.m.	11:00 a.m.- 2:00 p.m.	2:00 p.m.- 5:00 p.m.	Después 5:00 p.m.
lunes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
martes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
miércoles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
jueves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viernes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sábado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
domingo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### 21. ¿Cuáles son los tres meses más ocupados del año para este negocio? (● marque hasta TRES)

- |                               |                                 |                                  |
|-------------------------------|---------------------------------|----------------------------------|
| <input type="radio"/> enero   | <input type="radio"/> febrero   | <input type="radio"/> marzo      |
| <input type="radio"/> abril   | <input type="radio"/> mayo      | <input type="radio"/> junio      |
| <input type="radio"/> julio   | <input type="radio"/> agosto    | <input type="radio"/> septiembre |
| <input type="radio"/> octubre | <input type="radio"/> noviembre | <input type="radio"/> diciembre  |

#### 22. ¿Cuántos clientes visitan semanalmente su negocio durante los meses de verano, de mayo a octubre?

(● marque UNA)

- ningunos, todo el negocio es vía el teléfono, Internet, etc.    menos que 50    50-250    250-500    Más de 500

#### ¿Cuántos clientes visitan semanalmente su negocio durante los meses de noviembre a abril?

(● marque UNA)

- ningunos, todo el negocio vía el teléfono, Internet, etc.    menos que 50    50-250    250-500    Más de 500

#### 23. ¿Registra los códigos postales o las direcciones de sus clientes?

- Sí    No    No Sé

#### ¿Usted estaría dispuesto a compartir esta información y a permitir que creemos los mapas comerciales del área basados en la localización del cliente?

- Sí    No    No Sé

24. ¿Usted tiene un presupuesto de publicidad anual?  Sí  No  
¿Si es así cómo se asigna?

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25. Describa hacia quién o quiénes está dirigido su negocio, por favor.

Género  Varón  Hembra  Ambos

Edad  menor de 18  18-24  25-44  45-54  55-64  sobre 64

Ingreso anual  debajo \$15,000  \$35,000 - \$49,999  \$100,000 - \$149,999  
 \$15,000 - \$24,999  \$50,000 - \$74,999  sobre \$150,000  
 \$25,000 - 34,999  \$75,000 - \$99,999

26. ¿Cuál es la competencia más fuerte para su negocio? (especifique a hasta TRES competidores por nombre)

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

27. ¿Hasta qué grado los siguiente rasgos hacen que su negocio sea más competitivo que los competidores enumeró arriba?  
(●marque UNO contestar para cada artículo)

	Mucho	Pequeño	En absoluto
Su localización	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su estacionamiento	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su horas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su servicio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su marcas de fábrica conocidas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su calidad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su selección	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Su precio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Enumere por favor los seis productos y/o servicios que distinguen lo mejor posible su negocio de la competencia.

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29. ¿Concerniente a otros negocios, cuál es el precio que usted quiere alcanzar? (●marque UNA)

bajo extremo  promedio  alto extremo

30. ¿Qué tres negocios del vecindario complementan a su negocio? (especifique hasta TRES negocios por nombre)

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

31. ¿En su opinión, cuáles son las razones que la gente patrocina negocios y servicios en el vecindario? (es decir establecimientos, atracción o actividad específica)

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¿En su opinión, cuáles son las razones por las que la gente no patrocina negocios y servicios en la periferia de la calle Chandler?

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32. ¿Qué tipos de negocios usted quisiera ver disponible en el vecindario? ¿Por qué?

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33. ¿Con su negocio en mente, qué atractivos comunitarios le gustaría tener alrededor de su negocio ("espacios verdes", estacionamiento público, viviendas)?

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34. ¿Hay alguna cosa que no preguntamos que usted piensa debemos incluir? Siéntase, por favor, libre de agregar cualquier comentario adicional sobre este cuestionario.

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## Appendix E

Name of Business: \_\_\_\_\_

### LOTS

- Fence: ڦ none ڦ Wood, ڦ chain-link, ڦ iron, ڦ stone, ڦ block, ڦ wire, ڦ other(specify) \_\_\_\_\_
- Fence condition: ڦ Good, ڦ Fair, ڦ Poor
- Fence comments: \_\_\_\_\_
  
- Litter: ڦ none ڦ Glass, ڦ plastic waste, ڦ paper waste, ڦ dumpster/waste basket overflow, ڦ other
- General litter conditions: ڦ Low, ڦ Medium, ڦ High
- Litter comments: \_\_\_\_\_
  
- Yards ڦ none
  - o Contains: ڦ trees(#)\_\_\_\_\_, ڦ shrubs, ڦ flowers, ڦ grass, ڦ other(specify)\_\_\_\_\_
  - o General conditions: ڦ Good, ڦ Fair, ڦ Poor
  - o Comments: \_\_\_\_\_

### BUILDINGS

- Floors(#) \_\_\_\_\_
- Building material: ڦ Brick, ڦ wood, ڦ stone, ڦ other (specify) \_\_\_\_\_
- Façade types: ڦ wood siding, ڦ aluminum siding, ڦ vinyl siding, ڦ stone, ڦ brick, ڦ shingles, ڦ cement ڦ other( specify) \_\_\_\_\_
- Façade conditions: ڦ Good, ڦ Fair, ڦ Poor
- Façade comments: \_\_\_\_\_
  
- Accessibility: ڦ Stairs, ڦ Handicap access ڦ Both
- Windows: < 5 none 5 ڦ-10 11 ڦ-15 15< ڦ
- Windows condition: ڦ Intact, ڦ some broken(#), ڦ some boarded up(#)\_
- Comments: \_\_\_\_\_

### PARKING

- # of spaces \_\_\_\_\_
- Surface type: ڦ Asphalt, ڦ Gravel, ڦ Concrete, ڦ Unpaved, ڦ Tile, ڦ Other \_\_\_\_\_
  
- Surface conditions: ڦ Few cracks, ڦ numerous cracks, ڦ no cracks, ڦ other conditions noticed (specify) \_\_\_\_\_
- Overall conditions: ڦ Good, ڦ Fair, ڦ Poor

### SIGNAGE (under business table)

- location: ڦ sign on building, ڦ sign not on building
- # of signs: ڦ no signs, 1 ڦ sign, ڦ more than 1 sign
- Type of sign: ڦ painted/printed, ڦ individual letterings, ڦ lighted signs, ڦ animated sign, ڦ sign contains business logo,
- Size: ڦ small, ڦ medium, ڦ large
- Sign condition: ڦ letters missing, ڦ paint peeling, ڦ other \_\_\_\_\_
- General conditions: ڦ good, ڦ fair, ڦ poor
- Comments: \_\_\_\_\_

### UNITS

- # of units:
- Address:
- Unit uses:



Appendix F

## Chandler Street Corridor Physical Observation Form

### Long-Term Conditions

Map Block Lot:  Address:  Building ID:  Subunit:

Land Use Code:  # Windows Visible from Street:  # of Stories:  Building Material:

### Short-Term Conditions

Date Observed:

Business Name:

# of Boarded Windows:

# Broken Windows:

\*Construction Site

**Fence Type:**

- No Fence
- Chain-Link
- Barbed Wire
- Razor Wire
- Cast Iron
- Wood
- \*Other

Fence Height (ft):

Fence Condition

Building Material Condition

Chimney Condition

Sign Condition (bus. only)

Walkway Condition

Stair Condition

Railing Condition

Yard Condition

Shrubbery Condition

Door Condition

Lot Condition

Lot Surface:

1 2 3

L M H

\*Litter

Overgrown Veg

Graffiti

Paint Chipping

Fire Damage

**Lighting:**

Good Operation

Exposed Wires

Glass Broken

Broken Bulbs

Missing Bulb

No Lights Visible

\*Other

Comments:

## Appendix G

### Installation

The Perl programs that have been developed for this application will, in theory, work on any type of web server with any type of Relational Database Management System that is compatible with SQL. However, as of the time of this writing, this application has been tested (and is therefore known to work) on Apache Web Server running mod\_perl using MySQL database. Therefore, the installation procedure here is for installing and configuring Apache and MySQL. It should be noted that the installation of the Perl programs themselves can be carried cross platform, if so desired in the future.

### Setting Up MySQL Database Server

1. On the CD, there is a folder called MySQL. Open it and inside will be a zip file which contains the MySQL installer binary. Unzip this file to any convenient directory.

2. After the file is unzipped, CD to the directory you used. Launch the MySQL setup binary and follow the instructions on the screen.

3. At the end of the installation process, it will ask you if you want to start the server right away. Say yes.

4. When install finishes, you should have a MySQL server up and running on your system. You can verify this from the command prompt and navigating to the directory in which you installed MySQL (this will normally be C:/MySQL unless you changed it at install time). Then that folder is a program called MySQL. Run this program from the command line, you should get a prompt that looks something like this:

```
mysql>
```

5. At the MySQL prompt, create a new database for the chandler street data by entering the command "CREATE DATABASE chandler" (Note: the database name does not have to be chandler, it can be anything you want as long as you are consistent. For the purposes of this installation manual, we will assume that the database will be named chandler.)

6. After the database is created, navigate back to the CD and find the SQL folder. Within this folder is a sql file called chandler.sql. This file is actually a sql script that will create all of the necessary tables, user accounts, and data that reside in the chandler street database at the end of B term. From the MySQL prompt, issue the command:

```
mysql> \. chandler.sql
```

7. After this script finishes, the chandler database should be fully created and populated. You can verify this is so by running any number of SELECT statements from

the mysql prompt, such as "SELECT \* FROM business" or whatever. After you are satisfied that the database server is running properly and the chandler street data has been entered successfully, move on to installation of the web server.

### **Setting Up Apache Web Server**

1. On the CD, under the Apache folder is a binary executable called..... This is a package containing both Apache web server as well as the indigo Perl interpreter. The interpreter is necessary for execution of the Perl programs that make up the user interface to the database application. Copy this self extracting binary executable setup file to your system.

2. Run the install program and follow the instructions on your screen. During this process, it will ask you if you want to start the server every time windows starts. Say yes. It will also ask you if you want to start the server when the install finishes. Say no.

3. When the install program finishes, create a directory on the local machine named c:\iqp or whatever you like just be consistent. For the rest of this installation guide we will assume you named it c:\iqp. Navigate to the CD where you will find a folder called Perl. Inside this folder is all of the application code for the database application. Copy the entire contents of the Perl folder to c:\iqp.

4. Create a directory called c:\images. Once again, the name doesn't matter as long as you are consistent. On the CD is a folder called images. These are all of the pictures of the chandler street corridor that are pointed to by the links in the database. Copy them into your newly created c:\images folder.

5. On the local file system, navigate to the directory in which you installed apache. This will probably be named c:\indigo unless you changed it during the install process. Within that folder is a folder called Apache. Go into apache and in that folder is a folder called conf. Go into the conf folder.

6. Using your favorite text editor, open the httpd.conf file. This is the main configuration file for the web server and contains all of the server settings.

7. Within the httpd.conf file is a section called Aliases. It is denoted by a line that looks something like this:

**# Aliases: Add here as many aliases as you like**

8. On a line below the description of the aliases section, add this line:

**Alias /images/iqp/ "c:/images/"**

Note that you would change the "c:/images" to whatever directory you placed the pictures in step 4. Note also the forward slashes instead of the usual backslashes in the pathname.

9. Just below the Alias section is the Script Alias section. In that section, add the line

**ScriptAlias /iqp "c:/iqp"**

Note that you would change the "c:/iqp" to whatever directory you placed the Perl application files in step 3.

10. Save the modified httpd.conf file. The web server is now configured to use the Perl database application.

11. Start the apache web server. You can do this by clicking on the apache icon in the Apache folder, or going to the start menu, pointing to programs, pointing to apache, and then clicking start apache. You can now access the database application by opening up a web browser and typing into the location bar:

<http://localhost/iqp/login.pl>

For instructions on how to use the database interface itself, refer to the User Manual in Appendix H.

## Appendix H

### Working with the schema

As the name implies, this page allows the user to manage the tables in the database. While it is only a single page, it provides three functions, creating new tables, editing existing tables, or deleting existing tables. A screen shot of the application is provided below:

## Create Or Edit Table Definitions

[Home](#)

**Create New Table**

<b>Name Of Table</b>	
<b>Short Description Of Table</b>	
<input type="button" value="CREATE"/>	

**Existing Tables In Database**

Table Name	Table Description	Edit	Delete
parcel	a parcel of land with a specific map block lot number	<input type="checkbox"/>	<input type="checkbox"/>
building	representation of a physical building structure	<input type="checkbox"/>	<input type="checkbox"/>
parking	representation of a parking lot	<input type="checkbox"/>	<input type="checkbox"/>
unit	a space withen a building	<input type="checkbox"/>	<input type="checkbox"/>
business	representation of a business	<input type="checkbox"/>	<input type="checkbox"/>
sign	representation of a sign	<input type="checkbox"/>	<input type="checkbox"/>
residence	representation of a residential unit	<input type="checkbox"/>	<input type="checkbox"/>
school	representation of a school	<input type="checkbox"/>	<input type="checkbox"/>
church	data about churches	<input type="checkbox"/>	<input type="checkbox"/>
bizsurvey	Results of 2005 business survey	<input type="checkbox"/>	<input type="checkbox"/>

<input type="button" value="OK"/>
-----------------------------------

The first form on top is used for creating tables. To create a new table in the database, give the table a name, fill out a short description of the table if you wish to, and click the create button. The table is then created and you will be redirected back to this same page, with the newly created table appearing in the Existing Tables list. When a table is first created, it has no attributes other than its primary key. The primary key is simply a random number that is unique across all rows of any given table. Thus, it serves as a unique identifier for each row. After the table is first created, it is a good idea to double check the name and description of the table in the list, to make sure that there are no typos. If there are, you can simply delete the table and create it again. To delete existing tables, just click the delete button next to the table you wish to delete and click OK. This will take you to a conformation screen where it will ask you if you really want to delete the specified table. By clicking yes, the table will be deleted and you will once again be redirected back to the page above, with the corresponding table removed from the list.

However, if everything looks good after creating the table, you are now ready to populate it with the desired attributes (columns). To do this, just click the edit button across from the table you wish to edit, then click OK. From there, you will be taken to the edit table page:

<b>Edit Tables</b>		<a href="#">Home</a>
<hr/>		
<b>Add Attribute To Table (parcel) dirty.</b>		
Attribute Name	<input type="text"/>	
Attribute Description	<input type="text"/>	
Attribute Type	TEXT	<input type="button" value="v"/>
<input type="button" value="OK"/>		

CANCEL

**Existing entittys in table (parcel) which is dirty.**

Entitty Name	Entitty Type	Entitty Description	Primary Key	Unique	Not Null	Delete
parcel_id	varchar(20)	-	yes	yes	yes	-
mbl	varchar(32)	Map Block Lot Number	no	no	no	<input type="checkbox"/>
fence	enum	The type of fence the parcel has	no	no	no	<input type="checkbox"/>
fencecondition	enum	The condition of the fence	no	no	no	<input type="checkbox"/>
fencecomments	varchar(250)	Observational comments on the fence	no	no	no	<input type="checkbox"/>
litterglass	enum	Is this parcel litterd with glass	no	no	no	<input type="checkbox"/>
litterplastic	enum	Is this parcel litterd with plastic	no	no	no	<input type="checkbox"/>
litterpaper	enum	Is this parcel litterd with paper	no	no	no	<input type="checkbox"/>
litteroverall	enum	The overall litter condition	no	no	no	<input type="checkbox"/>
littercomments	varchar(250)	Observational comments about the litter	no	no	no	<input type="checkbox"/>
yardexists	enum	Does this parcel have a yard	no	no	no	<input type="checkbox"/>
yardtrees	integer	How many trees are on this parcel	no	no	no	<input type="checkbox"/>
yardshrubs	enum	Does this parcel have any shrubs in the yard	no	no	no	<input type="checkbox"/>
yardflowers	enum	Does this parcel have any flowers in the yard	no	no	no	<input type="checkbox"/>
yardgrass	enum	Does this parcel have any grass growing	no	no	no	<input type="checkbox"/>
yardcondition	enum	The overall condition of the yard	no	no	no	<input type="checkbox"/>
yardcomments	varchar(250)	Observational	no	no	no	<input type="checkbox"/>

		comments on the yard				
acres	real	The size of the parcel	no	no	no	<input type="checkbox"/>
landvalue	integer	The appraised value of this parcel of land	no	no	no	<input type="checkbox"/>
zone	varchar(16)	The zoning of this parcel	no	no	no	<input type="checkbox"/>
OK						
CANCEL						

For example, this is what you would see by clicking the edit button across from the parcel table and clicking OK. This new edit table page works very similar to the create table page, working instead with attributes of tables rather than the tables themselves. To create a new attribute (column) in the table, first give the attribute a name and type it into the attribute name field in the top form. The name of the attribute must contain only letters and numbers, and must begin with a letter. Then, enter a meaningful description of the attribute in the attribute description field. This description is important, for it will be the text that appears in the form that is used to enter data into the table (more about that later). The next thing to do is select the data type of the attribute. As of this version, four data types are supported. They are:

- TEXT - A line of text that can range from 1 to 255 characters long. (example: it was the best or times, it was the worst of times)
- INTEGER - A whole number (example: 11)
- REAL - A whole number or a fractional number (example: 3.14152)
- ENUM - A list of possible choices (example: [yes, no, maybe])

Choose one of these data types and click OK. The new attribute will be created, added to the table, and you will be redirected back to the same page. However, this time the name of the new attribute will appear in the list below. The list includes the attribute name, the attribute type, the description of the attribute, and an option to remove the attribute if necessary. Once again, look over the newly created attribute for typing



mistakes. It is much better to catch them here rather than after data has been added to them! If you wish to delete an attribute (column) from a table, click the delete button across from the attribute you wish to remove and click OK. You will be redirected back to this page with the corresponding attribute missing. Note that deleting a attribute from a table removes all data that was contained in that column as well! You can add and delete as many attributes from a table as you wish. When you are finished, click the cancel button at the bottom of the page and you will be returned to the create table page.

By repeatedly creating tables and then adding columns to them, you can add all of the tables (and the columns in those tables) to any database schema you think up. You can also edit and add to an existing schema, such as the one constructed for this project. Once you are done adding tables, the relationships between the tables can now be created by going to the create relationship page. This page is accessible from the home page by clicking on the create relationship link and looks like this:

Select Table One Name	Select Table Two Name	Select Relationship Type
parcel ▼	parcel ▼	One-To-Many (->) ▼
<input type="button" value="OK"/>		

To create a relationship, select the two tables involved from the drop down boxes. For example, if you wanted to create a relationship between parcels and buildings, select parcel in the first drop down box and select building in the second. The next step is to choose the type of relationship you want to create. There are two choices here, one-to-many and many-to-many. One to many relationships exist when there can be multiple rows of table two associated with (bound to) one and only one row in table one. Then it is said that a one to many relationship exists between table 1 and table 2. For example, the parcel table is in a one-to-many relationship with building, since a building can be on one

and only one parcel, while a parcel can contain, zero, one, or more than one building. A many to many relationship is where a row in table one can have multiple rows in table two associated with (bound to) it AND rows in table two can have multiple rows in table one that it is associated with (bound to). For example, the parcel table is in a many to many relationship with the property owners table, because a parcel can be owned by one or more property owners, and a property owner can own one or more parcels. Once the selection of the relationship type is determined and selected, simply clicking OK will create the relationship in the database.

### Working With The Data

Once the necessary tables, attributes and relationships are created, it is time to add actual data to the tables, and create bindings between the rows in the various tables. All this can be done through the web forms as well. From the splash page, click on the create, edit or delete rows of data link. This will take you to the edit rows page, which looks like this:

## Edit Rows In Table (school)

[Home](#)

Select which table you want to edit rows from bizsurvey ▼ LIST

Listing of data from table (school). This table contains 1 rows of data.

EDIT	<a href="#">schoolname</a>	<a href="#">schooltype</a>	<a href="#">schoolgrades</a>	<a href="#">comments</a>	DELETE
EDIT	<i>The name of the school</i>	<i>The type of school</i>	<i>The grades the school teaches</i>	<i>Observational comments about the</i>	DELETE

				<i>school</i>	
<input type="button" value="EDIT"/>	Chandler Community School	public	elementary		<input type="button" value="DELETE"/>
<input type="button" value="CREATE NEW ROW"/>					

To edit the data in a specific table, just select the name of the table from the dropdown box at the top of the page and click OK. This will produce a listing of the rows that currently exist within the table. The above listing is from the school table, which contains only one row, representing the Chandler Community Elementary School. Clicking on the column name links will sort the list on that particular column. For example, if this table contained more than one row, clicking on the "school name" link would sort the list alphabetically by the name of the school. The edit button to the left of the row gives the user the option of changing (updating) the values in the various columns for that particular row. The delete button will delete the row from the table. Similarly, clicking on the CREATE NEW ROW button will take you to a blank form, which is used to enter new data into the new row. Clicking on either the edit button or the create new row button will take you to the auto form page, which looks like this (when editing a row in the parcel table):

<b>Attribute</b>	<b>Value</b>
Map Block Lot Number	03-015-00001
The type of fence the parcel has	chainlink ▼
The condition of the fence	good ▼
Observational comments on the fence	picket fence ir

Is this parcel litterd with glass	yes
Is this parcel litterd with plastic	yes
Is this parcel litterd with paper	no
The overall litter condition	low
Observational comments about the litter	some minor cl
Does this parcel have a yard	yes
How many trees are on this parcel	1
Does this parcel have any shrubs in the yard	yes
Does this parcel have any flowers in the yard	no
Does this parcel have any grass growing	yes
The overall condition of the yard	fair
Observational comments on the yard	
The size of the parcel	0.0184
The zoning of this parcel	BG-3.0
The appraised value of this parcel of land	7300

### One-To-Many Relationships (2)

<b>building</b>	Create New Binding	List <input type="checkbox"/>	New <input type="checkbox"/>
	[1] building	Edit <input type="checkbox"/>	Delete <input type="checkbox"/>
<b>parking</b>	Create New Binding	List <input type="checkbox"/>	New <input type="checkbox"/>
	[1] parking	Edit <input type="checkbox"/>	Delete <input type="checkbox"/>
OK			

As you can see, the auto form CGI application can automatically generate a data entry and update form for any of the tables in the database that was created previously. This makes this web based database application very powerful, because it adapts automatically to any revisions in the database schema. Thus, the web code does not need

to be modified whenever the schema changes, as is required in most traditional web based database applications.

For example, in the form above, each of the table's columns is presented to the user in an easy to use html form. The attribute descriptions that were entered in the edit table form now appear in this form next to their corresponding attribute data entry fields. Since we are editing a row in the parcel table, the form asks the user to input the data relating to parcels. If we were creating a new row instead of editing an existing one, the form fields would all be blank. However, since this form is editing a row that already exists, all of the previously entered values are filled in. Thus, if the user makes changes to the data and then clicks the OK button, the particular row that the user was editing will be automatically updated in the database.

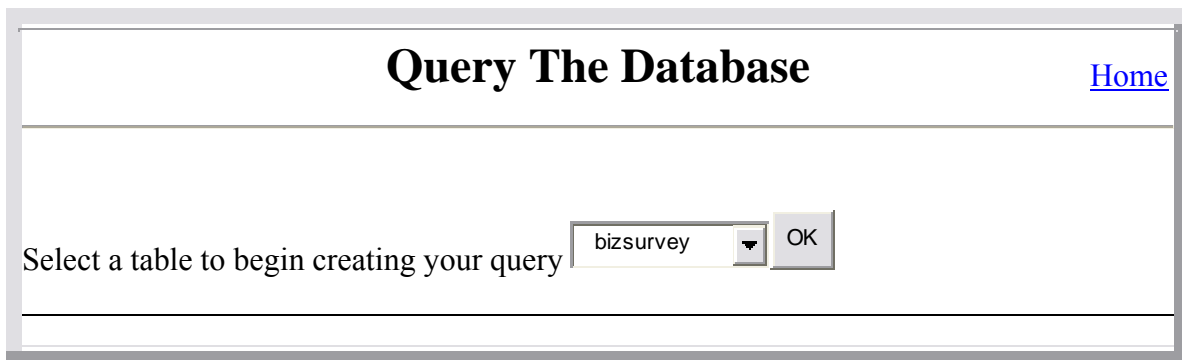
This application also allows the user to bind rows in different tables together, if the tables the rows belong to are involved in a relationship. In the example above, the form lists the two relationships the parcel table is participating in; namely a one-to-many relationship with the building table as well as a one to many relationship with the parking lot table. It also tells us that there is one building on this parcel, as well as one parking lot. By clicking on the edit button next to the building that is on this parcel, the user would be taken to a form to edit the row of data in the building table that corresponds to the building that resides on this parcel. (The same thing would happen for the parking lot, except the user would be taken to the parking lot form instead).

The delete button allows the user to unbind rows from each other. For example, if it was determined that a mistake was made entering data and that building really didn't belong on this parcel, the user could click the delete button next to the building, which would disassociate the building from the parcel. Note that this does not delete the building row from the database, just the binding (foreign key) between that particular building and this particular parcel. To actually delete rows themselves can be done via the previously described edit row application.

To add a new building to this parcel, the user would click the new button across from the "create new binding" option for the building relationship. This would create a new row in the building table; bind it to this parcel, then present a blank building form for the user to enter the new data about the new building. Once the user enters the building

data and clicks OK, he/she is returned to the parcel form once again. Alternatively, if the desired building row has already been entered into the database in the past, the user can click the "list" button to choose from a list of existing buildings. Once a choice is made from that list of buildings, the building that was chosen will be bound to this particular parcel. It is in this way that one can traverse all of the tables in the database that are related to each other, creating new rows or updating existing ones, while at the same time binding the appropriate rows together. We believe that this provides an extremely powerful yet flexible way to manage the data contained within the database.

While being able to easily create and maintain database schemas as well as the data in the database is nice, it would be a rather pointless task if there wasn't any way of accessing or searching the data once one entered it. This is why our database application provides an easy to use yet powerful query tool. Once again, the search page will automatically adapt itself to the existing database schema, without any modifications to the code itself. To query the database, click on the "Query the database" link on the home page, and you will be taken to a form that looks like this:



**Query The Database** [Home](#)

---

Select a table to begin creating your query

To get started making a query, select a table of interest from the dropdown box. As a simple example, lets say we wanted to query the database for the names, addresses, building values and pictures of buildings for all of the restaurants on chandler street. We could first start with the business table by choosing business from the dropdown box and then clicking OK. We would be taken to this page:

## Select From Table (business)

[Home](#)

Select	Attribute Name	Attribute Type	Attribute Description	Search Condition	Low Range	High Range
<input checked="" type="checkbox"/>	businessname	varchar	The name of the business	-		
<input type="checkbox"/>	naics	integer	North American Industry Classification System	is equal to	722	

### Join To Table

Join	Table Name	Relationship Type	Symbol
<input type="checkbox"/>	sign	One-To-Many	->
<input type="checkbox"/>	bizsurvey	One-To-Many	->
<input checked="" type="checkbox"/>	unit	Many-To-One	<-

OK

Since we are interested in the business name, we check the select box next to that attribute. By checking the select box, this means that the column selected will appear as a column in the query result. The next thing we do is impose a search condition on the NAICS column, namely, that the NAICS in the result must be equal to 722, which is the NAICS code for restaurants. Notice that an attribute does not need to be selected to be used as a search condition. Since the NAICS field is a numeric field, the search choices include equal to, not equal to, greater than, less than, and between. For text oriented data, the search conditions can be equal to (exact match), not equal to, begins with, ends with, or contains. Thus, it is in the same manner that we could have performed this query by imposing a search condition that the business name contains the word "restaurant."

Now, since we want the addresses of the restaurants, and we know from our database schema that addresses are stored in the unit table, we join the business table to

the unit table by clicking the join checkbox next to the unit table at the bottom of the form. After clicking OK, we will be taken to the dynamically generated search form for the unit table:

## Select From Table (unit) [Home](#)

Select	Attribute Name	Attribute Type	Attribute Description	Search Condition	Low Range	High Range
<input checked="" type="checkbox"/>	addressnumber	integer	The address number	- <input type="text"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	addressstreet	varchar	The address street	- <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	unitnumber	integer	The unit number	- <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	squarefeet	integer	Total square footage of the unit	- <input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	forsale	enum	Is the unit for sale	- <input type="text"/>	- <input type="text"/>	<input type="text"/>
<input type="checkbox"/>	forrent	enum	Is the unit for rent	- <input type="text"/>	- <input type="text"/>	<input type="text"/>
<input type="checkbox"/>	vacant	enum	Is the unit vacant	- <input type="text"/>	- <input type="text"/>	<input type="text"/>
<input type="checkbox"/>	contactinfo	varchar	Any contact info regarding the unit	- <input type="text"/>	<input type="text"/>	<input type="text"/>

**Join To Table**

Join	Table Name	Relationship Type	Symbol
<input type="checkbox"/>	residence	One-To-Many	->
<input type="checkbox"/>	school	One-To-Many	->
<input type="checkbox"/>	church	One-To-Many	->
<input checked="" type="checkbox"/>	building	Many-To-One	<-



OK

Once we are here, we select the address number and the address street from the unit table. Since we were also interested in the building values as well as pictures of the buildings themselves, we join the unit table to the building table (we now have a query involving businesses, units, and buildings). After clicking OK, we are taken to the search buildings form:

## Select From Table (building)

[Home](#)

Select	Attribute Name	Attribute Type	Attribute Description	Search Condition	Low Range	High Range
<input checked="" type="checkbox"/>	visuals	varchar	Links to pictures of the building	-		
<input type="checkbox"/>	floors	integer	The number of floors the building has	-		
<input type="checkbox"/>	material	enum	The material the building is constructed with	-	-	
<input type="checkbox"/>	facade	enum	The type of building facade	-	-	
<input type="checkbox"/>	facadecondition	enum	The overall condition of the facade	-	-	
<input type="checkbox"/>	facadecomments	varchar	Observational comments about the facade	-		
<input type="checkbox"/>	accessibility	enum	The buildings	-	-	

			accessability			
<input type="checkbox"/>	windows	integer	How many windows the building has	-		
<input type="checkbox"/>	windowscondition	enum	The overall condition of the windows	-	-	
<input type="checkbox"/>	windowscomments	varchar	Observational comments about the windows	-		
<input type="checkbox"/>	squarefeet	integer	The buildings square footage	-		
<input type="checkbox"/>	yearbuilt	integer	The year the building was constructed	-		
<input checked="" type="checkbox"/>	buildingvalue	integer	The appraised value of the building	-		

Join To Table

Join	Table Name	Relationship Type	Symbol
<input type="checkbox"/>	parcel	Many-To-One	<-

OK

Once we select the building value and the building visuals by selecting the appropriate checkboxes, we are ready to run the query. This is done by simply clicking the OK button, without initiating any further joins. The result of our query looks like this:

## Query Results

[Home](#)

Result contains 11 rows.

<b>business</b>	<b>business</b>	<b>unit</b>	<b>unit</b>	<b>building</b>	<b>building</b>
<b>businessname</b>	<b>naics</b>	<b>addressnumber</b>	<b>addressstreet</b>	<b>visuals</b>	<b>buildingvalue</b>
<input type="button" value="SORT"/>	<input type="button" value="SORT"/>	<input type="button" value="SORT"/>	<input type="button" value="SORT"/>	<input type="button" value="SORT"/>	<input type="button" value="SORT"/>
Caribbean Delight Restaurant	722	155	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a>	148700
Dunkin Doughnuts	722	211	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a> , <a href="#">Visual 3</a>	261000
Golden Pizza	722	210	chandler	<a href="#">Visual 1</a>	219500
John and Sons II	722	226	chandler	-	68400
Kilo Amigo Steakhouse Buffet	722	212	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a>	52200
King Chefs Chinese Restaurant	722	205	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a> , <a href="#">Visual 3</a> , <a href="#">Visual 4</a>	517900
New Star Cafe	722	146	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a> , <a href="#">Visual 3</a>	265200
Sano Cafe	722	232	chandler	<a href="#">Visual 1</a>	351700
Sazon Latino Restaurant	722	134	chandler	-	88200
Subway Restaurant	722	215	chandler	<a href="#">Visual 1</a> , <a href="#">Visual 2</a> , <a href="#">Visual 3</a> , <a href="#">Visual 4</a>	288300
White Tower Resteraunt	722	4	chandler	-	0

**SQL:** SELECT business.businessname AS business\_businessname, business.naics AS business\_naics, unit.addressnumber AS unit\_addressnumber, unit.addressstreet AS unit\_addressstreet, building.visuals AS building\_visuals, building.buildingvalue AS building\_buildingvalue FROM business,unit,building WHERE business.naics='722' AND business.unit\_fk=unit.unit\_id AND unit.building\_fk=building.building\_id

This newly generated table (which is a join of business, unit and building) has the columns in it that we selected; namely business name, NAICS, address, links to building pictures, and the value of the building containing the restaurant. Since we required the NAICS code to be equal to 722, only rows that match that criteria are shown in the query results. The sort buttons above each column of data allow the user to sort the data on each column. For this particular query, we decide to sort on the business name column, and

click on that sort button. This produces the result seen above, with the rows sorted in alphabetical order according to the business name.

Through the use of the auto query form, the user can run a practically infinite variety of queries, selecting only the columns of interest, imposing arbitrary search criteria on any column, and joining any and all tables of interest together to produce a customized query result. Indeed, the entire database could be joined together in this way, then filtered via imposition of search criteria on specific columns. As is the case with the auto form application, all of the search forms dynamically alter themselves to be consistent with the current database schema, such that no code changes have to be made when columns (or entire tables, for that matter) are created and dropped from the database.

### **Managing Users**

As a super user (administrator) of the database system, one of the tasks you will surely want to perform is the management of the users that are allowed to access the system. This application offers an easy way to do this, once again through the use of web forms. Before we discuss the details of how to add and remove users, a quick discussion of the permission levels is in order.

This application defines two permission levels, super users and users. A super user (permission level 0) has the privileges to alter the schema, as well as add and remove actual data from the database. A super user can also add other super user accounts as well as user accounts. In contrast, a regular user (permission level 1) can only query the database; he/she is disallowed from making any changes or additions to the schema or the database. It is in this way that a super user can grant permissions for someone to be able to have access to view data without having access to modify it.

To administer user accounts, you first need to login as a super user. When the application is first installed, it creates one super user account called "admin" with a password of "admin." This will be the account to use to login for the first time. It is recommended that this account be removed (or at least the default password changed) after the other suitable user accounts have been created and the system goes live. Once

you are logged in as a super user, click the "manage user accounts" link on the splash page. You will be taken to this screen:

## Edit Users

---

Find Users  Search on  Username  Real Name

[Add New User](#)

Username	Real Name	Address	Is Admin	Remove User
bd			YES	<input type="button" value="DELETE"/>
foo	foobar	222 foobar st	NO	<input type="button" value="DELETE"/>
john	john		YES	<input type="button" value="DELETE"/>
ryan			YES	<input type="button" value="DELETE"/>

This screen allows the user to view the currently active user accounts on the system. To remove an account, simply click on the delete button across from the account. To add a new account, click the "Add New" link and you will be taken to this page:

## Create New User

---

**Username**

**Password**

**Confirm Password**

<b>Real Name</b>	<input type="text"/>
<b>Address</b>	<input type="text"/>
<b>IS Adminastrator</b>	NO <input type="button" value="v"/>
<input type="button" value="INSERT"/> <input type="button" value="CANCEL"/>	

Fill in the username of the new account. Note that all usernames must be unique and if you try to create a duplicate username, an error will be raised. The next step is to enter the password for the new account you wish to create twice, once in the password field and again in the confirm password field. Optionally, you can fill in the user's real name and their email address, if so desired. The is-admin dropdown determines if this new account will have super user or user privileges (selecting yes grants super user privileges). Once everything looks good, click the INSERT button and the account will be created. If you change your mind and don't want to create an account, simply click CANCEL. You can add as many user accounts to the system as you wish, however it is a good idea to remove old users that no longer need access and keep the list of active users as small as possible, to avoid any possible security issues.

## Appendix I

<b>Attributes in table (bizsurvey)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	Not Null
0	bizsurvey_id	varchar		yes	yes	yes
1	sno	integer	survey number	no	no	no
2	qla	enum	Conflict with building owner or tenant	no	no	no

3	q1b	enum	Differculty recruting or retaining employees	no	no	no
4	q1c	enum	Expensive or unavailable products	no	no	no
5	q1d	enum	Cost of utilities	no	no	no
6	q1e	enum	Expensive employee wages or benifits	no	no	no
7	q1f	enum	Expensive Rent	no	no	no
8	q1g	enum	Expensive shipping or transportation	no	no	no
9	q1h	enum	Insufficiant Financing	no	no	no
10	q1i	enum	Insufficient parking	no	no	no
11	q1j	enum	In town competition	no	no	no
12	q1k	enum	Out of town competition	no	no	no
13	q1l	enum	Language Barriers	no	no	no
14	q1m	enum	Poor building condition	no	no	no
15	q1n	enum	Restrictive business regulations	no	no	no
16	q1o	enum	Shoplifting or theft	no	no	no
17	q1p	enum	Unskilled workers	no	no	no
18	q1q	enum	Vandalism	no	no	no
19	q1r	enum	Perception of neighborhood	no	no	no
20	q1s	enum	Traffic congestion	no	no	no
21	q1t	enum	Other	no	no	no
22	q1u	varchar	What are your three main challenges for doing business	no	no	no
23	q1v	varchar	Other text	no	no	no
24	q2a	enum	Business Planning	no	no	no
25	q2b	enum	Financial Management	no	no	no
26	q2c	enum	Inventory Management	no	no	no
27	q2d	enum	Advertising or marketing	no	no	no
28	q2e	enum	Coustomer service or hospitality	no	no	no
29	q2f	enum	Building Improvements	no	no	no
30	q2g	enum	Window displays or	no	no	no

			interior store design			
31	q2h	enum	Business market analysis	no	no	no
32	q2i	enum	Internet or ecommerce	no	no	no
33	q2j	enum	Transfer of ownership or selling a business	no	no	no
34	q2k	enum	Other	no	no	no
35	q2l	varchar	Other text	no	no	no
36	q3a	enum	Free Business Assistance	no	no	no
37	q3b	enum	Networking events for similar business	no	no	no
38	q3c	enum	Group business training	no	no	no
39	q3d	enum	Workforce development	no	no	no
40	q3e	enum	Business expos or trade shows	no	no	no
41	q3f	enum	Cooperative advertising coordination	no	no	no
42	q3g	enum	Facade grants	no	no	no
43	q3h	enum	Low interest business loan program	no	no	no
44	q3i	enum	Low interest building improvement loan program	no	no	no
45	q3j	enum	Local business contributions towards area wide improvements	no	no	no
46	q3k	enum	Local business directory	no	no	no
47	q3l	varchar	Are there any other improvements that you would like to see made in the Chandler Street Corridor	no	no	no
48	q4a	enum	Local police protection is outstanding	no	no	no
49	q4b	enum	I feel safe on Chandler Street during the day	no	no	no
50	q4c	enum	I feel safe on Chandler Street at night	no	no	no
51	q4d	enum	Local fire protection is outstanding	no	no	no



52	q4e	enum	I always try to buy products and services from other corridor businesses	no	no	no
53	q4f	enum	I always direct customers to other Chandler Street businesses	no	no	no
54	q4g	enum	The existing Corridor business mix helps my business	no	no	no
55	q4h	enum	The feel and look of the Corridor helps my business	no	no	no
56	q4i	enum	My building facade draws customers to my business	no	no	no
57	q4j	enum	My window and store displays help my business	no	no	no
58	q4k	enum	My advertising helps my business	no	no	no
59	q4l	enum	My business is open when customers want to shop	no	no	no
60	q4m	enum	Housing for employees is readily available	no	no	no
61	q4n	enum	Child care for employees and customers is readily available	no	no	no
62	q4o	enum	Chandler Street is an excellent place to have a business	no	no	no
63	q5	enum	How satisfied are you with the present location of your business	no	no	no
64	q5b	varchar	Why	no	no	no
65	q6	varchar	Do you have plans to expand or reduce operations for your business in the foreseeable future	no	no	no
66	q7	varchar	What building or storefront improvement	no	no	no

			projects are you or the building owner considering			
67	q8	integer	If known can you please provide your business or professional activity NACIS code	no	no	no
68	q9	enum	How long has your business been in operation	no	no	no
69	q9b	varchar	If you know the date your business was established please list it here	no	no	no
70	q10	enum	How long have you been the owner of your business	no	no	no
71	q11	enum	Does your business own or lease the space in which it is located	no	no	no
72	q12a	integer	Square feet sales space	no	no	no
73	q12b	integer	Square feet production space	no	no	no
74	q12c	integer	Square feet office space	no	no	no
75	q12d	integer	Square feet storage space	no	no	no
76	q12e	integer	Square feet unused space	no	no	no
77	q12f	integer	Square feet total space	no	no	no
78	q13a	enum	Where do your customers typically park	no	no	no
79	q13b	enum	How far do customers typically have to park from your business	no	no	no
80	q13c	integer	If you own a parking lot how many spaces are available for customers and not employees	no	no	no
81	q14a	enum	Where do you and your employees typically park	no	no	no
82	q14b	enum	How far do you and your employees typically have to park from your business	no	no	no
83	q14c	integer	If you own a parking lot	no	no	no

			how many parking spaces are available for employees not customers			
84	q15	integer	What percentage of your employees live here in the Piedmont Neighborhood	no	no	no
85	q16a	integer	Full time year round	no	no	no
86	q16b	integer	Part Time Year Round	no	no	no
87	q16c	integer	Seasonal	no	no	no
88	q16d	integer	Total	no	no	no
89	q17a	enum	Over the past 2-3 years your annual net sales has	no	no	no
90	q17b	integer	What are your annual net sales	no	no	no
91	q18a	enum	Over the past 2-3 years your annual rent has	no	no	no
92	q18b	integer	What is your annual rent	no	no	no
93	q19a	varchar	Monday from	no	no	no
94	q19b	varchar	Monday to	no	no	no
95	q19c	varchar	Tuesday from	no	no	no
96	q19d	varchar	Tuesday to	no	no	no
97	q19e	varchar	Wednesday from	no	no	no
98	q19f	varchar	Wednesday to	no	no	no
99	q19g	varchar	Thursday from	no	no	no
100	q19h	varchar	Thursday to	no	no	no
101	q19i	varchar	Friday from	no	no	no
102	q19j	varchar	Friday to	no	no	no
103	q19k	varchar	Saturday from	no	no	no
104	q19l	varchar	Saturday to	no	no	no
105	q19m	varchar	Sunday from	no	no	no
106	q19n	varchar	Sunday to	no	no	no
107	q19o	varchar	What are your thoughts on store hours	no	no	no
108	q19p	enum	What are your thoughts on store hours	no	no	no
109	q20a	enum	Monday	no	no	no
110	q20b	enum	Tuesday	no	no	no

111	q20c	enum	Wednesday	no	no	no
112	q20d	enum	Thursday	no	no	no
113	q20e	enum	Friday	no	no	no
114	q20f	enum	Saturday	no	no	no
115	q20g	enum	Sunday	no	no	no
116	q21a	enum	What are the three busiest months of the year for your business	no	no	no
117	q21b	enum	What are the three busiest months of the year for your business	no	no	no
118	q21c	enum	What are the three busiest months of the year for your business	no	no	no
119	q22a	enum	How many customers or clients visit your business per week during the summer months of May to October	no	no	no
120	q22b	enum	How many customers or clients visit your business per week during the winter months of November to April	no	no	no
121	q23a	enum	Does your business record zip codes or addresses of your customers	no	no	no
122	q23b	enum	Would you be willing to share this information and allow us to create trade area maps based on customer location	no	no	no
123	q24a	enum	Do you have an annual advertising budget	no	no	no
124	q24b	varchar	If so how is it allocated	no	no	no
125	q25a	enum	Gender	no	no	no
126	q25b	enum	Age	no	no	no
127	q25c	enum	Annual Household Income	no	no	no
128	q25d	enum	All	no	no	no

129	q26a	varchar	What is the toughest competition for your business	no	no	no
130	q26b	varchar	What is the toughest competition for your business	no	no	no
131	q26c	varchar	What is the toughest competition for your business	no	no	no
132	q27a	enum	To what degree do the following traits help make your business more competitive versus the competitors listed above Your Location	no	no	no
133	q27b	enum	Your parking	no	no	no
134	q27c	enum	Your hours	no	no	no
135	q27d	enum	Your service	no	no	no
136	q27e	enum	Your name brands	no	no	no
137	q27f	enum	Your quality	no	no	no
138	q27g	enum	Your selection	no	no	no
139	q27h	enum	Your price	no	no	no
140	q28	varchar	Please list the six products and or services that best differentiate your business from the competition	no	no	no
141	q29	enum	Relative to other businesses in your trade what price point to you target	no	no	no
142	q30a	varchar	What three Corridor businesses complement your business the most	no	no	no
143	q30b	varchar	What three Corridor businesses complement your business the most	no	no	no
144	q30c	varchar	What three Corridor businesses complement your business the most	no	no	no
145	q31	varchar	In your view what are the reasons people patronize	no	no	no

			businesses and services in the Corridor			
146	q31b	varchar	In your view what are the reasons people do not patronize businesses and services in the Corridor	no	no	no
147	q32	varchar	What types of businesses would you most like to see available in the Corridor and why	no	no	no
148	q33	varchar	With your business in mind what community assets would you most like to see developed	no	no	no
149	q34	varchar	Is there anything that we did not ask that you think we should have	no	no	no
150	business_fk	varchar		no	no	no

<b>Attributes in table (parcel)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	Not Null
0	parcel_id	varchar		yes	yes	yes
1	mbl	varchar	Map Block Lot Number	no	no	no
2	fence	enum	The type of fence the parcel has	no	no	no
3	fencecondition	enum	The condition of the fence	no	no	no
4	fencecomments	varchar	Observational comments on the fence	no	no	no
5	litterglass	enum	Is this parcel litterd with glass	no	no	no
6	litterplastic	enum	Is this parcel litterd with plastic	no	no	no
7	litterpaper	enum	Is this parcel litterd with paper	no	no	no
8	litteroverall	enum	The overall litter condition	no	no	no

9	littercomments	varchar	Observational comments about the litter	no	no	no
10	yardexists	enum	Does this parcel have a yard	no	no	no
11	yardtrees	integer	How many trees are on this parcel	no	no	no
12	yardshrubs	enum	Does this parcel have any shrubs in the yard	no	no	no
13	yardflowers	enum	Does this parcel have any flowers in the yard	no	no	no
14	yardgrass	enum	Does this parcel have any grass growing	no	no	no
15	yardcondition	enum	The overall condition of the yard	no	no	no
16	yardcomments	varchar	Observational comments on the yard	no	no	no
17	acres	real	The size of the parcel	no	no	no
18	zone	varchar	The zoning of this parcel	no	no	no
19	landvalue	integer	The appraised value of this parcel of land	no	no	no

<b>Attributes in table (building)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	Not Null
0	building_id	varchar		yes	yes	yes
1	visuals	varchar	Links to pictures of the building	no	no	no
2	floors	integer	The number of floors the building has	no	no	no
3	material	enum	The material the building is constructed with	no	no	no
4	facade	enum	The type of building facade	no	no	no
5	facadecondition	enum	The overall	no	no	no

			condition of the facade			
6	facadecomments	varchar	Observational comments about the facade	no	no	no
7	accessibility	enum	The buildings accessability	no	no	no
8	windows	integer	How many windows the building has	no	no	no
9	windowscondition	enum	The overall condition of the windows	no	no	no
10	windowscomments	varchar	Observational comments about the windows	no	no	no
11	parcel_fk	varchar		no	no	no
12	squarefeet	integer	The buildings square footage	no	no	no
13	yearbuilt	integer	The year the building was constructed	no	no	no
14	buildingvalue	integer	The appraised value of the building	no	no	no

<b>Attributes in table (parking)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique<TDNot Null	
0	parking_id	varchar		yes	yes	yes
1	spaces	integer	The number of parking spaces	no	no	no
2	surface	enum	The type of surface	no	no	no
3	surfacecracks	enum	The size of the surface cracks, if any	no	no	no
4	potholes	enum	The size of the potholes, if any	no	no	no
5	overallcondition	enum	The overall condition of the parking lot	no	no	no
6	parcel_fk	varchar		no	no	no



<b>Attributes in table (unit)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	TDNot Null
0	unit_id	varchar		yes	yes	yes
1	addressnumber	integer	The address number	no	no	no
2	addressstreet	varchar	The address street	no	no	no
3	unitnumber	integer	The unit number	no	no	no
4	squarefeet	integer	Total square footage of the unit	no	no	no
5	forsale	enum	Is the unit for sale	no	no	no
6	forrent	enum	Is the unit for rent	no	no	no
7	vacant	enum	Is the unit vacant	no	no	no
8	contactinfo	varchar	Any contact info regarding the unit	no	no	no
9	building_fk	varchar		no	no	no

<b>Attributes in table (business)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	TDNot Null
0	business_id	varchar		yes	yes	yes
1	businessname	varchar	The name of the business	no	no	no
2	naics	integer	North American Industry Classification System	no	no	no
3	unit_fk	varchar		no	no	no

<b>Attributes in table (sign)</b>						
#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	TDNot Null
0	sign_id	varchar		yes	yes	yes
1	location	enum	The location of the sign	no	no	no
2	signtype	enum	The type of sign	no	no	no

3	signsize	enum	The size of the sign	no	no	no
4	lettersmissing	enum	Does the sign have any letters missing	no	no	no
5	paintpeeling	enum	Does the sign have any paint peeling	no	no	no
6	condition	enum	The overall condition of the sign	no	no	no
7	comments	vvarchar	Observational comments about the sign	no	no	no
8	business_fk	vvarchar		no	no	no

**Attributes in table (residence)**

#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	Not Null
0	residence_id	vvarchar		yes	yes	yes
1	bedrooms	integer	The number of bedrooms	no	no	no
2	bathrooms	integer	The number of bathrooms	no	no	no
3	residencetype	enum	The type of residence	no	no	no
4	forsale	enum	Is this residence for sale	no	no	no
5	forrent	enum	Is this residence for rent	no	no	no
6	contactinfo	vvarchar	Any contact info regarding this residence	no	no	no
7	comments	vvarchar	Observational comments about the residence	no	no	no
8	unit_fk	vvarchar		no	no	no

**Attributes in table (school)**

#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	Not Null
0	school_id	vvarchar		yes	yes	yes
1	schoolname	vvarchar	The name of the school	no	no	no
2	schooltype	enum	The type of school	no	no	no
3	schoolgrades	enum	The grades the school	no	no	no

			teaches			
4	comments	varchar	Observational comments about the school	no	no	no
5	unit_fk	varchar		no	no	no

#### Attributes in table (church)

#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	TDNot Null
0	church_id	varchar		yes	yes	yes
1	denomination	varchar	The denomination of the church	no	no	no
2	comments	varchar	Observational comments about the church	no	no	no
3	unit_fk	varchar		no	no	no
4	churchname	varchar	The name of the church	no	no	no

#### Attributes in table (realestate)

#	Attribute Name	Attribute Type	Attribute Description	Primary Key	Unique	TDNot Null
0	realestate_id	varchar		yes	yes	yes
1	tax1	real	The 2005 annual property tax assessment	no	no	no
2	tax2	real	The 2004 annual property tax assesment	no	no	no
3	tax3	real	The 2003 annual property tax assesment	no	no	no
4	street	real	Street assesments	no	no	no
5	sewer	real	Sewer assesments	no	no	no
6	demo	real	Demolition assesments	no	no	no
7	cinterest	real	Compounded Interest	no	no	no
8	sleins	real	Sewer leins	no	no	no
9	wleins	real	Water leins	no	no	no
10	total	real	Total assesments	no	no	no

11	fees	real	Late fees, pains, and penalties	no	no	no
12	interest	real	Interest	no	no	no
13	parcel_fk	varchar		no	no	no