Toward A Spatial Understanding of Latin American Immigrant Worker Population Fatalities

By

Robert Stewart

A dissertation submitted to the Graduate Faculty in Earth and Environmental Sciences in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2010

Approval Page

This manuscript has been read and accepted for the Graduate Faculty in Earth and Environmental Sciences in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Date	**Ines Miyares, Ph.D.** **Chairperson of Examining Committee**
Date	**Yehuda Klein, Ph.D.** **Executive Officer, Ph.D program in Earth and Environmental Sciences**
	Charles Heatwole, Ph.D.
	Yehuda Klein, Ph.D.
	Jack Caravanos, Dr.PH
	Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

Toward A Spatial Understanding of Latin American Immigrant Worker Population Fatalities.

by

Robert Stewart

Chairperson of the supervisory committee: **Professor Ines Miyares**
Department of Geography

The object of this dissertation was to conduct a geographical immigrant labor population analysis of the work spaces where Latin American immigrant worker fatal accidents occurred and were investigated by OSHA in NYC's Brooklyn and Manhattan from 1995-2004. The purpose of this analysis was to identify spatial trends and to develop a spatial profile or spatial model of these fatal accident sites. With the identification of spatial factors that are related to Latin American worker fatal accidents, OSHA could implement an improved spatial strategy for identifying hazards, issuing violations, and thus preventing these fatalities before they occur.

The US Dept. of Labor/ Occupational Safety and Health Administration (OSHA) reported that the total amount of occupational fatal accidents went up from 1,729 to 1,966 in the years 1997 to 2005. In addition, in the U.S., the Hispanic worker fatality rate has

increased sharply from 4.50 per 100,000 in 2003 to 4.90 in 2004. This is an 11% increase (Smith, S., et al, 2006). The New York State (NYS) Trial Lawyers Association of OSHA reported that from 1994-2004 in NYS, most of the occupational fatal accidents occurred in New York City (NYC), and in NYC most occupational fatal accidents occurred on construction sites. Sixty seven percent occurred with workers who spoke a foreign language on the job, usually Spanish. Brooklyn was reported as the county that had the most accidents in the state (NYS Trial Lawyers Assoc. of OSHA, 2005). These statistics clearly identify a need to reduce the occupational fatal accident rate, especially for Latin American immigrants in NYC.

The research concludes that Latin American occupational fatal accidents do have a unique, and a statistically significant relationship with the following independent variables: union status; job size; median residential household income; and residential population density.

Acknowledgements

I would like to thank each of my four advisory committee members for providing their specific areas of expertise that helped bring this interdisciplinary research project to fruition.

I thank my primary advisor Dr. Ines Miyares for her leading edge knowledge in Latin American migration studies. I thank her for her steadfast support, patience, and feedback, which without I could not have completed this project.

I thank Dr. Yehuda Klein for his statistical expertise in helping to decide which statistical methods were best for examining fatal accident spatial patterns.

I thank Dr. Jack Caravanos for his expertise in occupational safety and health and helping to bridge the gap between geographic studies and occupational safety and health.

I also thank Dr. Charles Heatwole for providing his background in the broader discipline of human geography and his help in initially focusing my research to Latin American migration studies and bringing me together with my primary adviser Dr. Ines Miyares.

Additionally I would like to thank my employer, the US Department of Labor/Occupational Safety and Health Administration for providing me with the necessary data and my position as a fatal accident investigator which provided the venue for virtually limitless field work.

Dedicated to the seventy Latin American immigrant workers that died in industrial accidents in the boroughs of Brooklyn and Manhattan from 1995 -2004. Latin Americans are the ethnic group that had the most occupational fatal accidents in that time and space. This dissertation's job is to identify spatial patterns of Latin American immigrant worker population fatalities and offer techniques to prevent these accidents in the future.

Table of Contents

LIST OF LINE GRAPHS

LIST OF CHARTS

LIST OF ZIP CODE MAPS

LIST OF PHOTOGRAPHS

Definitions:

The Occupational Safety and Health Act of 1970 and the Occupational Safety and Health Administration:

The law called the "Occupational Safety and Health Act of 1970" created the agency within the United States Department of Labor called the "Occupational Safety and Health Administration" (OSHA), and numerous safety regulations. This agency is tasked with enforcing these safety regulations. Before 1970, occupational safety and health was managed by diverse and inconsistent state laws and there were no comprehensive laws in the U.S. for worker safety and health. Failure to follow OSHA requirements can result in penalties for the employer of up to $70,000, and 6 months in jail. The purpose of this law and agency is to provide employees in the United States with safer work spaces by reducing worker accident rates as well as worker fatal accident rates (OSH Act of 1970, as amended through 2004; US Dept. of Labor, 2007).

Since the main focus of this dissertation is fatal occupational accidents, with specificity to Latin American immigrant workers, it is important to understand OSHA's definitions with respect to "Occupational Fatal Accident", and "Immigrant Language Worker".

Occupational Fatal Accident:

OSHA has defined an occupational fatal accident as a fatal accident that occurs as a result of a work-related incident in which OSHA has jurisdiction. Frequently OSHA

does not have jurisdiction over workers employed by local municipalities. In the area examined in this study both New York City (NYC) and New York State (NYS) employee fatalities are handled by the New York State Department of Labor, Public Employee Safety and Health (PESH) (NYS Dept. of Labor, 2007). OSHA also does not have jurisdiction over any "on road" traffic or vehicular accidents. These are investigated and recorded by the United States Department of Transportation (USDOT) and enforced through the various local police departments (US Dept. of Transportation, 2007). Finally, OSHA does not have any jurisdiction over any fatal accidents related to gas pipeline safety. These are covered by the US DOT Division of Pipeline Safety (US Dept. of Transportation, 2007). Therefore this dissertation excludes any employee fatal accidents caused by fires and/or explosions involving natural gas distribution pipelines.

Immigrant Language Worker:

OSHA has defined an "Immigrant Language Worker" as any worker who immigrated to the United States from a foreign country, or a worker whose primary language is other than English, or a worker of Latin American origin. OSHA adopted this definition in 2001 as a method to keep track of growing immigrant worker fatalities, especially the noticeable growth of victims of Latin American origin. Before this definition was implemented, no records were kept by OSHA with regard to the ethnicity of victims' of worker fatalities (US Dept. of Labor/OSHA, 2005-2009). The researcher used this data to identify immigrant victims that were of Latin American origin. This

dissertation determined the ethnicity of each fatal accident victim by conducting a Google Genealogy Search, using the name of each victim.

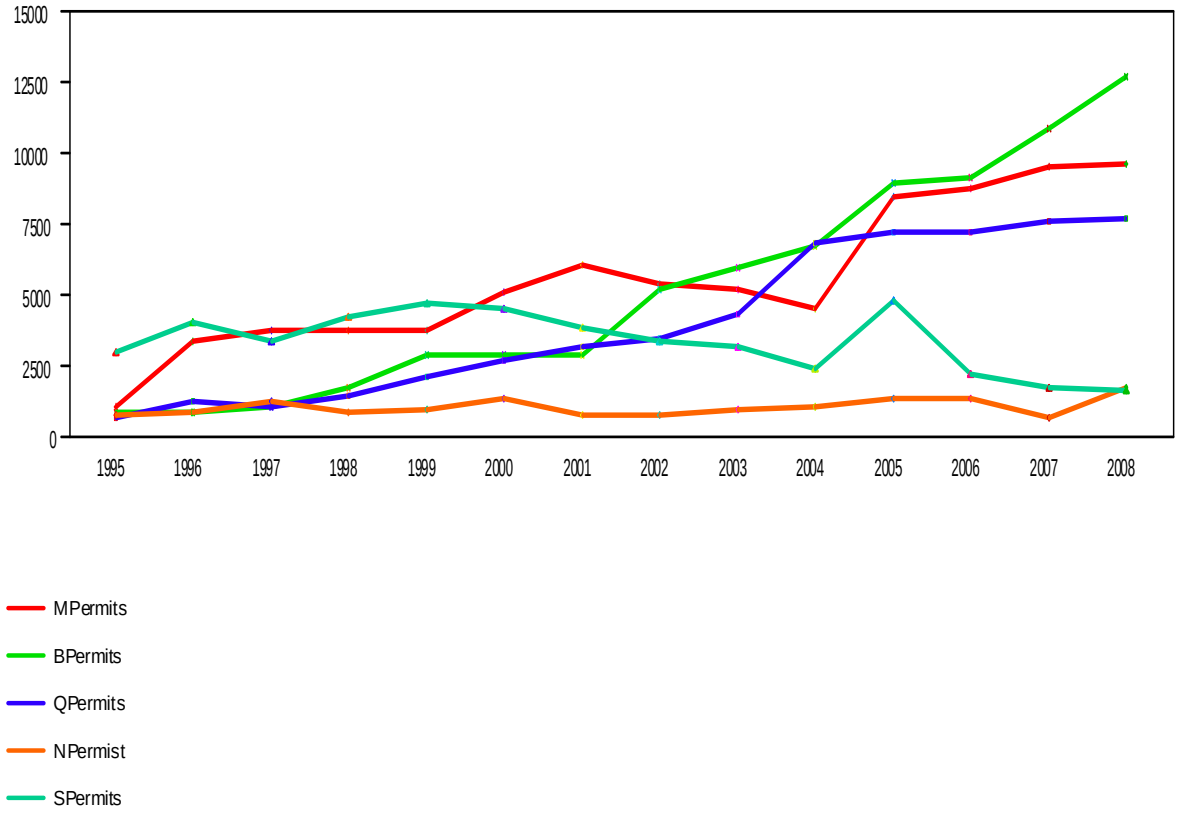
Hazardous or High Risk Work Area/site:

For the purposes of this dissertation hazardous or high risk work area/site will be defined as work area/site that has more than the average occupational fatal accidents. In this study we are using zip code areas as one of our geographical boundaries. One of the main goals of this dissertation is to define a more clear definition of hazardous or high risk work area/site for Latin American immigrant workers. The definition that will be proposed in the hypothesis section of this dissertation is that these sites will have victims that are mostly non-union, and the victims will be on smaller size jobs. The zip code areas where these fatalities occur will also have higher worker population densities, higher residential population densities, fewer OSHA inspections, more violations when OSHA inspections are done, and lower median household incomes.

I – Introduction:

Why Study Latin American Occupational Fatal Accidents? :

From 1997-2005 the annual amount of occupational fatal accidents in the U.S. rose from 1,729 to 1,966, which is an all-time high (U.S. Dept. of Labor/OSHA, 2005-2009). From 2003 to 2004 the occupational fatal accident rate in the US rose from 4.00 to 4.10 per 100,000 workers. This was the largest rise in 10 years. The Hispanic worker fatality rate increased even more sharply from 4.50 per 100,000 in 2003, to 4.90 in 2004. (Smith, S., et al, 2006) From 1994-2004, Manhattan and Brooklyn were the counties that had the highest proportion of occupational fatal accidents in New York State. Manhattan had 24% and Brooklyn had 13%. In NYC from 1994 to 2004, most of the occupational fatal accidents occurred on construction sites, and 67% occurred with workers who spoke a foreign language, usually Spanish (NYS Trial Lawyers Assoc. of OSHA, 2005). In contrast to NYC, only 13% of occupational fatal accidents in the US between 1996 and 2001 involved foreign born workers (Loh and Richardson, 2004). Out of the 210 fatal accidents being examined in this study, 126, or 60% of them, occurred on construction sites. The author believes that this is due to the steady rise in construction work going on in Brooklyn and Manhattan from 1995 to 2008 which is indicated by the amount of construction permits issued. (Line Graph 1).

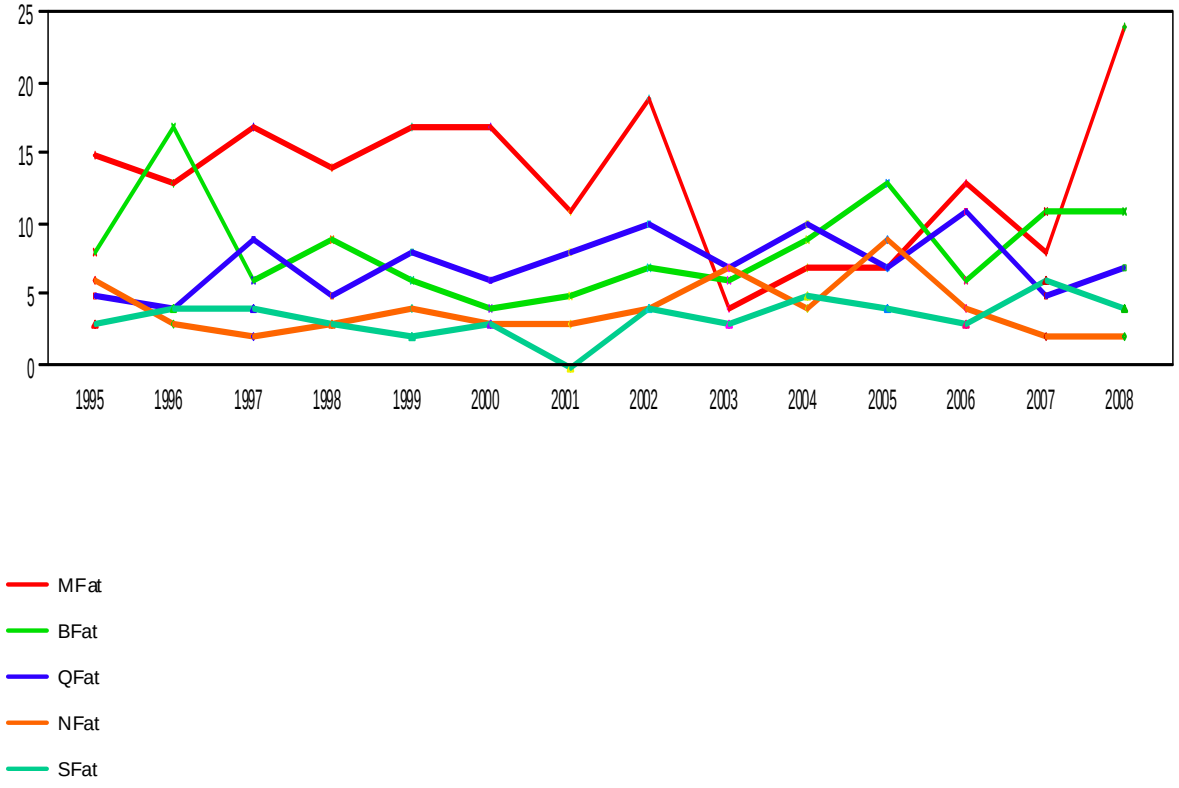


MPermits =Manhattan Permits
BPermits = Brooklyn Permits
QPermits = Queens Permits
NPermits = Nassau Permits
SPermits = Suffolk Permits

Line Graph 1 - Construction Permits Issued per Year, 1995-2008 (US Census, 2006-2009).

The amount of permits is measured in units. For example a one family private home would be one unit, and a 100 family apartment building would be 100 units. Permit units is a more accurate measure of the amount of new construction. If we just looked at the number of permits, the 100-family apartment building would have only one permit as would the one-family private-home, and this would lead to inaccurately small construction rates for large unit buildings. From 1995-2004 there was a steady rise in permit units, except in Manhattan from 2002-2004, where there was a drop in

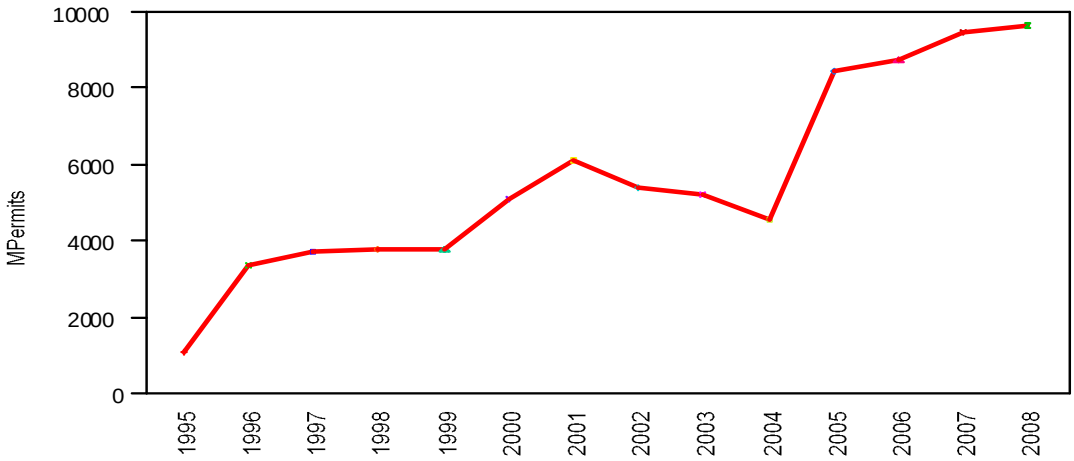
construction. The author believes that this drop in construction was as a result of the September 11, 2001 terrorist attacks on the World Trade Center in Manhattan, when for a two-year period of time, economic conditions were not conducive for starting any new construction jobs in Manhattan. In that same time span, construction permits and occupational fatal accidents went up in Brooklyn (Line Graph 2). Notice that in 2008 Manhattan had the highest number of fatal accidents when compared to any other year and to any other county on the chart.



MFat = Manhattan Fatalities
BFat = Brooklyn Fatalities
QFat = Queens Fatalities
NFat = Nassau Fatalities
SFat = Suffolk Fatalities

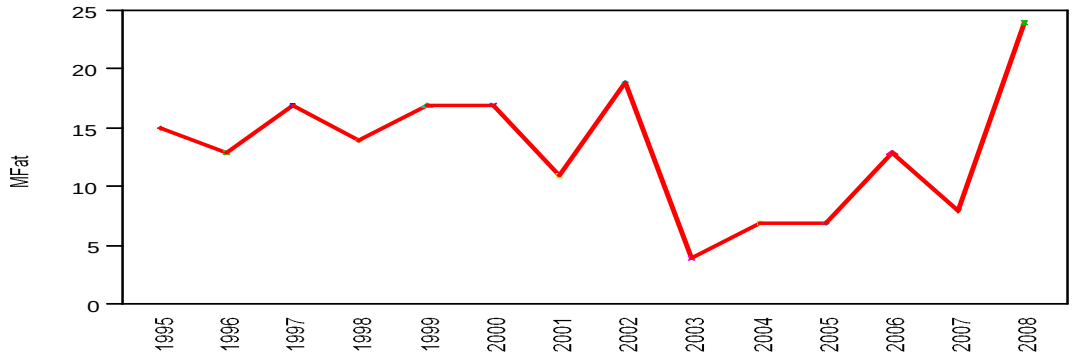
Line Graph 2 - Occupational Fatalities per Year, 1995-2008 (USDOL/OSHA, 2005-2009).

The author believes that this peak is where the trend was heading before the September 11, 2001 terrorists attacks on the World Trade Center caused a recession in construction in Manhattan. It appears that in 2005, construction permits increase and fatal accidents are quick to follow. Line graphs 3, 4, 5, and 6 were created to more closely illustrate the differences and similarities with construction permits and occupational fatal accidents in the boroughs of Brooklyn and Manhattan. For legibility, there are separate line graphs for permits and fatalities in each borough because of the large difference in scale for each.



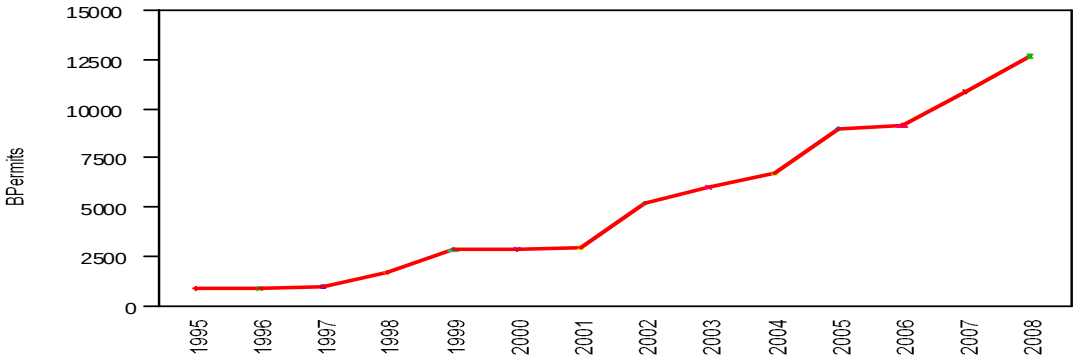
MPermits = Manhattan permits

Line Graph 3 – Construction permits issued in Manhattan per year, 1995-2008 (US Census, 2006-2009).



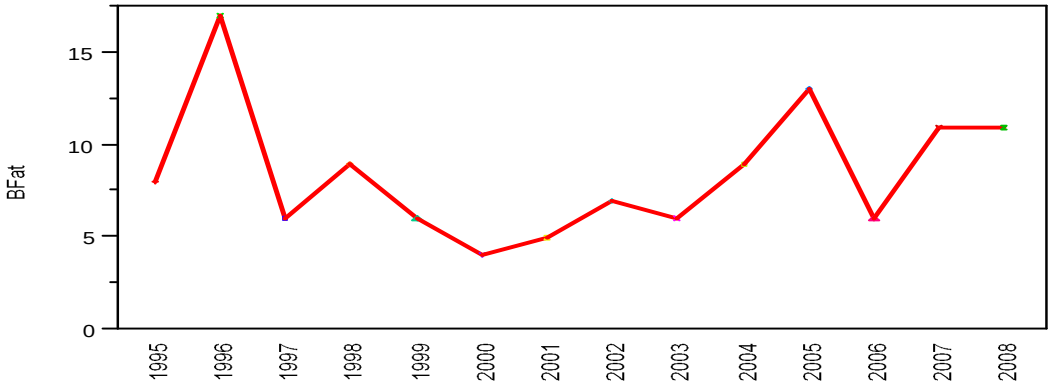
MFat = Manhattan fatalities

Line Graph 4 – Occupational fatalities per year in Manhattan, 1995-2008 (USDOL/OSHA, 2005-2009)



BPermits = Brooklyn permits

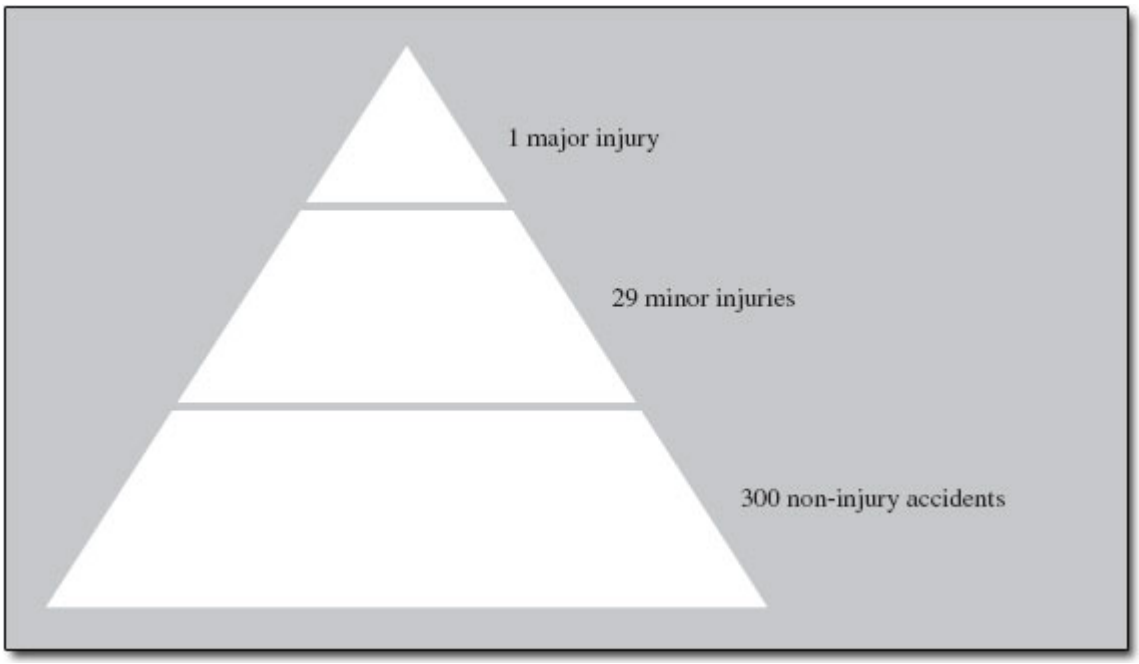
Line Graph 5- Construction permits per year in Brooklyn, 1995-2008 (US Census, 2006-2009).



BFat= Brooklyn fatalities

Line Graph 6 – Occupational fatal accidents per year in Brooklyn, 1995-2008 (USDOL/OSHA, 2005-2009).

Fatal accidents usually represent only a tip of an iceberg. In other words, when fatal accidents go up, non-fatal accidents have gone up as well in those same work places. This phenomenon is called “The Accident Pyramid”, and has been a long-standing theory in the safety literature. The accident pyramid proposes that for every 300 non-injury accidents there are 29 minor injuries and one major injury or fatality. This means that as the fatal accident rate goes up, the ordinary accident rate rises accordingly



(Heinrich, 1931).

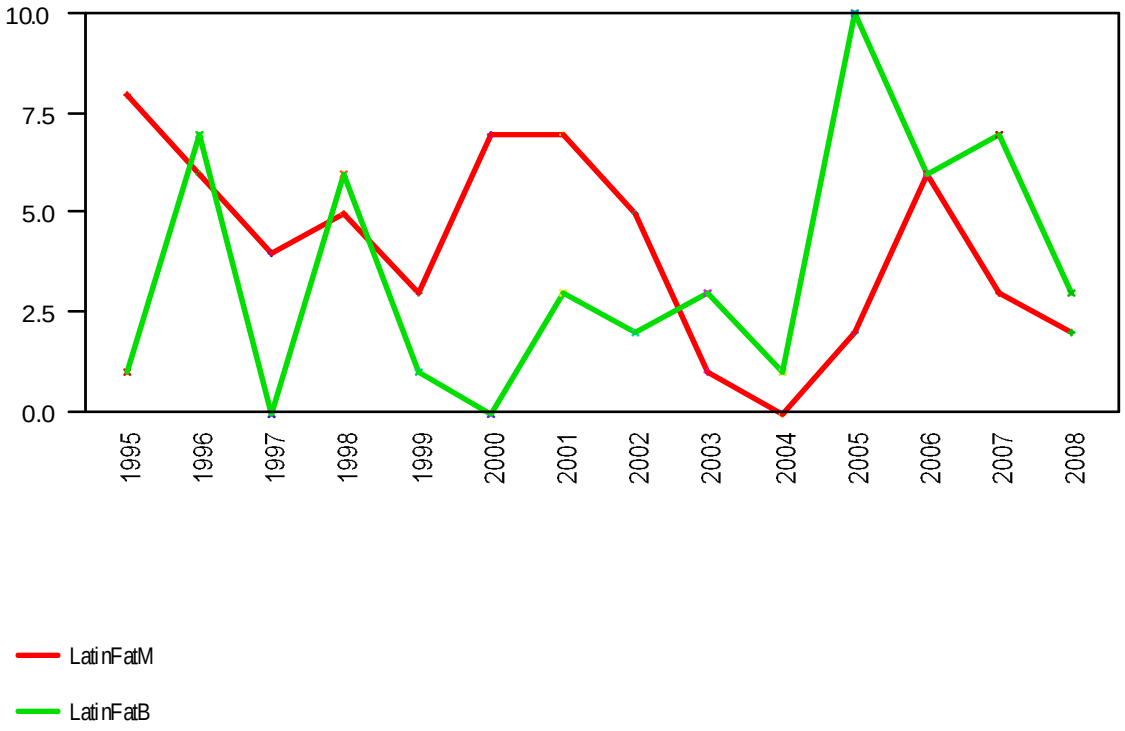
Chart 1 – Accident Pyramid Chart

The author believes that by focusing on the sites where fatal accidents are likely to occur, not only can the fatalities be prevented, but 29 other injuries as well.

Insurance companies are very aware of this accident pyramid, and they know that on any fatal site there will be more accidents and increased insurance payouts. Every worker accident has a dollar expense attached to it. The dollar costs are related to the cost of medical care and rehabilitation. Due to the rising cost of medical care, insurance costs related to worker accidents have skyrocketed in the same timeframe. (US CDC, 2007)

After September 11, 2001, Latin American occupational fatal accidents also went down in Manhattan and stayed level in Brooklyn. However, in 2005 Latin American fatal accidents hit record highs in Brooklyn (Line Graph 3).

By looking at Line Graphs 1 through 7, we can see that there are some obvious differences, and similarities in the geography of occupational fatal accidents and Latin American occupational fatal accidents. In 2002 and 2008, Manhattan has the highest peaks in occupational fatal accidents. In the same two years, in Manhattan the Latin American occupational fatal accidents show a decreasing trend. In Brooklyn during the years 1996 and 2005, the occupational fatal accidents hit peaks. During the same two years the Latin American occupational fatal accident also hit its highest two peaks. It



LatinFatM= Latin Fatals in Manhattan
LatinFatB= Latin Fatals in Brooklyn

Line Graph 7
Latin Fatals per year in Manhattan and Brooklyn, 1995-2008 (USDOL/OSHA,2005-2009).

appears that the geography of occupational fatal accidents and the geography of Latin American occupational fatal accidents have a more direct geographical relationship in Brooklyn, but not as much in Manhattan. The author believes that by examining geographic variables in more detail, we can understand this relationship; that is one of the goals of this study.

This steady rise of occupational fatal accidents, especially with Latin American immigrants in NYC, and the increased insurance costs, indicates a need to investigate the causes of these occupational fatal accidents for the purposes of controlling and reducing their occurrence in the future.

The purpose of this dissertation is to conduct a geographical analysis of Latin American immigrant labor with a focus on the work spaces where those fatalities occurred in order to determine whether there are spatial patterns to the fatalities, and subsequently develop spatially targeted preventative programs.

Using geographic theory and techniques to study death rates is not uncommon. In fact, occupational fatal accident rates are a small subset of death rates. Geographic studies of death rates in the US and United Kingdom have yielded substantial results in showing causal relationships (Murray, 1967). An example of fruitful geographic studies of death rates was in the examination of AIDS. In these studies, unlike many other fatal diseases of the African tropics, AIDS had a proven ability to take root in temperate lands (Shannon, et al, 1991; Gould, 1993).

Since most of the occupational fatal accidents in NYC occurred on construction sites and with Latin American workers, this study's main focus will be on the migration of Latin American immigrant workers to NYC and to their employment at those

construction accident sites. In different areas of the United States, other migratory factors may dominate. For example, high hazard mining or lumber jacking work spaces, where little or no construction is going on, may have high numbers of worker fatalities along with different migratory forces driving workers to those specific jobs. However, in the areas being examined in this study, there are no mining or lumber jacking operations, and therefore no mining or lumber jacking work space fatalities. Similarly, some of these other high hazard work spaces are in areas with low immigration rates, and as a result have a low number of immigrant fatalities (USDOL/OSHA, 2007-2009). What this means is that this study may identify some migratory elements that are very specific to the geography of the area, and may not be able to be applied to any other areas. On the other hand, this study hopes to find migratory trends that can be applied to other geographic areas and be used to prevent worker fatalities in those areas as well. This project will attempt to identify and add an understanding both types of migratory trends.

Migration experiences of immigrants cannot be adequately explained by a single theory, but only by a host of theories operating simultaneously at different geographic scales (Airriess and Miyares, 2007, p., 16). In addition, in the geographical immigrant labor population literature, theories are well developed relating to distinct workforce population migration patterns that have been know to grow in workplaces associated with certain areas and markets (Bowen, et al, 1995; Gilbertson, 1995; Harvey,1997; Kim, 1981; Min, 1988; Miyares, 1998; Portes and Zhou, 1992; Waldinger and Bozorgmehr, 1996). These theories will all be discussed in depth in the second chapter.

Positionality of the Researcher:

The position of the researcher is that of an OSHA Compliance Officer (Investigator) from the period of 1990 to present, whose job it is to investigate occupational fatal accidents in Brooklyn and Manhattan in order to determine the employer's compliance with OSHA safety regulations. The majority of the fatal accidents being studied in this dissertation were either directly investigated by the researcher or the researcher was consulted by other investigators. The researcher has reached the highest level of proficiency as an investigator established by OSHA. That level is GS-12 Step10. The researcher has also received the Secretary of Labor's Award for Exceptional Achievement on three separate occasions, and has been the only OSHA Compliance Officer to ever receive the US Department of Justice's Office of the US Attorney Award. All four awards were as a result of fatality investigations that have resulted in successful criminal prosecutions. Individually, the researcher has been involved with more fatal accident investigations and more fatal-related criminal prosecutions than any other OSHA compliance officer since OSHA's inception in 1970. It should be noted here that as a normal course of business, the author has easy access to the fatal accident data presented in this dissertation however the type of analyses done here in this dissertation is not part of the author's duties or job description and this dissertation goes greatly above and beyond the author's call of duty as an OSHA Compliance Officer.

The researcher has also worked with the NY City Police Department since 1982 as an Auxiliary (volunteer) Police Officer, presently as a Lieutenant assigned to the 61st Precinct in Brooklyn, which is located in the study area. This police department experience has given the researcher a perspective of comparison between police work and

OSHA work. The most important comparison is NYPD's present spatial strategy for preventing felonies versus OSHA's spatial strategy for preventing occupational fatal accidents. NYPD's spatial strategy is to identify spatial trends and profiles for felons and then focus police manpower in those areas to prevent crime. The author believes that this same spatial tactic can be used to prevent occupational fatal accidents. This will be discussed more in depth.

The researcher's position as an OSHA investigator specializing in occupational fatal accidents has given the researcher a unique opportunity as a geographer to observe two primary categories of occupational fatal accidents. Those two categories are: fatal accidents caused by normal human error, which occur at a regular rate related to man hours worked; and fatal accidents caused by employers who take advantage of and abuse workers, particularly Latin American workers. The researcher has realized that the latter has a greater degree of preventability and therefore has chosen to research Latin American immigrant worker population fatalities.

Academics have the potential to participate in social change, but we must find ways to collaborate effectively with each other and with those beyond the academic world. By using mixed methods including statistical methods and field work from different positions and perspectives, scholars create the conditions for richly varied research products that might connect to broader sets of audiences (Mountz, et al, 2003). This researcher hopes that his perspective as an academic, an OSHA investigator, and an NYPD auxiliary police officer, will result in this research project accomplishing that.

OSHA's Current Spatial Strategy for Preventing Fatalities:

OSHA's manpower presently consists of approximately 1,000 inspectors nationwide, doing an average of 35 inspections per year each. Nationwide, there are approximately 6 million inspectable workplaces in the United States (US Census, 2006). With OSHA's present amount of manpower, it would take approximately 171 years to inspect all of these workplaces. For the purposes of preventing fatal accidents, it is not necessary to inspect every workplace in the United States, but to inspect the workplaces that have common workplace fatality risk factors, and hopefully to inspect those workplaces before the fatalities occur. OSHA's current predominant spatial strategy for conducting inspections is to conduct inspections where OSHA has received a complaint from a worker, passerby, or governmental agency, or to conduct inspections where OSHA has learned that a worker fatality has occurred. Complaints are not always for high hazard work environments; many are for low hazard white collar jobs. Thus OSHA spends a much of time doing inspections relating to low hazard issues such as dust and sanitation.

The OSHA law requires that employers keep records of and report all work-related fatalities to OSHA within 8 hours (Code of Federal Regulations 29, 2006), or receive a penalty up to seven thousand dollars (Occupational Safety and Health Act, 1970 as amended through 2004; USDOL/OSHA, Field Inspection Reference Manual, 2007). These requirements, along with the cooperation from local authorities such as the police department, fire department, and medical examiner, have proven effective in OSHA being able to promptly investigate and gather data for all fatalities in the areas included in this study.

In Brooklyn and Manhattan, OSHA has deemed scaffolds and demolition jobs as spaces that are high hazard. OSHA has created a local emphasis program (USDOL/OSHA, LEP, 2007) that permits OSHA inspectors to do an inspection of any scaffold or demolition job they encounter. However, this is rare because OSHA inspectors are typically too busy handling complaints and fatal accidents and do not have time to scout for the most hazardous spatial profile.

Scouting for spatial profiles has proven effective in crime fighting for the New York City Police Department (NYPD). Former NYPD Police Commissioner William Bratton's theory was to fight crime by looking for criminals in the spaces that fit the spatial profile for criminals, (i.e. urinating in public, jumping subway turn-styles), hoping to prevent bigger crimes before they happen, and possibly catching criminals wanted for more serious crimes (Bratton, 1998). This author believes that a similar spatial program to prevent work space fatalities can be developed for OSHA as a result of this study. OSHA could send inspectors to areas with a specific spatial profile associated with Latin American fatal accidents for the purposes of preventing Latin American occupational fatal accidents.

Importance of the Research:

This study is important because it makes use of and adds to the existing body of geographical literature in immigrant population labor geography. This study is unique to the geographic scientific community in that none of the peer-reviewed geographic literature uses occupational fatal accidents as a variable. In addition, this study is unique to the safety community because none of the peer-reviewed safety literature gives

occupational fatal accidents a geographer's perspective by comparing occupational fatal accidents to the variables in question by using existing geographic theory and thought.

This study is important because it will help us to understand occupational fatal accidents for the purposes of preventing them. This study will help us develop a replicable spatial model or profile for where immigrant occupational fatal accidents are occurring, so a more optimal spatial strategy for conducting OSHA inspections can be implemented to reduce those fatalities. In addition to OSHA, insurance companies that insure employers for workers compensation accident insurance could use this information as part of their loss control program to prevent Latin American occupational fatal accidents. Once the insurance company spatially identifies a work site as one that is likely to have a Latin American fatal accident, then they could implement safety measures to prevent the fatal accidents. Perhaps this model can then be applied to other large or growing cities in the United States to reduce their occupational fatal accidents as well.

This dissertation consists of six chapters. The first introduces the research question. The second proposes a conceptual framework of Latin American labor migration theories. The third examines the evolution of Latin American Labor migration theories as a result of the changing immigration laws as well as the migration dynamics created by labor laws. The fourth establishes a spatial hypothesis for Latin American occupational fatalities based on the first, second, and third chapters and introduces quantitative methods to test this hypothesis. The hypothesis is that these fatal accidents will more likely occur on jobsites that are mainly non-union, and smaller in size. They will also be in zip code areas that have lower median household incomes, fewer OSHA

inspections, higher average OSHA citation rates, greater worker populations, and greater residential population densities. The fifth is the quantitative analysis and results along with a discussion of how this relates the hypothesized spatial characteristics of Latin American immigrant worker fatal victims in the zip code areas that had the most Latin American occupational fatal accidents. The sixth integrates the five chapters and draws spatial conclusions on how to prevent Latin American occupational fatal accidents in the study area and beyond.

II – Conceptual Framework for the Migration of Latin American Immigrant Labor to Hazardous Jobsites:

In the introduction we saw that a large percentage of occupational fatal accident victims in Brooklyn and Manhattan are of Latin American origin. Of the Latin American fatal accident victims, the author has observed that the two most frequent groups that emerge are Mexicans and Ecuadorians (Stewart, Field observations 1990-2009). Let us take a closer look at Latin American immigration with special emphasis on immigration from Mexico and Ecuador.

Of the 27.6 million foreign born residents in the US in the year 2000, approximately 52 percent were from Latin America (Airriess and Miyares, 2007). In New York City from 1990 to 1997, the native white population decreased by 250,000 (Wright and Ellis, 2001). Latinos are the largest immigrant group in NYC. In 2000 an estimated 2.2 million Latinos lived in NYC. Of this Latino group, Mexicans are the fastest growing group in NYC. Approximately 250,000 to 275,000 Mexicans lived in NYC in 2000. This was a big increase from approximately 40,000 Mexicans in 1980. This growth was due to an economic crisis in Mexico matched by a demand for work in the US. Mexicans are a highly available and compliant labor force. Fifty percent of Mexicans in NYC are undocumented and arrive unskilled and uneducated (Smith, R., 2001).

Up until the late 1990's, Ecuadorian international migration was primarily to NYC. Most of the 400,000 Ecuadorians living in the United States are concentrated in metropolitan New York. They were also having a similar economic crisis and were

coming from Canar and Azuay Provinces as farmers with little education and skills. Many came to the US to work and would remit their pay back to relatives in Ecuador (Jokisch, 2002; Jokisch and Pribilsky, 2002).

The majority of undocumented aliens are visa overstayers, that is, entrants on visas who remain in the United States after the expiration of there visas. The minority of undocumented aliens are those who entered the country without valid documents, by mainly crossing the boarders clandestinely. A widely accepted estimate by the INS put the number of undocumented immigrants in New York State at 540,000 in 1996, the vast majority of these living in New York City (Kraly and Miyares, 2001; Airriess and Miyares, 2007).

There are nine immigrant labor migration theories that can be used to explain the migration of Latin American workers to hazardous worksites. They are neo-classical theory, new economics of migration theory, dual market theory, world systems theory, network theory, institutional theory, human capital theory, disadvantage theory, and culture theory. We will now examine how each migration theory can explain how Latin American immigrant workers tend to migrate to jobsites that have a particular spatial description consistent with a more hazardous workplace.

Labor Migration Theories and How They Apply to Latin American Immigrant Workers in New York City:

Neo-Classical Theory:

Neo-classical Theory states that migration of workers across international boundaries is strongly influenced by employment opportunities and wage rates.

Employees will migrate where opportunity and earning potential is higher (Airriess and Miyares, 2007). Sydney, Australia is a good example of this. In Sydney, when a change in regulation opened up opportunities for immigrant entrepreneurs, the ethnic entrepreneurs became the defining aspect of Sydney as a cosmopolitan global city. Sydney has become the largest immigrant city in Australia for many different immigrant groups (Collins, 2006).

Another example of Neo-Classical Theory is the Ecuadorian international migration. Prior to the late 1990s, approximately 400,000 Ecuadorians settled in metropolitan New York. Ecuadorians in New York City who predominantly left their farming jobs in the highland provinces of Canar and Azuay, work mainly in menial jobs and as a group remit millions of dollars annually (Jokisch, 2002). In the mid to late 1990s, Ecuador entered a political and economic crisis just as clandestine transportation to the US became increasingly expensive and dangerous. Within two years Ecuadorian migration diversified radically, and a "new emigration" formed where migration shifted to Europe, mostly Spain, but also to France, Italy, and the Netherlands. Prior to 1998, few Ecuadorians lived in Europe, but now, Ecuadorian are the largest immigrant group in Madrid and one of the largest in Spain (Jokisch and Pribilsky, 2002).

Neo-Classical Theory also applies to Mexican immigrant migration to New York City. As mentioned above the number of Mexican immigrants in NYC increased from approximately 40,000 in 1980 to approximately 275,000 in 2000. This growth was due to an economic crisis in Mexico matched by a demand for work in the US. The Mexican immigrants who were largely unskilled and uneducated settled in NYC looking for job opportunities that were available in NYC and were lacking in Mexico (Smith, R., 2001).

The majority of occupational fatal accidents in Brooklyn and Manhattan occur on construction sites. Opportunity and earning potential are relatively high in construction. Unskilled construction workers currently get paid $125 per day, tax free as an undocumented day laborer (Stewart, Field observations, 1990-2009) This is more than double the minimum wage currently of $7.25 per hour (US Dept of Labor, ESA website, 2009). Latin American immigrants migrate to work on construction sites in the study area because in NYC, Latin Americans have the highest population of undocumented and unskilled labor (Smith, R., 2001; Jokisch, 2002), and are therefore motivated to accept the more dangerous undocumented day laborer construction jobs with higher pay rather than the lesser paying jobs that are less hazardous and may even require being documented.

New Economics of Migration Theory:

This theory explains that the migration of workers is determined by the availability of unemployment insurance in its various forms, or better access to credit reduces the financial risk of the worker (Airriess and Miyares, 2007). This can be seen in Miami where general urban and economic development has resulted in the Cuban ethnic enclave identity decreasing as the Cubans become increasingly integrated. The enclave splintered into specialized clusters of Cuban businesses such as in multinational corporations in Coral Gables, and manufacturing in Hialeah (Alberts, 2006).

In the study area Latin Americans are <u>not</u> migrating to work on dangerous construction sites for better credit and unemployment insurance. They are migrating there because there is less financial risk by getting much higher pay than working at a

less hazardous job. The construction sites they work on offer them jobs as day laborers where they work "off the books" and can easily avoid paying taxes (Stewart, Field observations, 1990-2009). Working "off the books" for more money offers greater immediate security than working "on the books" for less money, no workers compensation insurance, no medical insurance, and the fear of being at risk of being discovered as an undocumented when filing tax returns. Being discovered as undocumented could result in deportation, depending on the circumstances (Stewart, Field observations 1990-2009).

Dual Market Theory:

This theory states that international migration originates from the labor needs of modern industrial societies rather than poor economic conditions in the developing origin countries. Native populations often find low wage labor intensive work unattractive and immigrants meet this labor demand (Airriess and Miyares, 2007). A study in Britain refers to this as the ecological succession of business, when new immigrants occupy the rungs of opportunity ladder that are no longer attractive to the indigenous population. The South Asian presence in low-order retailing in Britain fit this explanation well, just as immigrants had been recruited in the 1950's and 1960's to fill unwanted jobs of the white British economy, so in the 1970s and 1980s South Asians occupied a residential entrepreneurial niche (Barrett and McEvoy, 2006). Native populations often fill union jobs and immigrants often get the non-union jobs. It has been observed that union workers tend to get better pay, working conditions and benefits than their non-union counterparts (Freeman, 2000; Gilbertson, 1995; Waldinger, 1996a). A good union will

often be very vocal and fight for working conditions. An example of a worker union fighting for working conditions was in 1998 during the GM/United Auto Workers dispute. As a result of this dispute all automobile production was shutdown in North America until working conditions were improved (Herod, 1999). Non-union day laborers would never have the organization to put together such a powerful labor dispute. Undocumented workers would never voice such complaints because of the fear of being discovered as undocumented and then deported.

Dual Market Theory applies to Latin American immigrant workers who migrate to NYC. Latin Americans workers are migrating to the smaller, non-union, more hazardous jobsites because Native New Yorkers find those unattractive. The native New Yorker would prefer a large union job with all its benefits (workers compensation insurance, health benefits for the employee and employees family, retirement plan including social security and 401K plan, paid vacation and paid holidays, to name a few) (Stewart, Field observations 1990-2009). Latin Americans are migrating to these jobs because Latin Americans have the highest population of unskilled and undocumented workers in NYC, and as previously discussed above, they do not want to take a documented job for fear of deportation, while they can get high untaxed day laborer pay (Stewart, Field observations 1990-2009).

Unions will never get upset or protest these small (under six stories or under 1 million dollars) non-union jobsites because the large jobs usually supply enough skilled job openings for the union workers. However, the unions will get very upset if a large site contractor hires non-union workers or if a large site union contractor starts to hire union workers as non-union workers due to a poor economic climate such as that which

occurred in the Spring of 2009. The unions get very upset when they see non-union workers taking skilled jobs for less pay and benefits because this erodes the wages and benefits that the union worked hard to acquire for all its workers. This sets up conditions for an extremely unsafe job site. Below is a photo (Photo # 1) taken at an unusually large non-union jobsite in Manhattan. The photo shows Local 79 union carpenter workers protesting by using a large inflatable rat to demonstrate that the employer who hired the local 79 "union workers" as "non-union workers" is a "rat", because the employer won't pay the proper union wages and proper benefits (Stewart, Field observations, 1990-2009).

The majority of the time the author observes this particular scene, with the inflatable rat, is in less complex situations where the employer simply just never hires union workers. In these situations the union simply places the rat in front of the site as an intimidation tactic to get the employer to sign a union contract and to get the employees to join the union (Stewart, Field observations, 1990-2009).

The author has asked the employers and employees on the site in photo # 1 why is it that this new scenario has emerged consisting of union workers and union employers acting as non-union. The employers stated that rather than stop work because they could not afford to pay union wages they decided to hire the union workers as non-union and give them non-union pay. The employees stated that instead of going unemployed and getting no pay, they decided to work and get lesser pay acting as non-union employees (Stewart, Field observations, 1990-2009).

Photo # 1 (Author's photo)

Local # 79 Union Carpenters protest an employer hiring skilled "union workers" as "non-union workers". They protest lack of proper wages and benefits by using a large inflatable rat. Undocumented Latin American day laborers could never hold such a protest for fear of deportation

World Systems Theory:

World Systems Theory explains that while the flow of capital and goods spread from the global business cities or cores to the periphery, the international flow of labor moves in the opposite direction. The cause of this is capitalist investments that displace labor from the business cores, which then results in a flow of replacement labor immigrants to those cores (Airriess and Miyares, 2007). A good example of this is Japan, which with its low and still declining birth rate, its aging population, and its high standard of living, found itself turning increasingly to migrants from poorer countries in Asia and even South America to satisfy its labor needs (Massey, et al, 1993).

World Systems Theory seems to apply to occupational fatal accidents in the Latin American community in NYC. Between 1990 and 1997 over 250,000 native-born whites (roughly one fifth of the 1990 total) left the city's workforce. Native white New Yorkers moved to the suburbs (or beyond) to businesses and/or living areas that have migrated from the city's core. Some have also retired from the labor force. The jobs left by this group created employment vacuums filled by different, and younger, other groups (Wright and Ellis. 2001). Since Latin Americans have the highest population of undocumented and unskilled workers in NYC and native white New Yorkers are not there to fill the most hazardous jobs, Latin American immigrants were the most likely to fill the void left after the native white New Yorkers moved from the city's core (Stewart, Field observations 1990-2009).

Network Theory:

Network Theory describes how immigrants form social networks or enclaves to reduce the risk of migration, settlement, and employment. Immigrants form networks from origin to destination countries. In other words social capital is used to reduce the risk of migration, settlement, and employment (Airriess and Miyares, 2007). In the destination country, ethnic enclaves are formed. Many immigrant and ethnic work groups tend to cluster in ethnic niches or ethnic enclaves (Ellis, et al, 2004). Immigrants tend to cluster where ethnic job networks are (Wright and Ellis, 1997). An example of this is Little Portugal in Toronto. Little Portugal formed as a self-sufficient economy based on a need to live near friends and relatives of the same ethnic backgrounds. A strong ethnic enclave developed and Portuguese entrepreneurs have followed a community-oriented strategy for Portuguese immigrants in business practice (Teixeira, 2006).

In NYC, Black Americans replaced Germans and Irish in factory, garment, and hotel work. Now the Black Americans are being replaced by Hispanics, Afro-Caribbeans, and Asians (Waldinger, 1996b). The immigrant enclaves provide work opportunities until the worker assimilates into the new country (Waldinger and Bozorgmehr, 1996). Enclaves delay acculturation (Bailey and Ellis, 1993). Enclaves survive when they have money, skills, and a flow of immigration (Wilson and Portes, 1980). Enclave members who belong to a union get more benefits than if they did not belong to a union (Gilbertson, 1995). The immigrant workers also have a great deal of control in the enclave space and control who else works there (Tonkin, 2000).

The fatalities in this study suggest the existence of social networks or enclaves with Latin American workers in the study area. Evidence for this comes from sites that have multiple fatalities, such as: The October 24, 2001 scaffold collapse where five Ecuadorian workers died in zip code 10003, which is located in the Gramercy Park area of Manhattan; a clothing store fire on December 8, 1995 where five Latin Americans died in zip code 10027, located in the West Harlem section of Manhattan; and the five Latin American fatalities at the Brooklyn recycling plants during 1995-2001 in zip code 11237, known as the East Williamsburg section of Brooklyn. These multiple fatalities hint toward some form of network that draws these immigrants together in these common places. In comparison, there are no "five fatality" locations for Non-Latin American workers. It appears that these social networks or enclaves are set up to keep a flow of Latin American immigrants to the most hazardous workplaces, because as discussed in, "Dual Market Theory" above, Native New Yorkers find these more hazardous labor intensive jobs unattractive. During the investigations of these fatal accidents, the author has confirmed the existence of social networks with Latin American workers. In the case of the January 24, 2001 scaffold collapse, the surviving workers explained how they were day laborers picked up off the street corner and getting $100 dollars per day "off the books". They stated that they preferred working "off the books" because they were undocumented and could make more money this way, and also make more money than doing something less hazardous. The author has made endless field interviews with Latin American workers stating exactly the same thing on countless other sites as well (Stewart, Field observations1990-2009).

The author has also made other observations while conducting OSHA inspections to confirm the existence of Latin American social networks or enclaves. Those observations include networks of Latin American day laborers that organize in preset

Photo # 2 (Author's photo)

Latin American day laborers line the corner at Coney Island Ave and Ditmas Ave. waiting to get picked up by any contractor.

locations in order to get picked up by employers that are looking for day laborers. The author has observed these day laborers will regularly line the streets in Brooklyn on 86th Street from 20th Street to New Utrecht Avenue, and on Coney Island Avenue and Ditmas Avenue, (Photo # 2) just to name a couple of locations.

The author has also stopped at these locations during OSHA outreaches to educate the Latin American workers about safety, but when the author pulled up, he was repeatedly mistaken for a prospective employer. The workers took the Spanish language safety literature but they all seemed more interested in wanting to know if the author had a job for them. The prospective workers took the information out of courtesy but the day laborers were more interested in getting a day's work (Stewart, Field observations 1990-2009).

Institutional Theory:

This theory explains how non-profit institutions like churches and humanitarian organizations emerge to assist potential immigrants (Airriess and Miyares, 2007). A good example of this was in Los Angeles with the Japanese American ethnic economy "Little Tokyo". In 1994, after the Northridge earthquake, the effects of a recession were felt in "Little Tokyo". As a result, Japanese American cultural, community, and religious organizations played a crucial role in the recovery of the immigrant community. These institutions sharpened transnational ties with import of films and music from Japan, and helped in building high rise homes for seniors (Smith, J., 2006).

The author has observed at least 4 institutions attempt to reach out and help the Latin American immigrants get safe jobs. The first organization began in 2002 when a

community group in Brooklyn called the "Latin American Workers Project," set up a safe pick up area for day laborers on Bay Parkway between the promenade along the Hudson River and the Caesar's Bay shopping area. (Photo # 3). A temporary building was erected where day labors could wait for contractors and stay warm. The contractors that picked up the day laborers made a promise that they would provide safe working conditions and insurance. This is still active as of this writing (Stewart, field observations, 1990-2009).

The second is a not-for-profit watchdog group call New York Committee for Occupational Safety and Health (NYCOSH). The author observed them on many occasions doing outreaches, training, and seminars to try and educate the Latin American community in safety and health (Stewart, Field observations, 1990-2009).

Third is the Union of Needle Trades and Industrial Textile Workers (UNITE). This is a union that organizes workers in the garment manufacturing section of Manhattan. These workers are of predominately Latin American origin. There purpose is to promote better safety and working conditions for its workers. The garment manufacturing industry is basically a low hazard industry however in NYC it is known for its fire hazards due to congestion for work space (Stewart, Field observations, 1990-2009) There was only one garment-industry-related fatality in this study which occurred on January 1, 2000 as a result of a fire in a garment manufacturing building on 260 West 36th Street in Manhattan, in which a Latin worker fell 5 stories to his death trying to escape a fire (USDOL/OSHA, 2006). The biggest worker fatality in NYC's history occurred in the garment industry in 1911 when a fire broke out in the Triangle Shirt

Photo # 3 (Author's photo)
"Latin American Workers Project" trailer set up at Bay Parkway near the Caesar's Bay shopping area in Brooklyn to help Latin American day laborers get safe jobs.

Factory at 21-23 Washington Place in Manhattan, and 146 immigrant workers died due to poor fire safety (Cornell University, 2009).

Fourth is OSHA, which also has done countless outreaches, training, and seminars to educate the Latin American community in occupational safety and health

requirements. One outreach in particular that stands out is when a famous professional wrestler Rey Mysterio did a series of public service announcement on Spanish television during professional wrestling programs. He spoke for OSHA in Spanish about the protections that OSHA provides for all workers, undocumented or not (Stewart, Field observations, 1990-2009).

Human Capital Theory:

Human Capital Theory states that some immigrant groups can market their skills and education obtained in their native countries. Workers who lack skills and education tend to settle with the most hazardous jobs (Borjas, 1986; Miyares, 1998; Portes and Zhou, 1992). Frequently those jobs have no required insurance or benefits. Nationally, health risk factors are elevated for Hispanics who are undocumented because they have no health coverage and there are social and economic disadvantages (NHLBI website, 2006). In the study area, immigrants from the former Soviet Union are an example of immigrants with a high amount of human capital. Many are educated professionals (Miyares, 1998). On the other hand, Mexican immigrants are an example of a group with low human capital. Many arrive undocumented with no skills or education (Smith, R., 2001).

The Human Capital Theory clearly applies to Latin American occupational fatal accident victims. This is exemplified by the two worst fatal accidents in the study both resulting in five Latin Americans dying on each job. During the study period there is no non-Latin occupational fatal accident that had as many deaths in one event. What can be

concluded here is that Latin Americans are migrating to these more hazardous jobs more than non-Latin Americans.

Disadvantage Theory*:*

Disadvantage Theory for working immigrant groups states that when immigrants have no place to live and no English language skills, they tend to get the most hazardous jobs (Bonacich, 1973; Min, 1988; Miyares, 1998). Again, in the study area, immigrants from the former Soviet Union have fewer disadvantages, because they often have English language skills and their refugee status helped them with their relocation and employment (Miyares, 1998). In the study area, Mexican immigrants are considered disadvantaged. Many come with no place to live and no English language skills (Smith, R., 2001).

Government involvement can help unskilled disadvantaged immigrants. One such example was in Southern California farms in the 1920s and 1930s where government involvement allowed for Mexican immigrant workers to go on welfare during the off-season. This proved to be more profitable for the Mexican immigrant workers than when farmers were in control during the off-season and could not afford to pay the Mexican workers. This government involvement also proved to be more profitable for the farmers because from this pool of Mexican immigrant workers, they were able to rapidly deploy a large working staff of laborers when needed during the harvest season. If the Mexican immigrants were not there, the farmers could have lost their crops because of the lack of manpower to do the harvesting (Walsh, 1999).

The disadvantaged usually are in areas with high populations and social disorganization such as low economic status, detached family structure, congested living

and working areas, and this can lead to high crime rates (Kamber et al, 2000; Swartz, 2000). Crime statistics for serious crimes (Uniform Crime Reports) are related to smaller crimes and "quality of life" issues (Bratton, 1998). A hazardous work environment can be considered an example of a poor "quality of life" issue.

A literature review by the author in an unpublished Master's Paper in 1991 examined empirical studies concerning occupational accidents. The author calculated that out of 13 factors examined, "a good quality of life work environment" (good housekeeping, cleanliness, light, lack of congestion, orderliness of the site rather than disorder) was tied for first place with, "the way workers were trained" (positive reinforcement and management involvement rather than punishment) for reducing worker accident rates. (Stewart, 1991).

Current research in geography of industry and environment indicates that the most environmentally hazardous plants tend to set up in the poorest and most disadvantaged neighborhoods. They settle in these neighborhoods because the unskilled and economically disadvantaged residents lack the political and economic resources to resist them, and because lesser skilled workers are attracted to the availability of jobs and the low cost of housing in these areas (Harvey, 1997; Bowen, et al, 1995). This is true of heavy construction in an area which is a sign of prosperity and a good economy. City construction patterns differ with time and technology (Vance, 1991). Construction of large buildings is an example of the global economy (Ford, 1988). Even though job sites that are of a greater size or height may have greater potential for work hazards, these sites usually attract elite contractors with more skilled union labor.

Smaller size companies may find it more difficult to succeed in business than larger companies. NYC has many policies of stopping work and issuing fines for improper zoning, excessive noise, and other quality of life complaints that affect the smaller company's ability to survive in a greater way than it affects the larger companies (Curran and Hanson, 2005). Larger companies on larger jobs are better able to hire engineers, architects, and expeditors to handle these issues before they arise, when smaller contractors can't even figure out the maze of laws that apply to each project. This may provide an incentive for smaller companies to want to break the law by doing such things as hiring the disadvantaged undocumented day labor, and not providing worker insurance or worker safety equipment.

The Disadvantage Theory also applies to Latin American occupational fatal accident victims. The data show that Latin American immigrants get the most hazardous jobs. As in Human Capital Theory, this is exemplified by the two worst fatal accidents in the study both resulted in five Latin Americans dying on each job. During the study period there is no non-Latin American occupational fatal accident that had as many deaths in one event.

Recent Latin American immigrants in NYC were an example of an immigrant group that was arriving undocumented in a clandestine way with no place to live and no English language skills (Smith, 2001; Jokisch, 2002; Jokisch and Pribilsky, 2002). What these two fatal accidents suggest is that they were also migrating to these more hazardous jobs in NYC more than the non-Latin Americans.

Employers at these sites take advantage because they know that many Latin American immigrants don't have permanent residency. Sometimes the employers will

abuse the employees' benefits and rights by taking money away from them, making believe it is going to some benefit (like medical insurance, or workers compensation insurance, etc) when it is just going into the employer's pocket (Wright, et al, 2000). The researcher has observed this on many occasions, specifically during the fatal accident on October 24, 2001 in zip code 10003, Manhattan's Gramercy Park, where five Ecuadorian day laborers died in a scaffold collapse. The investigation revealed that the employer was given money by the owner of the building to pay for benefits for the workers, but the employer pocketed the money, hired day laborers, and gave them no benefits (Stewart, Field observations 1990-2009).

Unions are supposed to be set up for the benefit of workers. However the author has observed unions are sometimes not set up not for the benefit of the workers but for criminal racketeering purposes. An excellent example of this is the five Latin American fatal accidents that occurred in East Williamsburg Brooklyn's zip code 11237 in waste handling plants. The author observed that even though these workers all belonged to a union, there was evidence that all these Latin American workers were day laborers. Early on in the investigations, it was unclear why the employers did not have good personal data on the victims. The OSHA investigators knew that the employees had no English language skills and suspected that the employees were homeless. Finally, the OSHA investigators learned after the OSHA investigations were concluded that the union involved, Local 813 Teamsters, was indicted and convicted of Labor racketeering charges in an unrelated criminal investigation. It was known as the largest union racketeering conviction ever. The union did not give the employees benefits even though the workers were paying for them (National Legal and Policy Center, 2009). This union took

advantage of the fact that the Latin American immigrant employees were disadvantaged by not having a place to live and no English language skills. They knew the undocumented employees would not complain for fear of deportation and losing their jobs (Stewart, Field observations 1990- 2009)

Culture Theory

Culture Theory explains that some immigrant groups have come from cultures where they learned to succeed in business. They have a cultural propensity to be entrepreneurial. These workers get the less hazardous jobs (Kim, 1981; Min, 1988; Miyares, 1998). Again in the study area immigrants from the former Soviet Union are considered to have a cultural propensity toward being entrepreneurial (Miyares, 1998) and not as much with Mexican immigrants (Smith, R, 2001).

The Culture Theory applies to Latin American occupational fatal accident victims in the study area in a negative way. The data shows that Latin Americans are working on the most hazardous jobs. Again this is evidenced by the fact that the two worst fatal accidents in this study have resulted in more Latin American workers dying on the job than any other type of sites or with any other type of ethnicity. Five Latin American workers died on each of these jobs. These two jobs were the October 24, 2001 scaffold collapse in zip code 10003, Gramercy Park, Manhattan, and the December 8, 1995 clothing store fire in zip code 10027, West Harlem, Manhattan. During the study period there is no equal non-Latin American occupational fatal accident. The Latin Americans arriving undocumented with minimal work skills do not seem to have the cultural

propensity toward entrepreneurialism as in the Soviet immigrants in NYC (Miyares, 1998), and the Latin Americans get the most hazardous jobs in the study area.

Now that we understand the generic various migration theories the next chapter will take a look at the specific evolution of these migration patterns by examining over time the immigration laws and the major labor laws that have the most influence over Latin American Immigrants migrating to unsafe jobsites.

III – The Evolution of the Migration Patterns of Latin Americans to Hazardous Work Sites:

In the previous chapter we saw how the various migration theories explained why the unskilled undocumented Mexican and Ecuadorian workers gravitate to the most hazardous work sites in Brooklyn and Manhattan. This chapter will explain what controlled the evolution of those migration patterns of those workers to those hazardous work sites in the period from 1995-2004, that is the changes in immigration and labor laws in recent years.

The Influence of Immigration Laws on the Migration Patterns of Latin American Immigrant Labor to Hazardous Work Sites in NYC:

Diversity in the US is in part the result of the evolution of two federal processes over time: the spatial expansion of the US territories and the elaboration of immigration and naturalization policy (Miyares and Airriess, 2007). Immigration laws and asylum practices may be theorized more deeply as a set of flexible responses by the government that turn on identity construction at different scales, and that aim to mediate transnational relations (Mountz, et al, 2002).

Immigration to the US can be divided up into 5 distinct periods. First was the colonial period when the focus was on who could reside in the colonies in the 1700's. Second was the territorial expansion period in the 1800's. During this period, much of the focus was on who would work and be part of the expansion West to California during the gold rush and construction of the railroad from the Atlantic to the Pacific. This period was marked with increasing negative reactions to Chinese immigrants who were perceived as “The Other” and taking wealth and jobs from the earlier settlers. The third

period began with the Chinese Exclusion Act of 1882. This was a period of legislative responses to those perceived as "The Other", with increasingly restrictive immigration law and national origin limits. The fourth period was from the 1940's through present. This period involves the incremental elimination of these national origin restrictions and a shift toward a focus on family reunification and on attracting highly skilled professionals. The fifth and concurrent period which has been one of ad hoc responses to refugees and political asylees, and to those who have entered the U.S. with the intent to stay but have done so without proper authorization (Miyares and Airriess, 2007).

The laws of the two most recent eras most directly affect the immigrant worker population and the occupational fatality rate in NYC. Five immigration laws will be discussed here: The Immigration and Nationality Act of 1952; The Immigration Reform and Control Act of 1965; The Immigration Reform and Control Act of 1986; The Diversity Immigrant Visa Program beginning in 1990; and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996.

Immigration and Nationality Act of 1952:

One component of the Immigration and Nationality Act of 1952 makes employment of unauthorized aliens unlawful (USDOL, 2007). This has a mixed impact on Latin American immigrant workers in that they have both the highest population of undocumented workers in the NY area, and the highest population of documented immigrants in the NY area (US Census, 2006). The 1952 Immigration and Nationality Act also made all nationalities eligible for citizenship and eliminated gender-based discrimination with respect to immigration. It retained a quota system that was

previously established, but allowed previously excluded immigrants from the Asia Pacific Triangle. The countries of the Asia Pacific triangle included China, India, Afghanistan, Arabia (Saudi Arabia), Burma (Myanmar), Siam (Thailand), the Malay States (Malaysia), the Dutch East Indies (Indonesia), Asiatic Russia west of the Ural Mountains, and most Polynesian Islands. It created a four-tiered preference system for the allotment of quota visas: For highly skilled professionals whose services were needed; for family reunification of parents of US citizens over age 21 and unmarried adult children of US citizens; for spouses and unmarried adult children of permanent resident aliens; and for extended family members (brothers, sisters and married children of US citizens and accompanying spouses and children) (Miyares and Airriess, 2007, pp. 36-38).

Elements of this act inspired the population of undocumented, uneducated, and unskilled Latin American workers to gravitate to the most hazardous work sites in NYC. Making employment of unauthorized aliens illegal inspired the illegal aliens to hide from view. Allowing preference for highly skilled professionals helped the skilled professionals but not the unskilled uneducated who now had another reason to enter undocumented. Allowing preference for family reunification permitted the unskilled and uneducated Latin Americans to join their family members who had entered with documentation. The more hazardous jobs were smaller, clandestine, nonunion jobs sites that were abundant in the poorer areas, where the worker and residential populations was high. Latin Americans sought these jobs because they believed it was more profitable to get higher pay as a day laborer at a high risk construction job than on an “on books” low risk job, and live with the fear of deportation. This fear of deportation also made it

unlikely for these workers to complain of any unsafe conditions on these clandestine jobs (Stewart, Field observations, 1990-2009)

The Immigration Reform Act of 1965:

One key weakness of the Immigration and Nationality Act was the continuation of immigrant quotas. The Immigration Reform Act of 1965 amended the earlier act by eliminating quotas. This act ended systematic discrimination in terms of national origin. (Miyares and Airriess, 2007, p27) This act revised and expanded the preference system giving greater focus to extended family reunification (Miyares and Airriess, 2007).

This act helped persons fleeing communism or areas in the Middle East. In addition, spouses, unmarried minor children, and parents of US citizens were allowed to enter without being part of the national totals. Working professionals such as doctors, artists, and special trade workers that were in short supply in the US were given preference (Kraly and Miyares, 2001; Wright and Ellis, 2001). Visa ceilings of 170,000 visas for the Eastern Hemisphere, and 120,000 visas for the Western Hemisphere were set, with a maximum of 20,000 visas for each country (Miyares and Airriess, 2007, p39). In 1978 the hemisphere ceilings were replaced by a global ceiling of 290,000, and subsequently, Congress sets annual global ceilings. However to this day 2/3 of all post-1965 immigrants enter on non-preference family reunification visas (Miyares and Airriess, 2007 p.40). The Immigration Reform Act coincided with economic and political crises in a number of Latin American countries, such as Columbia, Ecuador, Dominican Republic, and Cuba. As a result, these immigrant groups began to establish

themselves in the U.S. at this point in time. Until then most immigrants were coming to the U.S. from neighboring Mexico (Miyares and Airriess, 2007, p., 40).

This act contributed to an increase of undocumented uneducated unskilled Latin American workers gravitating to more hazardous jobsites because of the extended family reunification provisions. Allowing preference for family reunification permitted the unskilled and uneducated Latin Americans to join their families in NYC and as in the Immigration and Nationality Act of 1952 above, it is more profitable to get higher pay as a day laborer at a high risk construction job than on an "on the books" low risk job, with the fear of deportation (Stewart, Field observations, 1990-2009)

Immigration Reform and Control Act of 1986:

The Immigration Reform and Control Act of 1986 permitted undocumented aliens to change their status to legal resident despite having entered illegally and their families could join them if they could prove they lived in the U.S. continuously and a minimum of five years (Kraly and Miyares, 2001). This law benefited all immigrant workers regardless if they entered legally or not. This act took some stress away from the fear of deportation in the minds of the undocumented Latin American immigrants in NYC. This reduction in the fear of deportation may have limited the pressures on Latin American immigrants to accept work at hazardous jobsites that were the typical venue of Latin Americans. On the other hand, even though this Act permitted more Latin American immigrants to become documented, they still may have preferred the lure of greater immediate pay as an unskilled day laborer, rather than paying taxes and contributing to benefits (Stewart, Field observations, 1990-2009).

The Diversity Immigrant Visa Program (Green Card Lottery Program):

The Diversity Immigrant Visa Program made available 50,000 permanent resident visas annually through a lottery, to persons from countries with low rates of immigration to the United States. Requirements include at least a high school diploma, or its equivalent, or two years of work experience in an occupation requiring at least two years training. The ineligible countries change from year to year, and are determined by identifying countries that sent 50,000 immigrants in the previous five years. The term "50,000 immigrants", refers only to people who immigrated via the family-sponsored, employment, or immediate relatives of US citizen categories, and does not include other categories such as refugees, asylum seekers, Nicaraguan and Central American Relief Act asylum beneficiaries, or previous diversity immigrants. For example, Cuba, Ukraine, Bosnia and Herzegovina, Guatemala and Iran are not on the ineligible list despite sending over 50,000 immigrants in the previous five years. Ecuador and Guatemala have been added to the ineligibility list since the 2006 immigration statistics show over 50,000 family or employment immigrants from those countries in the period 2001-2006. There were 53,502 for Ecuador and 52,120 for Guatemala.

The visas are distributed on a regional and national basis, with each region that sends less immigrants to the US than in the previous 5 years will receive more diversity visas. Currently, Africa and Europe receive about 80% of the visas in the lottery. The following countries are currently ineligible: Brazil, Canada, China (mainland-born), Columbia, Dominican Republic, El Salvador, Haiti, India, Jamaica, Mexico, Pakistan,

Peru, Philippines, Poland, Russia, South Korea, United Kingdom (except Northern Ireland) and its dependent territories, and Vietnam (US Dept. of State website, 2007).

In 2006, the diversity visa lottery moved entirely to the Internet. It remains to be seen what effect this will have on the applicants that have varying degrees of access to the internet and varying degrees of skills in its use (Miyares and Airriess, 2007).

In the study period, the following Latin American countries benefited from this program: Ecuador, Guatemala, Brazil, Columbia, Dominican Republic, El Salvador, Mexico, and Peru (US Dept. of State website, 2007). Those who entered under this program and went to NYC would have had a reduction in the fear of deportation. This lack of fear of deportation can contribute to Latin American immigrants not gravitating to the more hazardous jobsites. On the other hand as above, even though the Latin American immigrants were able to become documented as a result of this act, they still may have preferred the lure of greater immediate pay as unskilled day laborers not paying taxes and benefit contributions (Stewart, Field observations, 1990-2009).

Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA):

The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 increased the patrolling of the border and created more stringent penalties for those who entered unlawfully or who smuggled undocumented immigrants into the country. Deportation procedures were reformed, expediting removal and making re-entry more difficult. It also required the foreign-born to provide proof of citizenship or lawful immigration status to receive public benefits and gave states the authority to limit the general public cash benefits given to immigrants. College students needed to show proof

of lawful status and residency to receive public higher education benefits such as in-state tuition. Persons sponsoring family members needed to show proof of financial ability to support the immigrant. This law was portrayed an unjust treatment of Latino immigrants, but it withstood legal challenges (Miyares and Airries, 2007).

This law definitely increased the fear factor for deportation in undocumented Latin American immigrants in this study. This fear is undoubtedly a factor that can push undocumented Latin American immigrants to gain employment on the more hazardous higher paying "off the books" job sites.

The purpose of this chapter is to obtain a better understanding of the migration forces that bring Latin American immigrants to the most hazardous worksites in Brooklyn and Manhattan and subsequently develop spatially targeted preventive programs. In Chapter II we saw that Mexicans and Ecuadorians were the predominant Latin Americans migrating to NYC and they had the largest amount of undocumented and unskilled entrants. In this chapter we can see how the immigration laws caused the evolution of this migration. We see the changes in immigration laws resulting in source region shifts to Latin America and Asia, and make it more difficult for potential immigrants from Europe to obtain visas. We also see laws for extended family reunification which permitted Mexican and Ecuadorian relatives to join their families already in NYC, regardless of their education or skills.

In summation, the immigration laws created the opportunity for unskilled, uneducated Latin Americans to enter the US, and in NYC they found low skilled, high

paying, highly hazardous construction jobs as day laborers, working "off the books" with no benefits. These jobs are more immediately attractive to the unskilled and uneducated than making less money in a less hazardous job "on the books" and paying taxes and benefits.

The Influence of Labor Laws on the Migration Patterns of Latin American Immigrant Labor to Hazardous Work Sites in NYC:

Laws have made work spaces safer, increased the quality of life, and made work places more pleasant. There are five major labor laws that have a relationship with all labor issues in the United States: The Occupational Safety and Health act of 1970; The Fair Labor Standards Act; the National Labor Relations Act, the Social Security Act; and the Sixteenth Amendment to the Constitution of the United States.

The Occupational Safety and Health act of 1970:

As discussed earlier, this act provides safety and health laws for workers. This act does not discriminate by immigration status. Safety and health regulations are enforced equally for immigrants (documented or undocumented) and non-immigrants (US Dept. of Labor 2007). OSHA inspectors are given strict instructions never to report a worker's immigration status to any other governmental agency. This is so immigrant workers can feel free to complain about safety and health without fear of loss of their job or deportation. On the other hand, because OSHA is a governmental agency, it is required to share its information with other law enforcement agencies that have initiated separate investigations on there own. In other words, if the US Department of Justice wants to

know if the OSHA inspector suspects undocumented workers, then OSHA would release all necessary information to the Justice Department. Undocumented Latin American immigrants may not be aware that OSHA is not interested in immigration status for safety enforcement, so they will not complain to OSHA when a job is unsafe. The author has observed on many occasions Latin American workers, and their employers, running from the OSHA inspectors. This is especially so on smaller, non-union sites, in poorer areas, where the residential and worker population is dense. Employees from these sites complain less to OSHA, but when OSHA does get to these sites, they are usually violation-plentiful. Employers that hire undocumented Latin Americans in NYC are usually not interested in being law-abiding, so there will violate other labor laws as well (Stewart, field observations 1990-2009).

The Fair Labor Standards Act:

The Fair Labor Standards Act provides laws for minimum wage, overtime, record keeping, and child labor provisions (US Dept. of Labor, 2007). Employers who do not provide minimum wage, deny adequate overtime pay, do not keep pay records, or hire underage workers, are in violation of this law. These employers are also the most likely to disregard the safety and welfare of the employees and operate the more hazardous worksites.

The highest population of undocumented workers in NYC is Latin American immigrants (Smith, R., 2001; Jokisch and Pribilsky, 2002), and they know they can migrate to the more hazardous sites because that is where they can be less visible and not be caught as undocumented (Wright, et al, 2000). The author has observed this

phenomenon while doing joint fatal investigations with the US Department of Labor, Wage and Hour Division on Latin American fatal sites. The author has observed first hand workers and bosses running, as if for their lives, when the Wage and Hour investigators announced themselves. Employers on these sites are aware of the fact they are hiring undocumented workers. They do this because they are usually small employers and don't want to have the burden of recordkeeping and taxes. Like OSHA, this law for fair wages is enforced equally for all workers, documented or not.

In conclusion, the more hazardous job sites tend to disregard the Fair Labor Standards Act laws. As a result, these laws have little protective effect on the workers on these sites. The way this law affects the migration patterns of Latin American immigrant workers in Brooklyn and Manhattan is that it assists in driving the undocumented workers and unscrupulous bosses underground. The workers avoid governmental contact to avoid deportation, and employers avoid governmental contact so as to avoid from being fined for violating wage and hour law or even jailed for tax evasion. Ultimately, the real driving force for the undocumented Latin American immigrant day laborer is to get high untaxed day laborer pay. The driving force for the employer is to get the cheapest labor, which includes avoiding most labor laws (Stewart, Field observations 1990-2009).

National Labor Relations Act:

The National Labor Relations Act of 1935 formed the National Labor Relations Board, which gives unions the rights to organize. One of the main reasons that unions

organize in the workplace is to see to it that the employer follows all labor laws and treats the employees lawfully (National Labor Relations Board, 2007).

Undocumented Latin American workers gravitate to the more hazardous work sites which are usually non-union worksites. The workers on the non-union sites have no union benefits. These workers are choosing to go to these sites for the benefits of not being organized, that is, being able to work getting day laborer pay without union dues or having to pay into a union pension and/or health plan. Along with union dues, and pension and health plans, comes taxes, and along with taxes comes the US government's ability to identify undocumented immigrants. When this happens, there is the fear of deportation. Whether deportation will occur is another question; however, the fear of deportation is real. The undocumented Latin American workers are not willing to organize, thus the migration effect of this law is that it drives these workers toward the non-union sites (Stewart, Field observations 1990-2009).

On the other hand, sometimes unions are corrupt and are organized for the purpose of exploiting the immigrant worker and giving cash kickbacks to the employer. In labor jargon this is known as a Sweet Heart Union. An example of a Sweet Heart Union is Local 813 Teamsters. This union was involved in five Latin American fatal accidents in recycling plants in the Brooklyn zip code 11237, an area know as Bushwick. Latin American immigrants gravitated to these unions because they were hired as day laborers and the union and employers kept the money from the employee's benefit contributions. When this was discovered by the authorities, many of the union officials went to jail (National Legal and Policy Center, 2008). This will be discussed in greater detail later in this study.

Social Security Act:

The Social Security Act requires employee payroll deductions and employer contributions for federal benefits, including retirement, disability income, veterans' pensions, public housing, and food stamps. Presently this is set at a rate of 6.2 percent for employers and employees each (Social Security Administration, 2007).

Employers who do not make Social Security contributions usually do this because they are trying to save money. Saving money on Social Security usually goes hand in hand with saving money on safety equipment and safety training. Jobs with no Social Security are usually more hazardous jobs. Undocumented Latin American immigrant workers gravitate to these more hazardous jobs. These workers are choosing to go to these sites for the benefits of being able to work getting high hazard day laborer pay in cash without taxes or payroll deductions. Social Security benefits come along with taxes and the possibility of being identified as an undocumented immigrant. When this happens, there is the fear of deportation, whether real or perceived. Thus, undocumented Latin American workers are not willing to get involved with jobs that have Social Security benefits because they fear deportation, resulting in undocumented Latin American workers being more secretive and to avoid all government contact (Stewart, Field observations 1990-2009).

The Sixteenth Amendment to the Constitution of the United States:

The Sixteenth Amendment to the Constitution of the United States declares that Congress shall have the power to lay and collect taxes on incomes, from whatever source derived. This constitutional amendment was passed in 1909 and ratified in 1913. The

Internal Revenue Service (IRS) of the Department of the Treasury is the agency tasked with collecting income taxes. Depending upon income, the tax rate can be anywhere from 0% for very small incomes to 35% for very high incomes (US Dept. of Treasury/IRS, 2009)

An undocumented Latin American day laborer in NYC who would get paid approximately $125 per day, and work five days a week and 50 weeks per year, would have an income of $31,250. This income would be taxed by the IRS at approximately 10% (US Dept. of Treasury/IRS, 2009).

Employers and employees who do not pay their taxes usually do this because they want to save money. Saving money on taxes usually goes hand in hand with saving money on safety equipment and safety training. Jobs where no taxes are paid are usually more hazardous jobs. Undocumented Latin American immigrant workers gravitate to these more hazardous jobs for the benefits of being able to work getting high hazard day laborer pay in cash without having to pay taxes. Along with taxes comes the possibility of being identified as undocumented immigrants. When this happens, there is the fear of deportation. As with the Social Security Act, undocumented Latin American workers tend to be drawn to jobs that allow them to avoid all government contact (Stewart, field observations 1990-2009).

Undocumented Latin American immigrant employees tend not to complain to OSHA, tend not to complain to the Wage and Hour Division, tend not to organize to form a formal union, tend not to pay for social security benefits, and tend not to pay taxes. They fear that if they get involved with any of the above, they may be discovered as undocumented and get deported. This fear drives large numbers of undocumented Latin

American immigrant workers to the most hazardous jobs in Brooklyn and Manhattan where there is a complete disregard for the labor laws by employees and employers.

IV - Methodology:

A major question asked by this dissertation is whether there are variables associated with the geography of Latin American immigrant worker's deaths on the job so that we can use this information to predict and prevent future similar fatalities. Based on this study's review of Latin American immigrant labor migration theory, and the related immigration and labor laws, the author would now like to propose a research hypothesis along with the expected research findings, and will discuss the methods to be used to test the hypothesis.

Hypothesis:

The hypothesis is that the spatial distribution of clusters of occupational fatal accidents for Latin Americans and Non-Latin Americans will have a unique (signature) relationship with the independent variables. The author proposes that the ethnic group with the most worker fatalities is Latin Americans, because they have the largest disadvantaged, undocumented, and unskilled population in the study area (Smith, R., 2001; Jokisch and Pribilsky, 2002; Kraly and Miyares, 2001; Airriess and Miyares, 2007); workers who lack skills and education tend to settle with the most hazardous jobs (Borjas, 1986; Miyares, 1998; Portes and Zhou, 1992; Smith 2001; Jokisch and Pribilsky, 2002); and disadvantaged immigrants who have no place to live and no English language skills also tend to get the most hazardous jobs (Bonacich, 1973; Min, 1988; Miyares, 1998).

The Latin American occupational fatalities will more likely be on jobsites that are smaller in size (less than 6 stories or less than 1 million dollars) and mostly non-union. The zip code areas will also have higher worker population densities, higher residential population densities, less OSHA inspections, and lower median household incomes.

Latin American immigrant occupational fatalities will be disproportionally on non-union sites because unionized employers make a long-term investment in their labor force which can be justified by the stability of employment afforded by documented workers. Legitimate unions will not let undocumented workers join. Unions will also train their workers, and the non-union workers do not get that training and are less skilled.

Latin American immigrant occupational fatalities will occur on smaller jobsites (less than 6 stories and less than 1 million dollars), because the unskilled undocumented workers get hired by the smaller employers and not by the large unionized elite employers.

Latin American immigrant occupational fatalities will occur in areas where the worker population is larger because those are the areas where the work is available. In addition, areas with dense worker population leads to densely populated construction sites, and that in itself leads to more hazardous working conditions.

Latin American immigrant occupational fatalities will occur in areas where the residential population is denser because unskilled, undocumented workers tend to cluster in more densely populated areas. They can blend in, work "off the books," and be more clandestine in densely populated areas.

Latin American immigrant occupational fatalities will occur in areas that have fewer “calls to service” (fewer OSHA inspections) because many immigrants fear that if they complain they may lose their jobs, so they do not call OSHA.

. Latin American immigrant occupational fatalities will occur in areas that have higher than average OSHA citations (serious or greater) per inspection, because these areas may get fewer OSHA inspections resulting from fewer “calls to service”. They are areas where poor worker safety flourishes, so when they do get inspections, there will be more citations.

Latin American immigrant occupational fatalities will occur in areas that have lower median household income, because the most unsafe employers tend to cluster in the poorest and most disadvantaged neighborhoods.

Photo # 4 is a typical jobsite where a Latin American occupational fatal accident would occur. It is a relatively small jobsite of three stories in a residential area in Brooklyn. By the outside appearance of the good quality of the face of the building it is clear that the facade will remain, and that the interior is being gutted and rehabilitated. Note the red dumpster in front of the site, which is a sure sign of demolition material being carted away. There are some obvious signs of lack of safety. The windows are not guarded and workers could fall out. There is no sidewalk canopy to protect workers from falling debris when walking in and out of the building. This canopy would also protect pedestrians from falling debris. The Department of Buildings of the City of New York requires that work permits be posted on the front of the jobsite. Note that there are no permits posted on the site. It is likely that the contractor never applied for permits. If there are no permits, it is likely there is no insurance coverage for liability or workers

compensation. The contractor most likely does this with the hope of completing the job quickly with non-union day laborers that are in large supply in the neighborhood. The contractor would be saving money on worker wages, permits, insurance (general liability and workers compensation), taxes (income and social security taxes). This type of jobsite will act like a magnet to Latin American immigrant day laborers, and have a higher accident rate per man hours worked than other sites.

Photo# 4 (Author's photo)

A typical job site where a Latin American occupational fatal accident would likely occur.

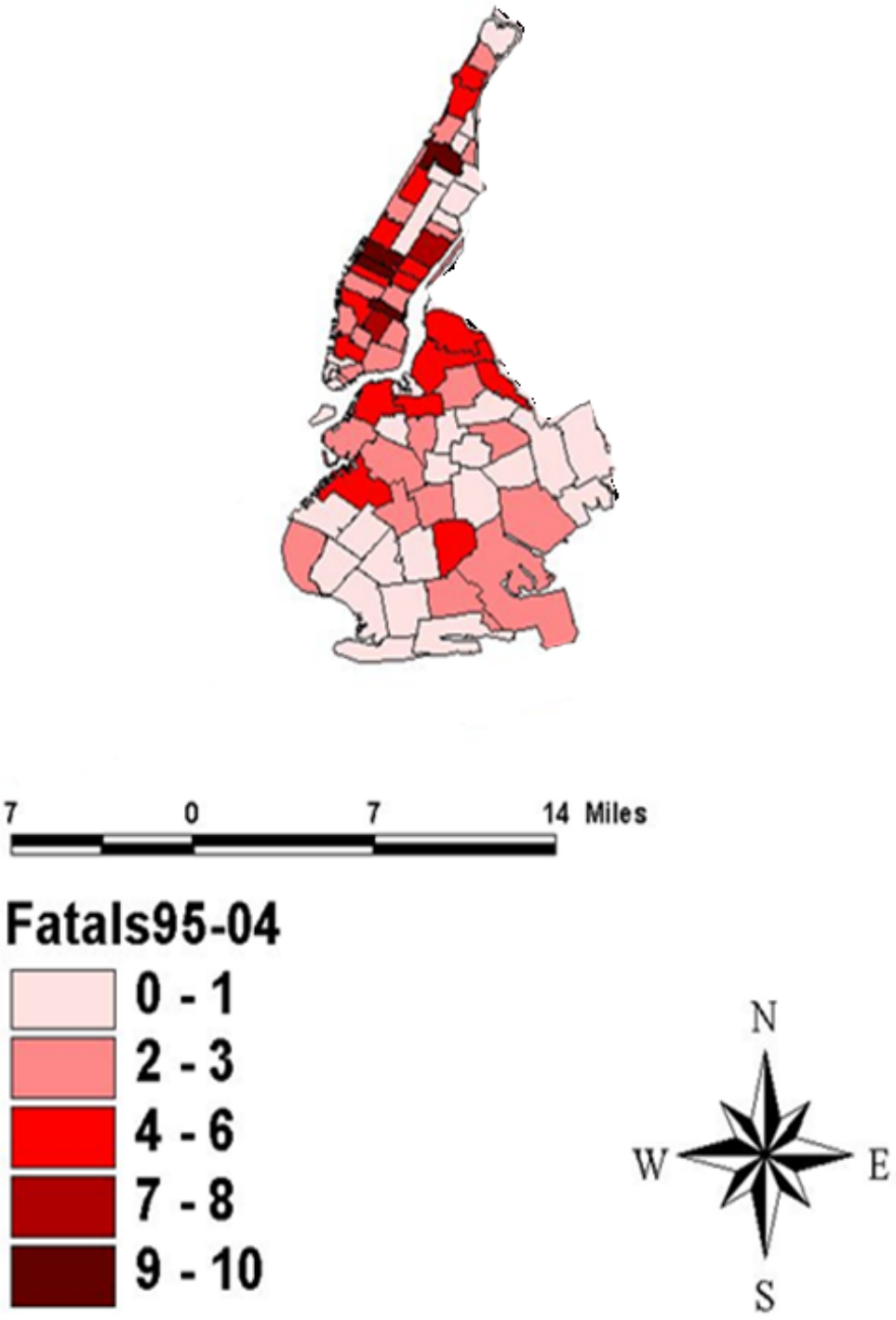
Photo # 5, on page 59, would be a typical site where no Latin American occupational fatal accident would be likely to occur. It is a relatively large jobsite of twelve stories high in a residential and office area on Columbus Circle in Manhattan. By the outside appearance of the very elaborate cocoon-like scaffold, the face of the building is being rehabilitated. Old stones are being removed and new ones installed. In contrast to Photo #4, there are some obvious signs of safety. The windows are protected by the scaffold and netting so workers and debris could not fall out. The large sidewalk canopy is present to protect the street and pedestrians from falling debris. The wide view of the photo makes it impossible to see the small permits posted, but note that there are several advertisements posted on the sidewalk shed. It is likely that the contractor applied for all its permits because the large advertisements also require permits. If there are permits, there is likely to be insurance coverage for liability and workers compensation. The contractor does this with the hope of completing the job correctly and safely with skilled union laborers that are in big supply in Manhattan. The contractor does not appear to be sparing any expense. This type of employer will pay proper worker wages, obtain all permits, get all necessary insurance (general liability and workers compensation), and pay taxes (income and social security taxes). This type of jobsite will not attract Latin American immigrant day laborers. This type of job will typically have a lower accident rate per man hours worked than other sites.

Photo # 5 (Author's photo)

A typical job site where a Latin American occupational fatal accident would not be likely to occur.

Expected Research Findings:

We already know that most of the occupational fatal accidents in the study area are occurring on construction sites and with foreign language workers. Preliminary data show that these occupational fatal accidents tend to cluster in certain zip code areas (Map 1)



Map 1
Total occupational fatal accidents by zip code from 1995-2004.

and the areas that have the most occupational fatal accidents changes from year to year. The author, who has been an OSHA investigator since 1990, expects to find that specific zip code areas can also be identified where clusters of Latin American fatal accidents are occurring and that these clusters will have a signature of "immigrant labor population geographic variables," associated with it. It is expected that Latin American immigrant worker fatal clusters may be associated with zip code areas that have more non union sites; fewer OSHA inspections; higher average OSHA citation rates; greater worker population; greater residential population density; lower median household incomes; and will occur on smaller job sites. It is expected that worker clusters of Non-Latin American fatalities will be associated with zip code areas where there are more union sites; more OSHA inspections; lower average OSHA citation rates; lesser residential and worker populations; higher median household incomes; and larger job size.

With this information in hand, OSHA can then implement a spatial model of allocation of resources by targeting this spatial profile. One possible method would be for OSHA inspectors to patrol or scout out spaces that meet this spatial profile and then initiate inspections to look for and correct possible violations that can lead to a fatal accident.

Methods:

Parameters:

Geography:

The geographic areas that this study will examine are the zip codes in the counties of New York (Manhattan), and Kings (Brooklyn), that are located in New York City (Appendixes B, and D) . This geographic area of Manhattan and Brooklyn was chosen because this is the jurisdictional area in which the author of this study has worked as an OSHA investigator since 1990. As a result, access to data in this area is readily on hand. In addition, the author has first hand experience with interacting and dealing with the different populations in the various neighborhoods being examined here (Appendixes C and E). This study includes data collected between January 1, 1995 and December 31, 2004. The geographic unit of zip code was chosen because it divides the two counties into smaller units that differences and similarities in the variables can easily be identified and compared in various degrees. Demographic data are also more readily available at the zip code level rather than at smaller geographic levels. Using geographic data at the county level would only offer a comparison between the variables in the two counties and not offer differences and similarities with all the variables in various degrees as in comparisons at the zip code level.

Variables:

Variables for each county (New York (Manhattan), and Brooklyn (Kings)):

The data used in this study were obtained from the US Department of Labor/OSHA and US Census and are aggregated at the zip code level of geography.

OSHA data were collected through the USDOL/OSHA website, freedom of information requests, and first hand field observations. US Census data were obtained from public records available in print and from American Fact Finder. The dependent variables in this study are the number of occupational fatal accidents; Latin American fatalities; and non-Latin American fatalities. For the victims from 1995 to 2001, ethnicity of each victim was determined by conducting a Google Genealogy Search, using the name of each victim. For the victims from 2001 to 2004, the ethnic group of the victims have already been ascertained by OSHA.

The independent variables are the number of OSHA serious (or greater) citations issued; worker population; residential population density (population per square mile); the number of OSHA calls to service (number of OSHA inspections); percent of fatal victims' work places associated with a union workforce; size or height of job where fatal accident occurred (amount of job sites less than 6 stories and/or under 1 million dollars); and median household income.

Techniques of Analysis:

There are a total of 81 zip code areas in the boroughs of Brooklyn and Manhattan. From 1995-2004 there have been 210 occupational fatal accidents in those zip code areas. This means that on the average there are approximately 2.6 fatal accidents per zip code area for a 10-year period. Map 1 shows that the fatalities are concentrated in Brooklyn and Manhattan. The zip code areas with the most fatal accidents had 10 fatalities in this timeframe. The zip code areas with the least fatal accidents had zero fatalities in the

same timeframe. In order to make these relatively small numbers meaningful, the author decided to use a clustering technique.

Clustering:

Latin America and non-Latin American occupational fatalities were put into separate zip code clusters. Latin American and non-Latin American occupational fatalities in zip codes with 3 or more fatalities were identified for both and were put in two separate clusters. These clusters were created in order to amplify the results by focusing on and comparing the zip code clusters that had the most occupational fatal accidents for both Latin Americans and non-Latin Americans.

Statistics:

The statistical program, "Gretl" (Cottrell, 2005) was used to conduct a Poisson analysis to determine the degree of correlation and statistical significance between the independent variables and the occupational fatalities with each group in each zip code area.

Poisson Regression Model

$$\Pr(Y=y) = \frac{e^{-v} v^{y}}{y}$$

The dependent variable is taken to represent the occurrence of events of some sort, and must take on only non-negative integer values. If a discrete random variable Y follows

the Poisson distribution, then for y=0,1,2…. The mean and variance of the distribution are both equal to v. In the Poisson regression model, the parameter v is represented as a function of one or more independent variables. The most common version (and the only one supported by "Gretl") has

$$v = \exp (BO + B1\ X1 + B2\ X2 + \ldots)$$

v= The dependent variable.

X= The independent variables.

In other words the log of v is a linear function of the independent variables. All results were tested for degree of correlation; and statistical significance (Cottrell, 2005). Appendix A includes a list of all the data used in this analysis. Additionally, the statistical program "JMP START STATISTICS" was used to graph trends. (Sall and Lehman, 1996). The following is the key for what each variable represents in the data chart in Appendix-A, and/or in the charts for the Poisson regression models in the next chapter.

Key:

-Date of Fatal- Date the fatal accident occurred.

-Total Fatals -This is the total number of fatals that occurred on the date shown.

-Latin -This is the number of Latin fatals that occurred on the date shown.

-Non Latin - This is the number of Non Latin fatals that occurred on the date shown

- Zip code - This is the zip code in which the fatal accident(s) occurred.

- Calls/zip/98 - This the number of calls to service (inspections) per zip code, that OSHA did for all inspections (fatal and nonfatal) in the calendar year 1998)

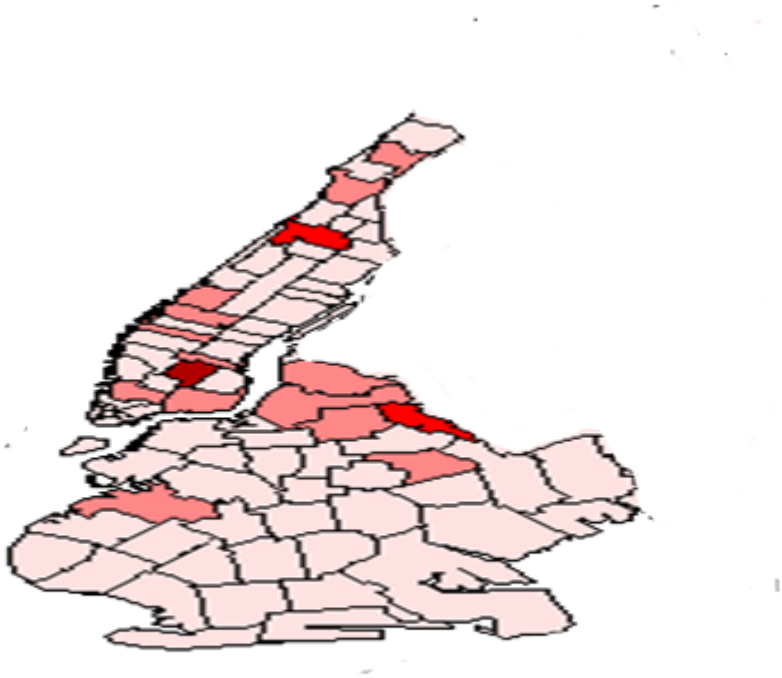
- #CitZip-in-98 - This an index for the number of citations issued for all inspections (fatal and non fatal), per zip code, conducted in calendar year 1998. Serious citations are counted as 1, repeat citations are counted as 2, and willful citations counted as 7.
- Union - If a fatal victim(s) belonged to a union then this value is 1. If the fatal victim(s) did not belong to a union then this value is 0.
- HHIncome - This is the median residential household income in 1998 per zipcode as per census data.
- Res-pop den – (Residential population density) This is the total residential population per zip code in 1998 as per census data, divided by the square miles that the zip code is.
- Workerpop - This is the total worker population in 1998 per zip code as per census data
- Jobsize - This is an index (1-7) that the researcher uses to describe the size of the job where the fatal accident occurred.

  1-5 is smaller jobs. (1-5 stories or under 1 million dollars). 6-7 is for larger jobs 6 or 7 floors or higher or over 1 million dollars.
- Construction- If the jobsite where the fatality occurred is a construction site the value here is 1. If the jobsite where the fatality occurred is not a construction site (factory, office) the value here is 0.
- +Const- appears as the first word under the word “variable” in each Poisson Analysis chart. This is a constant generated by the statistical program “Gretl,” and is not an actual independent variable used in this study.

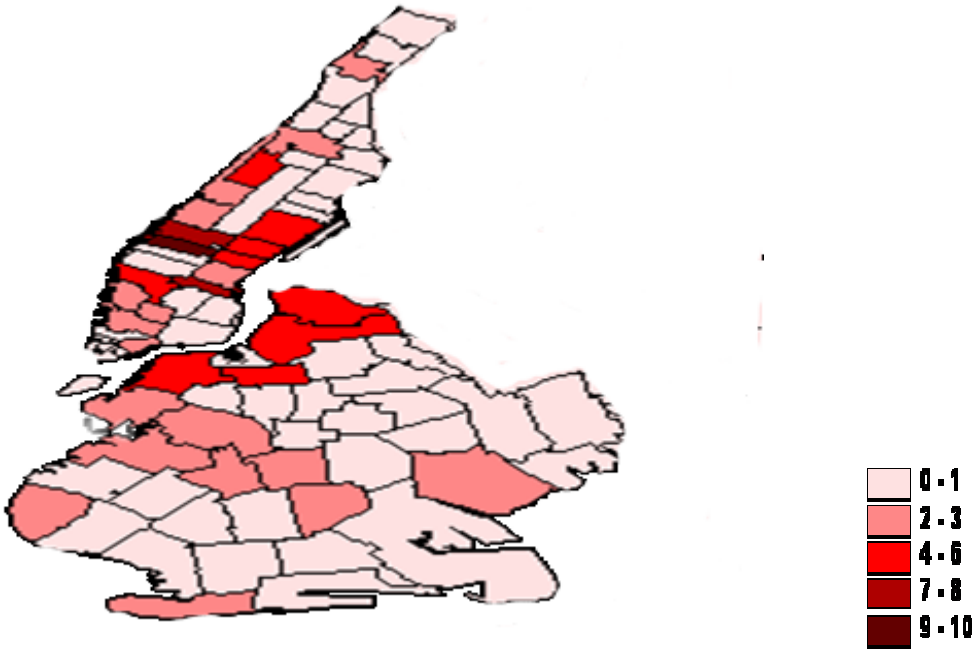
V – RESULTS AND ANALYSIS:

Mapping The Results:

Map 2 is a geographic representation of the zip code areas where the Latin American immigrant occupational fatalities have occurred. Map 3 is a geographic representation of the zip code areas where the Non-Latin American occupational fatalities have occurred. By simple observation one can easily conclude that the concentrations of occupational fatal accidents for each category are different. The top three zip code areas that had the most Latin American occupational fatal accidents were 10003, Gramercy Park, Manhattan, 10027, West Harlem, Manhattan, and 11237, East Williamsburg and Bushwick, Brooklyn. They had seven, six, and five fatal accidents respectively. The top three zip code areas that had the most Non-Latin occupational fatal accidents were, 10036, Midtown, Manhattan, 10019, also Midtown, Manhattan, and 10010, Stuyvesant Town, Union Square, and Kips Bay sections of Manhattan. They had ten, seven, and seven fatal accidents respectively. The maps infer that there are different geographical processes involved in both Latin American occupational fatal accidents and Non-Latin American occupational fatal accidents, because they mostly are occurring in different zip code areas. Note that in all the maps (Maps 1, 2, and 3) that only the boroughs of Brooklyn and Manhattan are being studied here, and all surrounding fields have no data and should be ignored.



Map 2 – Latin American Occupational Fatalities by zip code from 95-04



Map 3 - Non-Latin American occupational fatalities by zip code from 95-04

Poisson Regression Analysis of the Data and Discussion of Results:

The first analysis is the Poisson regression analysis comparing the dependent variable of Total Fatal Accidents with the dependent variables in the zip code areas with at least one fatal accident. Model 1 shows that there is no statistically significant relationship between the selected variables and fatal accidents in general. This means that Total Fatal Accidents are randomly distributed spatially in NYC. The statistical program Gretl defines any t-statistic greater than .8, as a positive correlation and any t-statistic less than -.8, as a negative correlation. These correlations are considered statistically significant when the p-value is .07 or less (Cottrell, 2005).

Model 1: Poisson estimates using the 199 observations 1-199
Dependent variable: TotalFatals

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*
+Const	0.109855	0.260593	0.4216	0.67335
Calls/zip/98	0.00134673	0.00939977	0.1433	0.88607
#citZip-in-98	0.00701648	0.0431186	0.1627	0.87073
Union	-0.0836264	0.147735	-0.5661	0.57136
HHincome	-3.73815e-06	6.48451e-06	-0.5765	0.56429
Respopden	1.54112e-06	2.66169e-06	0.5790	0.56259
WorkerPop	7.38965e-07	2.44642e-06	0.3021	0.76261
Jobsize	0.0050691	0.0300391	0.1687	0.86599
Construction	-0.0263161	0.115547	-0.2278	0.81984

Mean of dependent variable = 1.05528
Standard deviation of dep. var. = 0.514399
McFadden's pseudo-R^2 = 0.00226729
Log-likelihood = -212.225
Akaike information criterion = 442.45
Schwarz Bayesian criterion = 472.09
Hannan-Quinn criterion = 454.446

Model 2 shows the Poisson regression analysis for the dependent variable of Non Latin Fatal Accidents. The only statistically significant correlation is the positive correlation between Non-Latin Fatal Accidents and Jobsize. This means that Non-Latin Fatal Accidents are occurring on larger job sites where a greater number of employees are at risk, even if all safety mechanisms are in place.

Model 2: Poisson estimates using the 199 observations 1-199
Dependent variable: NonLatin

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*	
+Const	-0.650806	0.330785	-1.9675	0.04913	**
Calls/zip/98	0.00196995	0.0113557	0.1735	0.86228	
#citZip-in-98	-0.0108186	0.0523182	-0.2068	0.83618	
Union	-0.0274598	0.18318	-0.1499	0.88084	
HHincome	6.17328e-06	7.83967e-06	0.7874	0.43102	
Respopden	-2.21052e-06	3.24986e-06	-0.6802	0.49639	
WorkerPop	1.49742e-07	2.84873e-06	0.0526	0.95808	
Jobsize	0.0825028	0.040573	2.0334	0.04201	**
Construction	-0.178898	0.199654	-0.8960	0.37023	

Mean of dependent variable = 0.703518
Standard deviation of dep. var. = 0.479412
McFadden's pseudo-R^2 = 0.0170441
Log-likelihood = -187.37
Akaike information criterion = 392.74
Schwarz Bayesian criterion = 422.38
Hannan-Quinn criterion = 404.736

Model 3 shows the Poisson regression analysis comparing the dependent variable of Latin American Fatal Accidents. There are statistically significant correlations with several of the independent variables. There is a negative correlation between Latin American Fatal Accidents" and High income areas. This means that Latin American Fatal Accidents are occurring in zip code areas that have lower median household

incomes. There is a positive correlation between Latin American Fatal Accidents and High residential population density areas. This means that these accidents are occurring in zip code areas that have higher residential population densities. There is a negative correlation between Latin American Fatal Accidents and Large job size, meaning that these fatalities tend to occur on sites that have smaller job sizes.

There are no statistically significant correlations with Latin American Fatal Accidents and Calls/zip/98, #CitZip-in-98, Union, WorkerPop, and Construction. This means that Latin American Fatal Accidents are randomly distributed spatially with respect to these independent variables.

Model 3: Poisson estimates using the 199 observations 1-199
Dependent variable: Latin

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*	
+Const	-0.254142	0.448183	-0.5671	0.57068	
Calls/zip/98	-0.000543424	0.0171356	-0.0317	0.97470	
#CitZip-in-98	0.0570928	0.076963	0.7418	0.45819	
Union	-0.200908	0.257107	-0.7814	0.43456	
HHincome	-2.54463e-05	1.21041e-05	-2.1023	0.03553	**
Respopden	8.62548e-06	4.70079e-06	1.8349	0.06652	*
WorkerPop	2.09162e-06	4.78744e-06	0.4369	0.66219	
Jobsize	-0.154799	0.0564499	-2.7422	0.00610	***
Construction	0.0784663	0.141823	0.5533	0.58008	

Mean of dependent variable = 0.351759
Standard deviation of dep. var. = 0.656655
McFadden's pseudo-R^2 = 0.0624629
Log-likelihood = -143.173
Akaike information criterion = 304.346
Schwarz Bayesian criterion = 333.985
Hannan-Quinn criterion = 316.342

In an effort to amplify the results, the analysis was further refined by selecting only the zip code areas that had 3 or more Latin American Fatal Accidents and 3 or more

Non Latin American Fatal Accident. The zip codes and the number of fatal accidents that were included in each group are as follows:

Zip codes with 3 or more Latin American Fatals

Zip code	Number of Latin Am. Fatals	Number of Non Latin Am. Fatals
10003	7	1
10027	6	3
11237	5	1
11233	3	1
11222	3	4
10023	3	2

Zip codes with 3 or more Non Latin American Fatals

Zip code	Amount of Non Latin Am. Fatals	Amount of Latin Am Fatals
10036	10	1
10019	7	2
10010	7	2
10021	6	2
10011	6	0
11211	5	2
11201	5	1
11205	4	1
11222	4	3
10017	4	1

10022	4	1
10025	4	1
11231	3	1
10014	3	0
10027	3	6
10033	3	1
11218	3	0

Model 4 used this subset of zip code areas, using Total Fatal Accidents as the dependent variable. There are no statistically significant correlations with Total Fatal Accidents and any of the independent variables. Again this is what was expected because this set of fatal accidents is very diversified, including native born, and a diverse foreign born population.

Model 4: Poisson estimates using the 118 observations 1-118
Dependent variable: TotalFatals

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*
+Const	0.233279	0.404238	0.5771	0.56388
Calls/zip/98	0.000514944	0.0158374	0.0325	0.97406
#citZip-in-98	0.0140067	0.0577672	0.2425	0.80842
Union	-0.156557	0.185371	-0.8446	0.39836
HHincome	-1.00936e-05	1.01982e-05	-0.9897	0.32230
Respopden	5.21126e-06	5.04258e-06	1.0335	0.30139
WorkerPop	1.08729e-06	3.41751e-06	0.3182	0.75037
Jobsize	0.02236	0.0458776	0.4874	0.62599
Construction	-0.138736	0.239548	-0.5792	0.56248

Mean of dependent variable = 1.09322
Standard deviation of dep. var. = 0.666504
McFadden's pseudo-R^2 = 0.0093201
Log-likelihood = -130.283
Akaike information criterion = 278.565

Schwarz Bayesian criterion = 303.501
Hannan-Quinn criterion = 288.69

Model 5 below is the Poisson regression analysis with the dependent variable of Non-Latin American Fatal Accidents. There are no statistically significant correlations with Non Latin American Fatal Accidents and any of the independent variables. As in Model 4 above, this is what is expected because this data set is also a very mixed population.

Model 5: Poisson estimates using the 118 observations 1-118
Dependent variable: NonLatin

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*
+Const	-0.817757	0.510268	-1.6026	0.10902
Calls/zip/98	0.01105	0.0182643	0.6050	0.54518
#citZip-in-98	-0.00258065	0.0699899	-0.0369	0.97059
Union	0.0467583	0.23261	0.2010	0.84069
HHincome	4.8365e-06	1.23911e-05	0.3903	0.69630
Respopden	-1.75366e-06	6.25626e-06	-0.2803	0.77924
WorkerPop	3.72316e-07	3.90829e-06	0.0953	0.92411
Jobsize	0.0841293	0.0570447	1.4748	0.14027
Construction	-0.114614	0.316557	-0.3621	0.71730

Mean of dependent variable = 0.728814
Standard deviation of dep. var. = 0.483241
McFadden's pseudo-R^2 = 0.0245385
Log-likelihood = -111.779
Akaike information criterion = 241.559
Schwarz Bayesian criterion = 266.495
Hannan-Quinn criterion = 251.684

Model 6 is the Poisson regression analysis comparing the dependent variable of Latin American Fatal Accidents with the independent variables. This analysis is very similar to the analysis in Model 3; however we see here one more statistically significant

relationship emerge. That relationship is with non-union sites. There is a negative correlation between Latin American Fatal Accidents and Union Jobsites. This means that Latin American Fatal Accidents are occurring on jobsites that are non-union sites. There is a negative correlation between Latin American Fatal Accidents and High income areas, meaning that accidents are occurring in zip code areas that have lower median household incomes. There is a positive correlation between Latin American Fatal Accidents and High residential population density areas, meaning that fatalities are occurring in zip code areas that have higher residential population densities. There is a negative correlation between Latin American Fatal Accidents and Large job size, meaning that they occur on smaller job sites.

There are no statistically significant correlations with Latin American Fatal Accidents and Calls/zip/98, #CitZip-in-98, WorkerPop, and Construction. This means that Latin American Fatal Accidents are randomly distributed spatially with respect to these independent variables.

Model 6: Poisson estimates using the 118 observations 1-118
Dependent variable: Latin

Variable	*Coefficient*	*Std. Error*	*t-statistic*	*p-value*	
+Const	0.233948	0.678615	0.3447	0.73029	
Calls/zip/98	-0.0185385	0.0318419	-0.5822	0.56043	
#citZip-in-98	0.0709323	0.105488	0.6724	0.50131	
Union	-0.585813	0.322301	-1.8176	0.06913	*
HHincome	-3.90081e-05	1.89417e-05	-2.0594	0.03946	**
Respopden	1.89924e-05	9.01626e-06	2.1065	0.03516	**
WorkerPop	2.26178e-06	6.97007e-06	0.3245	0.74556	
Jobsize	-0.16889	0.0935881	-1.8046	0.07114	*
Construction	-0.238065	0.368288	-0.6464	0.51801	

Mean of dependent variable = 0.364407
Standard deviation of dep. var. = 0.7586
McFadden's pseudo-R^2 = 0.124734

Log-likelihood = -84.0105
Akaike information criterion = 186.021
Schwarz Bayesian criterion = 210.957
Hannan-Quinn criterion = 196.146

Latin American Immigrant Worker Fatalities:

As observed above there are no statistically significant spatial relationships between Total Fatal Accidents and any of the selected independent variables, and there is only one statistically significant relationship with Non Latin American Fatal Accidents and the independent variables – larger job size. The model with the most explanatory power included zip code areas that had three or more Latin American occupational fatal accidents (Model 6). Latin American occupational fatal accidents tend to occur on smaller non-union jobs in densely populated areas with lower median household incomes. This study would like to now examine the details of those accidents and details of those zip code areas.

In this study, there were 81 zip code areas and 210 fatal accidents. Seventy of those fatal accidents were Latin Americans (Chart 2) with a mean age of 38. Five of the Latin American victims were females and the rest were males. One hundred-forty were Non-Latin American with a mean age of 43. Three of the non-Latin American victims were females and the rest were males. Twenty-seven of those Latin American fatal accidents occurred in six of the zip code areas. In descending order of accidents from 7 to 3 those zip code areas are: 10003 with seven fatal accidents; 10027 with six fatal accidents; 11237 with five fatal accidents; 11233 with three fatal accidents; 11222 with three fatal accidents; and 10023 with three fatal accidents. Three of the zip code areas were in Manhattan and three of the zip code areas were in Brooklyn (USDOL/OSHA,

2005-2009). Below is a more detailed examination of those zip codes areas and the Latin American occupational fatal accidents that occurred in each. The information on all the fatal accidents was obtained from the USDOL/OSHA website, and through the author's direct observations as an OSHA fatal accident investigator.

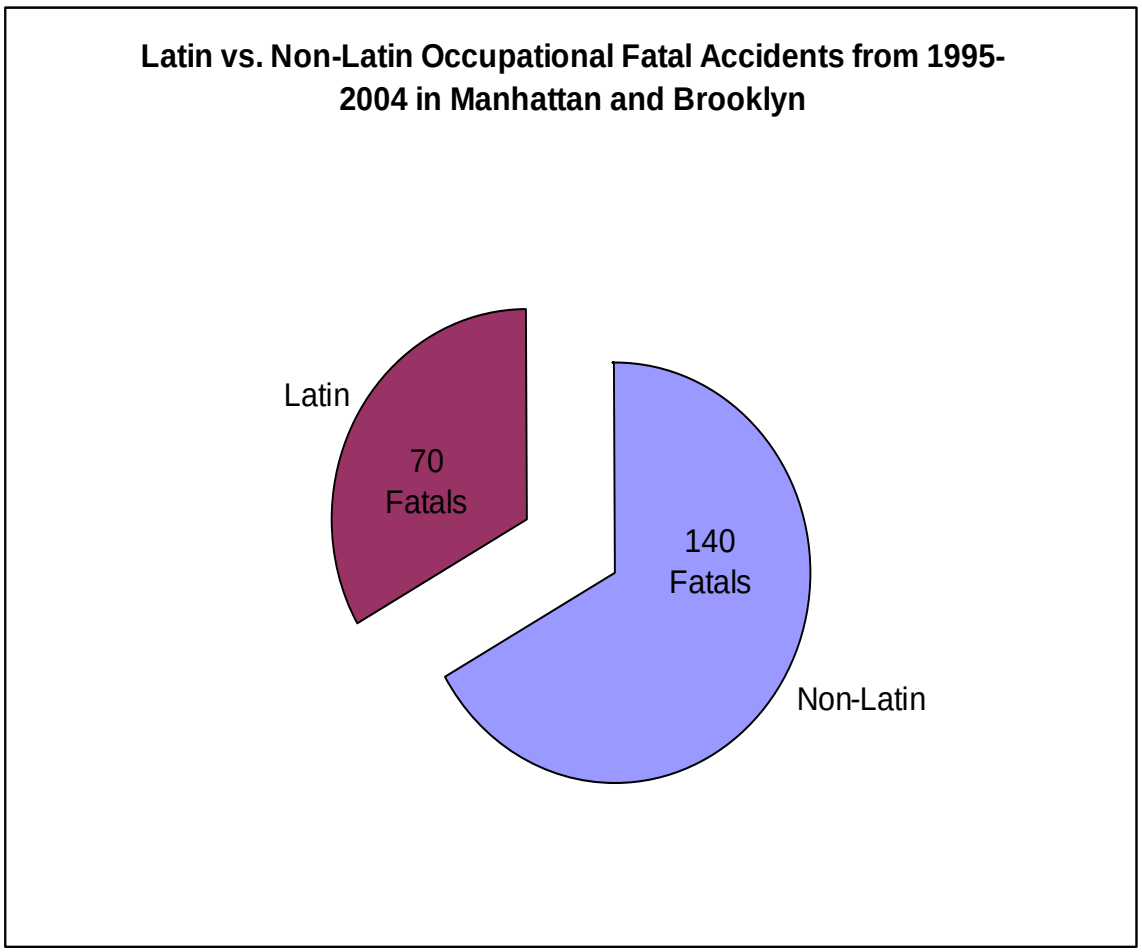


Chart 2 – Pie Chart of Latin Occupational Fatal Accidents vs. Non-Latin Occupational Fatal accidents.

Zip code 10003:

Zip code area 10003 in Manhattan is bounded approximately from 1st Ave on the East to 5th Ave on the West. It is also bounded from West Houston Street on the South and 20th Street on the North. These areas consist of the East Village, Washington Square

Park, Stuyvesant Square, and Gramercy Park (Hagstrom, 1989). The median household income in 1998 was $47,140, which was considered moderately high for NYC. This is primarily a residential area and the residential population density was 88,888 per square mile, which was considered high (CACI, 1999). There are many residential high rise buildings in this area which allowing for this high population density. The workplaces in this area are office buildings, New York University campus, and storefronts. This is not a heavy industrial area (City of NY, 1994). The worker population was 45,226, which was considered low for a zip code area in NYC (CACI, 1999).

On October 24, 2001, there was an occupational fatal accident where 5 Ecuadorian immigrant workers died in a scaffold collapse. The scaffold was 14 stories high. The building was located at 215 Park Ave. It was an upscale residential building that was undergoing exterior brick removal and replacement. Despite the size of the building, this is considered a relatively small job in time and materials. The site was a non-union site. The scaffold collapsed because it was not properly supported at the base. The base was placed on top of roof-mounted air conditioners that were not designed to support the scaffold's weight. The employer was saving money by not paying union wages, not applying for a permit from the building department, and not hiring an engineer who would have realized that there was no permit and that the base of the scaffold was not sturdy. The erector of the scaffold was charged with willful OSHA violations and was sentenced to 3 years in jail.

On September 16, 2002, there was an excavation collapse that resulted in the death of a Latin American worker at 216 East 18th Street, Manhattan. The site was small. The excavation was 8 feet deep, 4 feet wide and 15 feet long. The excavation collapsed

because the walls were vertical and there was no support to prevent them from collapsing. The OSHA regulation requires that excavation walls be supported when they are over 5 feet deep and not sloped. The employer was saving money by hiring a non-union worker and did not need to pay union wages. In addition, the employer saved money because he had the worker dig manually with a hand shovel, when the preferred and safer method would be to have a machine (backhoe) do the digging. If a machine did the digging, the price would have risen from approximately $100 for the day to thousands of dollars for the machine rental with an operator. The employer was cited by OSHA for $17,600 in serious violations. No willful violations were issued because the employer did not have the expertise to realize that what he was doing was hazardous.

On August 10, 2000, a Latin American worker fell 4 stories down an elevator shaft at 130 Avenue C. This was a small union construction site and the worker was getting union wages. The open shaft was covered with orange mesh but the sturdy wood or steel cable supports under the mesh were left out. This mesh gave the worker a false sense of safety, because usually orange mesh is held up by something sturdier to prevent a worker from falling. The worker was part of a 3-man company and was measuring the floor to install floor tiles. The employer was cited by OSHA for $9,250 in fines. No willful violations were issued because no one realized that the supports were not behind the orange mesh.

Zip code 10027:

Zip code area 10027 is known as West Harlem and is bounded approximately from 120th street on the South, 133rd Street on the North, and 5th Ave. on the East to the

Hudson River on the West (Hagstrom, 1989). The median household income in 1998 was $23,474, which was considered low. The residential population density of 53,616 per square mile was not considered that dense for NYC (CACI, 1999). There are fewer high rise buildings than in 10003 (City of NY, 1994). The worker population was 29,035, which was considered low (CACI, 1999).

On December 8, 1995, seven non-union employees died in a relatively small retail clothing store fire 272 W 125th Street. Five of the seven were Latin Americans. The workers died because the store remained open as contractors renovated the store, leaving fire exits blocked and the sprinkler system not functioning during the construction process. The correct way to conduct renovations would have been to close the store as the contractors blocked the exits and disabled the sprinkler system. If the fire had not occurred, it would have been more cost advantageous to keep the store open as the contractors worked to expand the store. Fines totaling $6,250 were issued to the store employer. No willful violations were issued because the store employer did not realize that the conditions were hazardous.

On October 8, 1995, a non-union Latin American employee was killed as he was doing a medium-size brick pointing construction job from a two-point suspended scaffold when one side of the scaffold became loose and dropped down at 52 W 126th Street. The employee was wearing a safety belt. However the employee slipped out of the belt. Since this accident, OSHA now requires employees on this type of scaffold to wear safety harnesses attached to an independent lifeline. Safety belts are now considered obsolete because when an employee falls, the belt can slip off or cause severe injury in

the midsection of the body. This employer was issued no violations related to the accident.

On April 2, 2002, a Latin American non-union worker died in a partial building collapse during a medium-size partial demolition of a building at 258-264 St. Nicholas Ave. OSHA fines totaling $32,250 were issued to the employer. The employer was issued a willful violation for failure to prevent the collapse of the floors as prescribed by four of his engineering advisers. These advisers allege that they gave him specific advice that he ignored, resulting in the collapse and fatality. This case is still under investigation by the Manhattan District Attorney.

Zip code 11237:

Zip code area 11237 in Brooklyn is known as East Williamsburg and Bushwick, and is approximately bounded by Metropolitan Avenue on the North, Myrtle Avenue on the South, Cypress Avenue on the East, and Wilson Avenue on the West (Hagstrom, 1989). The median household income in 1998 was $22,497, which was considered low. The residential population density of 45,952 per square mile was not considered that dense for NYC (CACI, 1999). The residential buildings are low-rise, or three stories or less (City of NY, 1994). The worker population was 10,373, which was considered low (CACI, 1999). This area is known as one of the last areas in Brooklyn that has many small manufacturing and industrial plants (City of NY, 1994).

The following five separate accidents all occurred in union recycling plants. It is important to understand that the union involved, Local 813 Teamsters, has been identified in the courts as the union with the most labor crime convictions in the history of labor

law. The union has been found guilty of abusing their workers by taking money from them for benefits but not providing the benefits to them (National Legal and Policy Center, 2009). For this reason the researcher believes that, even though these jobsites are union, it should be understood that they really are not because they are not providing the services that unions provide.

On September 28, 1995, at a small recycling plant located at 123 Varick Ave, Brooklyn, an Ecuadorian Latin American union truck driver was opening the tailgate of his truck to dump the load of garbage in the plant when he was struck and killed by a 300-pound tree stump that fell out of the truck. OSHA cited the employer for $16,000 in fines. The employer lacked the work rules and procedures to prevent workers from being struck by objects being dumped. No willful violations were issued because the employer did not have the expertise to recognize the hazard.

On March 22, 1996, at the same recycling plant, but this time under new ownership, an Ecuadorian Latin American union worker was crushed and killed between a wall and a dumpster as the dumpster was being pushed against the wall. The worker was out of the truck operator's line of site when he pushed the dumpster, not realizing the worker was there. OSHA cited the company for $14,500 in fines. The employer lacked the work rules and procedures for control of traffic in the plant to avoid crushing workers. No willful violations were issued because the employer did not have the expertise to recognize the hazard.

On June 12, 1996, again at the same recycling plant, an Ecuadorian Latin American union worker was killed while sweeping between a truck and a loading bay when the truck suddenly backed up, crushing the worker. Again the worker was out of

the line of sight of the truck driver. Violations for the incident that occurred on March 22, 1996 were not issued until September 2, 1996, thus the employer still lacked the expertise to realize his lack of work rules and procedures to prevent these types of accidents, therefore no willful violation was issued. The total fine for this case was $14,000.

On August 21, 1996, for a fourth time at the same recycling plant, a fourth Ecuadorian Latin American union worker was killed when he was run over by a container truck. Again because the violations were not yet issued for the first time an employee was run over, OSHA felt they could not willfully hold the employer responsible for not having work rules and procedures to prevent these accidents of being struck by trucks in the plant. OSHA issued $14,000 in fines for this case, the same amount issued in the previous case.

On March 26, 2001, at a different small recycling plant, across the street from the plant discussed above, a Latin American union worker was killed on the job. He was killed while he was sorting materials on the floor and a 1200-pound bail of waste cardboard fell off the top of the pile, crushing the employee. OSHA cited the employer for not keeping the bails stable while they were being unstacked at the time. The fine was for $7,200. No willful violation was issued because the employer did not know the correct procedure for un-stacking bails.

Zip code 11233:

Zip code area 11233 in Brooklyn is known as East New York and is approximately from Hancock Street on the North, and East New York Avenue on the

South, and from Broadway on the East, and Marcus Garvey Blvd on the West (Hagstrom, 1989). The Median household income in 1998 was $22,026, which was considered low. The residential population density of 47,086 per square mile was not considered that dense for NYC (CACI, 1999). The residential buildings are three stories or less as compared to higher rise buildings in Manhattan (City of NY, 1994). The worker population was 3,982, which was considered very low (CACI, 1999). This is basically a residential area in Brooklyn (City of NY, 1994).

On September 9, 2004, at a small jobsite at1355 St. Marks Avenue, Brooklyn, a non-union Latin American worker died in an excavation collapse. He was killed while installing shoring equipment to hold up the excavation wall in order to prevent a collapse. The workers did not know the proper technique for installing the shoring supports, which would be from the top down and not from the bottom up, as the employee was doing. This employer was issued $14,500 in fines by OSHA. No willful violations were issued because the employer did not know the proper technique for installing the shoring supports.

On April 29, 2003, at 216 Rockaway Avenue, a Latin American union worker who worked for a small employer died when he was crushed by an elevator in an apartment building complex. The deceased worker was a porter for the apartment complex and was assisting an elevator mechanic from an elevator company that was trouble shooting an elevator problem. The mechanic was controlling the elevator from the roof and inadvertently ran the elevator when the porter was halfway in and halfway out of the elevator. The apartment complex that employed the victim was issued $3,000 in OSHA fines for not following procedures that would prevent the inadvertent startup of

the elevator. No willful violations were issued because the employer was not aware of the proper energy control procedures that were required.

On December 22, 1998, at 216 Bainbridge Street, a non-union Latin American worker died when a section of a building that was being demolished collapsed on him. This was a medium-size site. The accident occurred because the employer did not follow a sound planned sequence of demolition. The employer was issued $15,000 in fines from OSHA. The employer was not issued willful violations because he was never trained in the proper engineering principles of structural demolition.

Zip code 11222:

Zip code area 11222 in Brooklyn is known as Greenpoint and is approximately bound by Newtown Creek on the North and West sides, and Maspeth Avenue and Jefferson Street on the South, and from the East River on the West (Hagstrom, 1989). The median household income in 1998 was $37,336, which was considered low. The residential population density of 21,892 per square mile was not considered that dense for NYC (CACI, 1999) because the residential buildings are low rise (3 stories or less) as compared to higher residential buildings in Manhattan (City of NY, 1994). The worker population was 15,736, which was considered low (CACI, 1999). However this is known as an industrial area in Brooklyn that hosts many small factories (City of NY, 1994).

On September 18, 2002, at a small recycling plant located at 860 Humboldt Street in Brooklyn, a Latin American union worker died on the job. He died when a 1,500 pound bale of waste paper fell off the top of its pile and crushed the employee. The bale

fell after it was hit by a fork lift that was stacking the bales. The worker should not have been in the area while the fork lift was doing the stacking. OSHA cited the employer for $15,750 in fines. No willful violations were issued because the employer did not know that there were standardized procedures for using fork lifts and stacking bales.

On August 6, 1998 at a small warehouse located at 18 India Street in Brooklyn, a Non-union Latin American worker collapsed while unloading and stacking cartons. OSHA issued $1,750 in fines but nothing related to the death because OSHA currently has no ergonomic regulations. Ergonomics is defined as the worker's ability to do work. Some work is just too strenuous for certain workers. When workers do excessive work (too frequent or too much), workers can become injured or die. It is unfortunate that there are no safety and health regulations for this.

On February 28, 1996, at 24-30 Thomas Street, Brooklyn, a union Latin American employee working for a small sign company fell off a billboard sign that he was installing and died. OSHA cited this employer for $6,750 in fines for not installing guardrails on the sign and not enforcing the use of a harness that was available.

Zip code 10023:

This area is known as the Upper West Side and is approximately bound by 77th Street on the North and 59th Street on the South, and Central Park on the East and the Hudson River on the West (Hagstrom, 1989). The median household income in 1998 was $59,168, which was considered high. The residential population density of 90,154 per square mile was considered dense for NYC (CACI, 1999). The residential buildings in this area are high rise (over six stories) as compared to lower rise residential buildings

in Brooklyn (City of NY, 1994). The worker population was 28,250, which was considered low (CACI, 1999). This area is mainly residential with numerous neighborhood stores and shops (City of NY, 1994).

On April 30, 2001, at small sanitation carting company was making a pickup at Columbus Ave and 78th Street, Manhattan, when one of its Latin American union workers was hanging on the back of the truck preparing to jump off. He slipped without the driver of the truck noticing, and the driver backed over the worker crushing him. OSHA cited the employer for $4,800 in fines. The employer lacked an anti-slip riding step, and also lacked the work rules to prevent workers from riding on the riding step in the back as the truck is backing up. No willful violations were issued because the employer did not have the expertise to recognize the hazard.

On July 13, 1998, a union Latin American worker on a small window washing job fell to his death in a scaffold collapse at 132 West 65th Street. OSHA cited the company for $7,500 in fines. The employees did not use the correct procedures for setting up the scaffold. No willful violations were issued because the necessary equipment was present and the workers just lacked the skills to use it correctly.

On February 2, 1997, a union Latin American worker fell to his death down an elevator shaft with an automobile in a small parking garage located at 201 West 75th Street. OSHA cited the company for $8,900 in fines, which included a willful violation for intentionally keeping the safety mechanism on the elevator doors bypassed so the workers could work faster by keeping the elevator shaft doors open all the time. The worker drove into the open shaft with the automobile thinking that the elevator was there.

Summary:

A major geographic feature we observe with Latin American occupational fatal accidents is that there are two zip code areas that have had five fatal accidents for one incident each, and one zip code area that had five fatal accidents in the same recycling industry and all the recycling industry victims belonged to the same corrupt union. The largest multiple fatality that has occurred in the same time frame with non-Latin American fatal victims, was two. This observation clearly shows that Latin Americans are on more hazardous areas/sites than non-Latin Americans.

As for correlations with the variables we observed that Latin American occupational fatal accidents occur mainly on smaller, unskilled non-union sites, in zip code areas where the median household income is lower, and residential population density is higher. Because these correlations are statistically significant we can use these relationships to predict where Latin American occupational fatal accidents will occur.

Non-Latin American Immigrant Worker Fatalities :

Out of the 210 fatal accidents in the 81 zip codes, 140 of those fatal accidents were Non-Latin American fatal accidents. As we saw in the Poisson regression analyses of Non-Latin American fatal accidents, there was only one statistically significant relationship, job size, and there were no statistically significant relationships when we focused on the zip code areas that had three or more Non-Latin American fatal accidents. For the purposes of contrast the author would now like to describe the three zip code areas that had the most Non-Latin American fatal accidents and describe the circumstances of those accidents for a better understanding of the differences and

similarities between Latin American fatal accidents and Non-Latin American fatal accidents. Twenty-four Non-Latin American fatal accidents occurred in those three zip code areas. In descending order of accidents from 10 to 7 those zip code areas are: 10036 with ten fatal accidents; 10019 with seven fatal accidents; and 10010 with seven fatal accidents. These zip code areas are all in Manhattan. Again, the information on all the fatal accidents were obtained from the USDOL/OSHA website and through the author's direct observations as an OSHA fatal accident investigator.

Zip code 10036:

This area is known as the Midtown and Times Square section of Manhattan. It is approximately bound by 49th Street on the North and 42nd Street on the South, and Sixth Ave. on the East and the Hudson River on the West (Hagstrom, 1989). The median household income in 1998 was $31,327, which was considered moderate. The residential population density of 35,154 per square mile was considered moderately dense for NYC (CACI, 1999). The residential buildings in this area are high rise (over six stories) as compared to lower rise residential buildings in Brooklyn (City of NY, 1994). The worker population was 102,831, which was considered very high (CACI, 1999). This area consists of mainly corporate offices, hotels, theaters and lots of stores and shops (City of NY, 1994).

Eight of the victims belonged to a union and two did not. Four of the fatal accidents were on construction sites and six were not. Four of the accidents occurred on large job sites and six were on smaller sites.

On August 12, 2004, at 4 Times Square (The Conde Nast Tower), a regularly assigned union security guard was killed in a very large office building when an elevator ascended uncontrollably. No violations were issued to this employer because the mechanical failure was not under the control of the security guard or his employer.

On August 2, 2002, at 300 Madison Avenue, two union employees died when the outside material elevator they were erecting on a very large construction site collapsed and fell to the street. A total of $27,200 in fines were issued, which included two repeat citations for the workers not using fall protection harnesses that were provided, and for not following the manufacturer instructions for the erecting process. No willful violations were issued because the employer provided the fall protection harnesses, and the procedures related to the collapse were highly technical and difficult to follow, and it is believed the employees veered from the procedures unintentionally.

On December 6, 2001 at 250 West 43rd Street, a union maintenance supervisor for a small employer in a hotel was on top of an elevator trying to repair the elevator when the elevator started up unintentionally. He was employed by the hotel and not an elevator repair company. A total of $5,000 in fines were issued, which included citations for not following elevator repair procedures and not being trained in those procedures. No willful violations were issued because the employee was voluntarily doing work outside his area of training and expertise.

On June 26, 1998, at 4 Times Square the Conde Nast Tower, a union construction elevator erector was crushed on a very large jobsite by the outside construction elevator that he was building. A total of $9,000 in fines were issued, which included a citation for

not shutting the elevator off while doing the erection. No willful violations were issued because it is believed that the employee merely forgot that the machine was operational.

On April 20, 1998, at 130 West 46th Street, a non-union worker fell through an unguarded floor hole that was being used for debris removal on a large jobsite. A total of $2,250 in fines was issued which included a citation for not guarding the hole. No willful violations were issued because the employee was not supposed to be in that area and that area was designated solely for workers disposing of debris while wearing fall protection harnesses.

On December 9, 1997, at 1 Times Square, a union elevator repair worker was doing a small repair job when he got caught between an elevator and elevator shaft. A total of $10,500 in fines was issued, which included a citation for not shutting the elevator power while in the shaft. No willful violations issued because the mechanic was trying to trouble shoot the elevator problem with the power on.

On November 17, 1997, at 620 12th Avenue, a union elevator repair worker was crushed by an elevator he was trying to repair when the elevator started up unintentionally. A total of $13,500 in fines were issued, which included a citation for the elevator power control switch not functioning correctly. It was not properly wired by an earlier mechanic. No willful violations were issued because the employer had thought that the elevator power control switches were all functioning correctly

On April 17, 1996, at 42 West 48th Street, a non-union worker in a small company was killed by inhaling a chemical vapor used in the work process. No citation was issued because the victim was the employer, and since he was deceased, there was no one to whom to issue the citation.

On November 14, 1995, at 141 West 43rd Street, a union worker was killed in a four level parking garage when he was crushed by a man lift step. It was his first day on the job. A total of $51,750 in fines were issued, which included citations for an improperly maintained man lift. No willful violation was issued because the employer was not aware of all the man lift safety requirements.

Zip code 10019:

This area is also part of the Midtown and Times Square section of Manhattan. It is approximately bound by 59th Street on the North and 49th Street on the South, and Fifth Ave. on the East and the Hudson River on the West (Hagstrom, 1989). The median household income in 1998 was $68,865, which was considered high. The residential population density of 85,755 per square mile was considered dense for NYC (CACI, 1999). The residential buildings in this area are high rise (over six stories) as compared to lower rise residential buildings in Brooklyn (City of NY, 1994). The worker population was 42,563, which was considered moderate (CACI, 1999). This area consists of mainly of office buildings, residential buildings, hotels, and numerous stores and shops (City of NY, 1994).

All seven of the victims belonged to a union. Five of the fatal accidents were construction sites and two were not. Four were at large sites and three were at smaller sites.

On November 10, 2004, at 350 West 53rd Street, a union crane oiler fell through an open hatchway in the crane tower. A total of $10,500 in fines was issued, which included citations for the hatchway not being properly guarded. No willful violations

were issued because this unguarded hatchway was considered standard in the crane industry. Today, as a result of this accident, hatches have been installed on all crane towers and they have been named the "Glenn Hatch" in memory of the victim who died whose first name was Glenn.

On September 27, 2002, a union carpenter was standing in front of the jobsite at 10 Columbus Circle, the construction site of the very large AOL/Time/Warner towers, on a windy day when a wood plank blew off the 80th floor of the site and struck him in the head. No citations were issued for this incident, because required safety was provided in the way of a sidewalk canopy and hard hats, however the wind was exceptionally strong that day and the wood plank blew outside the protection of the sidewalk canopy.

On July 12, 2001, at 3 West 57th Street, on a small painting job, a union painter improperly placed a ladder on top of a scaffold, and the ladder fell off the scaffold with the worker. A total of $5,000 in fines were issued, which included a citation for using a ladder on top of a scaffold, which is against OSHA requirements. A citation was also issued for inadequate training. No willful violations were issued because the employer did not realize that ladders were not permitted on scaffolds.

On January 18, 2000 at 1725 Broadway, on a large construction site, a union iron worker was tightening bolts on top of a large steel sign on top of a new 50-story building, when he fell as he was climbing outside the guardrail protection to get to a bolt. A total of $5,000 in fines were issued, which included citations for the worker not using the provided fall protection, and for re-training in fall protection. No willful violations were issued because the employer provided the necessary fall protection and training for the employee.

On January 14, 1998, at 711 12th Avenue, a union employee for an exposition service company doing a small exposition job was standing on a load being lifted with a fork truck, and the worker fell off and hit his head. A total of $7,000 in fines were issued, which included a citation for riding the load on the forks against OSHA regulations, and an additional citation was issued for not giving adequate training. No willful violation was issued because the employer did not realize that riding the load on the fork truck was against OSHA regulations.

On March 12, 1997, at West 59th Street between Columbus and 10th Avenue, on a large construction site, a union masonry employee was killed when his scaffold collapsed and he was not wearing his safety harness that was provided. A total of $8,400 in fines was issued, which included a citation for not wearing the provided harness and not providing adequate training. No willful violations were issued because the employer did provide the necessary harness.

On October 3, 1996, at 542 West 57th Street, a union stagehand was struck in the forehead with an electric cable cord connector on a small stage set, and the worker later died. No citations were issued for this incident because there are no requirements for forehead protection for the job he was doing.

Zip code 10010:

This area is known as the Stuyvesant Town, Union Square, and Kips Bay section of Manhattan. It is approximately bound by 27th Street on the North and 14th Street on the South, the East River on the East and 6th Ave. on the West (Hagstrom, 1989). The Median household income in 1998 was $59,679, which was considered high. The

residential population density of 60,228 per square mile was considered moderately dense for NYC (CACI, 1999). The residential buildings in this area are high rise (over six stories) as compared to lower rise residential buildings in Brooklyn (City of NY, 1994). The worker population was 73,905, which was considered high (CACI, 1999). This area consists mainly of office buildings, residential buildings, hotels, and lots of stores and shops (City of NY, 1994).

Six of the seven victims belonged to a union. Four of the fatal accidents were on construction sites and three were not. Four were big job sites and three were smaller sites.

On November 10, 2003, at 38 West 26th Street at a small window washing job, a non-union employee was washing windows while standing on the window ledge using a window washing belt, when the belt broke and he fell 12 stories to his death. No violations were issued because the victim was the employer, and because he was deceased, there was no one OSHA could issue the violations to.

On May 24, 2000, at 55 Lexington Avenue, a union elevator employee was found dead in the bottom of a ventilation shaft at a large high rise construction site. No violations were issued because the elevator employee had no business in the ventilation shaft. There was no elevator work anywhere near the shaft and it was believed he was looking for a quiet place to sleep.

On October 15, 1999, at 11 Madison Avenue on a small construction site, a union electrician was working on live electric wiring when he was electrocuted. A total of $15,000 in fines were issued which included citations for the employee not using safe techniques while working with live electricity. No willful violations were issued because

the worker was considered an experienced electrician and should have known the proper safety techniques.

On September 17, 1999, at 750 6th Avenue, a union carpenter was killed by a crane that was being assembled and fell over in heavy winds on a large construction site. A total of $35,000 in fines were issued, which included citations to this employer for not following proper crane assembly procedures. No willful violations were issued because the violation of procedure was considered an over sight and not intentional.

On July 8, 1999, at 345 Park Avenue South, at a small window washing job, a union window washer fell 12 stories to his death while standing on a radiator cleaning a window. The window came loose from its track, causing him to fall out the window. At total of $7,000 in fines were issued, which included a citation for the worker not standing on the floor when cleaning the window.

On April 29, 1997, at 29 West 28th Street, a union worker was killed in a small parking garage when he was crushed by a man lift step. A total of $20,700 in fines was issued, which included citations for an improperly maintained man lift. No willful violation because the employer was not aware of all the man lift safety requirements.

On August 2, 1995, at 328 East 25th Street, a union grocery employee was working on wiring for some equipment in a small grocery store when he made contact with live electricity and was electrocuted. A total of $1,500 in fines was issued, which included citations for improperly wired electricity. No willful violations were issued because the employer did not realize that the electric wiring was incorrect.

Summary:

To summarize, we see a large percentage of very highly skilled workers in this list of Non-Latin American occupational fatal accident victims. We see elevator mechanics, electricians, steel erectors, and crane tower erectors, to name a few. In addition we do not see the large multiple fatalities as with Latin Americans. The majority of trades we see Non-Latin American fatalities require years of training and experience as compared to the fatal Latin American victims, who held lesser skilled jobs such as masonry, garbage handling, and sales clerk. We also see the Non-Latin American fatal accidents on larger jobs, and this occurs with statistical significance as discussed in the earlier Poisson regression analyses'. We also see that many of the Non-Latin American victims are union workers, but as per the Poisson regression analyses', there is a positive correlation but it is not statistically significance.

VI- Conclusions:

The object of this dissertation was to conduct a geographical analysis of the work spaces where Latin American immigrant worker fatal accidents occurred and were investigated by OSHA in NYC's Brooklyn and Manhattan from 1995-2004. The purpose of this analysis was to identify spatial trends and to develop a spatial profile or spatial model of these fatal accident sites. With the identification of spatial factors that are related to Latin American worker fatal accidents, OSHA could implement an improved spatial strategy for identifying hazards, issuing violations, and thus preventing these fatalities before they occur. To accomplish this the dissertation first examined the geographical theories related to the migration of Latin American immigrant workers to New York City, second the evolution of these migration patterns is explained by review of the immigration and labors laws. The hypothesis proposed Latin American occupational fatal accidents will be on jobsites that are smaller and mostly non-union, and that the zip code areas they occur in will have higher worker population densities, higher residential population densities, less OSHA inspections, and lower median household incomes. This hypothesis was then tested empirically using the statistical technique of Poisson's regression analysis. In this final chapter the author will draw conclusions from the empirical results and then relate those results to the migration theories, migration laws, and labor laws, in an effort bring both the empirical and theoretical conclusions together.

Empirical Conclusions:

In the Introduction section we saw Line Graphs 1 through 7 display how there is some indication of an interrelationship between the amount of construction permit units, total occupational fatal accidents, and Latin American occupational fatal accidents. We observe in Manhattan and Brooklyn a steady rise in construction permit units until the recession in construction in Manhattan caused by September 11, 2001 terror attacks on the World Trade Center. At this point in time, both construction permit units and total occupational fatal accidents decreases in Manhattan and increases in Brooklyn. In 2005 Manhattan construction permit units increased again and total occupational fatal accidents were quick to follow. After September 11, 2001 Latin American occupational fatal accidents decrease in Manhattan and stay level in Brooklyn until 2005, at which time they reach a record high. In 2002 and 2008, Manhattan has the highest peaks in total occupational fatal accidents; however, Latin American occupational fatal accidents display a decreasing trend. In 1996 and 2005, Brooklyn has its highest peaks in both total occupational fatal accidents and Latin American fatal accidents. From this observation, it appears that the geography of occupational fatal accidents and the geography of Latin American occupational fatal accidents have a more direct relationship in Brooklyn than in Manhattan.

In order to more closely examine these statistics, the dependent variables (total occupational fatal accidents, Non-Latin American fatal accidents, and Latin American fatal accidents) were put into a chart (Appendix A) and mapped to identify the zip codes areas where the most occupational fatal accidents were occurring. Maps 1, 2, and 3,

color-code the zip codes with the most fatalities for each dependent variable. In these maps the top few zip codes for each dependent variable easily stand out as:

Total Fatal Accidents	Non-Latin Fatal Accidents	Latin Fatal Accidents
Zip code - # fatals	Zip code - # fatals	Zip code - # fatals
10036 - 11	10036 - 10	10003 - 7
10010 - 9	10019 - 7	10027 - 6
10019 - 9	10010 - 7	11237 - 5
10027 - 9		

Next, these dependent variables were compared statistically by applying Poisson's regression analysis to the independent variables: calls to service in 1998, citations per zip code in 1998, union status, median residential household income, job size, and whether the job was construction or not.

The first Poisson's analysis found (Model 1) that there were no statistically significant relationship between total fatal accidents and any of the independent variables. This is what the author would expect because total fatal accidents includes accidents with every ethnic group (i.e. Latin American, Non-Latin American, other ethnic groups, etc.), and because all fatal accident groups are included, the researcher would expect results in many different directions ultimately resulting in no overall statistical significance.

The second Poisson's analysis (Model 2) found that there was only one positive statistically significant correlation with Non-Latin American fatal accidents, which was with the larger job size independent variable. The author believes that because this analysis also included other immigrant groups (i.e. Pakistanis, Asians, Poles, etc.) and excludes only Latin Americans, it too would have results in many different directions.

Perhaps if the group Non-Latin American occupational fatal accidents included only non-immigrants, we would see more statistically significant relationships in a trend opposite to the hypothesized model for Latin American occupational fatal accidents.

The third Poisson's analysis (Model 3) found that Latin American occupational fatal accidents had statistically significant correlations in zip codes with low median household incomes, higher residential population density, and smaller job size. The author hypothesized that these fatal accidents would also have a statistically significant relationship with the other independent variables. The author believes that there were no significant correlations with the other variables mainly because the sample size of Latin American fatal accidents is relatively small for each zip code (1-6 fatal accidents for each). The results can easily be skewed by any singular anomaly. An example of an anomaly occurred in zip code 11237 in Brooklyn. This zip code had five Latin American fatal accidents and the victims were union employees. Upon closer examination, however, it was learned that this union was just taking workers money and embezzling it, and was not a legitimate union for the workers (National Legal and Policy Center, 2009), but statistically these five workers were counted as union workers.

In order to try and refine these results and minimize any skewing, the author decided to repeat the three Poisson analyses, but this time to only include the zip code areas that had three or more Latin American occupational fatal accidents, or three or more Non-Latin American occupational fatal accidents. This resulted in the fourth, fifth, and sixth Poisson analyses.

The fourth Poisson analysis (Model 4) also determined that there were no statistically significant correlations with total fatal accident and any of the independent

variables. Again, this is because this group includes a diverse foreign born and native population.

The fifth Poisson analysis (Model 5) determined that there were no statistically significant correlations with Non-Latin American occupational fatal accidents and any of the independent variables. Again this is what was expected because of the mixed population in this sample group.

The sixth Poisson analysis (Model 6) again found that with Latin American occupational fatal accidents, there were statistically significant correlations in zip codes with low median residential household income, high residential population density and small job size. In addition these refined results did pick up one more statistically significant relationship: non-union status.

To sum up, Latin America occupational fatal accidents are occurring in zip code areas that have low median household income, high residential population densities, and on smaller job sites that are non-union. There were no significant relationships with the variables, calls to service in 1998, citations per inspection in 1998, and whether the job was construction or not. As previously discussed the author believes that due to the small sample size, certain anomalies can skew the results. This is the case with the construction scaffold collapse accident that occurred on October 24, 2001 in zip code 10003, in which five Latin American workers were killed in an area that had higher calls to service, and lower citations per inspection, which is opposite the hypothesis, but what drove the Latin Americans to work on this site was that the corrupt businessmen decided to take advantage that the job was well hidden in a courtyard and decided to do the job with no attention to safety, without a permit and with day laborers. What normally would

have been a union job with elite contractors turned out to be an unsafe, out of view, day laborer job site. After the accident, the contractor was arrested and jailed for three years for manslaughter. The contractor took advantage of a geographical subarea (the courtyard) that had the characteristics of an area with fewer calls to service, and higher citations per inspection, because it was out of view. These five fatal accidents were statistically treated as though they were in an area of higher calls to service and lower citations per inspection because spatially that is what zip code 10003 mainly consists of. The other accident that skewed the results was the December 8, 1995 fire in zip code 10027, where five Latin American workers died in a fire in a clothing store. The workers were not construction workers and were statistically treated as that, however the hazards were caused because construction contractors were renovating the store in an unsafe manner as the store remained open. The contractors blocked the fire exits and left the sprinkler system inoperative.

In this study, the fact that we find more statistically significant relationships between Latin American occupational fatal accidents and the independent variables as opposed to, Total occupational fatal accidents, and Non-Latin American occupational fatal accidents, means that as a result of this study Latin American occupational fatal accidents are much more predictable and therefore preventable on a geographic scale than Total Occupational Fatal Accidents, and Non- Latin American occupational fatal accidents.

Relating Empirical Conclusions to Migration Theory, Migration Laws, and Labor Laws:

Even more important than identifying the specific physical locations and calculating the statistical significance of the variables associated with where Latin American occupational fatal accidents occur in NYC, which may change from place to place and time to time, is to understand the migratory forces that drive these variables which in turn drives Latin American immigrants toward these places of employment. The migratory forces involved can be understood only by careful study of the interrelationships with current migratory theories, labor laws, and immigration laws. With an understanding of these interrelationships it becomes easier to relate this study to different populations in different areas in different timeframes.

When we compare Latin American occupational fatal accident victims with Non-Latin American occupational fatal accident victims, we see mostly very skilled workers in the Non-Latin American occupational fatal accident category. We see elevator mechanics, electricians, steel erectors, and crane tower erectors to name a few. With Latin American occupational fatal accident victims we see low skilled workers that are masonry workers, garbage handlers, and sales clerks, etc. In the Latin American occupational fatal accident category we also see three very large multiple fatal accidents where five Latin American workers died on each. In the same timeframe in Brooklyn and Manhattan the largest Non-Latin American fatal accident was only with two victims.

We learned from Neo-Classical Theory (Airriess and Miyares, 2007) that many Latin Americans choose to immigrate to the US due to poor economic conditions in many of the Latin American countries (Smith, R., 2001; Jokisch and Pribilsky, 2002). Latin

American immigration to NYC is controlled by primarily by five major US immigration laws: The Immigration and Nationality Act of 1952, The Immigration Reform and Control Act of 1965, The Immigration Reform and Control Act of 1986, The Diversity Immigrant Visa Program of 1990, and The Illegal Immigration Reform and Immigrant Responsibility Act of 1996. These laws provide for a source shift in immigration to the US from Europe to Latin America and Asia. Under these laws, most Latin American immigrants arrive legally as visitors; however it is easy to overstay on their visas. The majority of undocumented Latin Americans in NYC are as a result of overstaying on their visas (Kraly and Miyares, 2001; Airriess and Miyares, 2007). Once they have overstayed, they are considered illegal aliens and could be subject to deportation. A minority also arrive clandestinely crossing the boarders to join friends and/or family members (Kraly and Miyares, 2001). Many Latin American immigrants arrived under the family reunification provisions of the law with minimal work skills, minimal education (human capital) as per Human Capital Theory (Borjas, 1986; Miyares, 1998; Portes and Zhou, 1992), and as per Disadvantage Theory (Bonacich, 1973; Min, 1988; Miyares, 1998) they are disadvantaged due to minimal English language skills and many come with no place to live (Smith, 2001; Jokisch and Pribilsky, 2002). As per Culture Theory (Kim, 1981; Min, 1988; Miyares, 1988), they are also not from a culture that has a propensity to be entrepreneurial (Smith, R., 2001). Because of all these factors they settle with the most hazardous jobs (Borjas, 1986; Kim, 1981; Min, 1988; Miyares, 1998; Portes and Zhou, 1992). These jobs are available because the hazardous low skill construction work is not attractive to the locals as per Dual Market Theory (Airriess and Miyares, 2007). In fact, as per World Systems Theory (Airriess and Miyares, 2007)

between 1990 and 1997 over 250,000 native-born whites in NYC moved to the suburbs or beyond which created an employment vacuum (Wright and Ellis, 2001) for these Latin Americans to fill. In this employment vacuum consisting of mainly high hazard construction work, earning potential is high, tax free, and in cash. As per Network Theory (Airriess and Miyares, 2007), Latin American networks and enclaves have already paved the way to these job sites. As per Institutional Theory, institutions like OSHA, Latin American Workers Project, Union of Needle Trades and Industrial Textile Workers, and the New York Committee on Occupational Safety and Health, are set up to help them in these jobs. Better benefits as outlined in the New Economics of Migration Theory (Airriess and Miyares, 2007) are not important because these workers don't want to work "on the books" because they don't want to give part of their pay to taxes as per the Sixteenth Amendment to the Constitution of the United States and/or be discovered as undocumented and have the fear of deportation back to their impoverished countries. Labor laws such as The Occupational Safety and Health Act, and Fair Labor Standards Act help these workers with respect to safety and wages (respectively) regardless of immigrant status. These workers avoid the benefits of the Social Security Act and National Labor Relations Act laws because these laws provide for retirement benefits and organizing rights (respectively) which could result in their "off the books" or undocumented status being revealed, which could subject them to deportation or criminal tax evasion charges.

The author gives special highlights to the labor migration theories, Dual Market Theory, Network Theory, and Institutional Theory. As a result of the author's twenty years of field research with Latin American occupational fatal accidents, these three

theories present the most obvious visual representations in the geographical landscapes of Brooklyn and Manhattan, more so than the other theories do.

The Duel Market is ever visible by unions displaying of the large inflatable union rat on non-union sites. The large rat demonstrates the power that the unions have to be vocal about improving working conditions (Photo # 1). On the other side of the Duel Market the Latin American immigrant day laborer population is obviously absent and never could partake in such a protest for fear of deportation.

Another feature of the labor landscape is the very visual Network system that Latin American immigrant day labors form. They can be seen on any work day lining the street corners such as in Brooklyn on 86th Street from 20th Street to New Utrecht Avenue, and on Coney Island Avenue and Ditmas Avenue (Photo # 2). They do this so they could get picked up by construction contractors looking to hirer labor to do strenuous, high hazard, low skilled work, "off the books", with no insurance. Non immigrants are obviously absent from this network system.

Institutions to help undocumented Latin American day labors are also a very obvious part of the labor landscape in the study area. Five days per week the "Latin American Workers Project" trailer can be seen by the Bay Parkway shopping area in Brooklyn, helping Latin American day laborers get safe jobs with insurance (Photo # 3). OSHA even teamed up on television with the world of professional wrestling to do public service announcements about worker safety.

Recommendations:

The author believes that OSHA can use the findings in this study to target jobsites for inspection in Brooklyn and Manhattan. Specifically, the results of this study conclude that Latin America occupational fatal accidents are occurring in zip code areas that have low median household incomes, high residential population densities, and on smaller job sites that are non-union, therefore OSHA could scout jobsites that meet this spatial profile. This technique of scouting is similar to the spatial technique used by the NYPD in reducing crime rates to record lows. Rather than just wait for crime to occur and the 911 call to come in, the police would scout areas that had the spatial profile consistent with a low "quality of life". The NYPD would put manpower and concentrate on areas that had minor crimes such as graffiti, broken windows, public drunkenness, turnstile jumping, and public urination, in an effort to stop these crimes and prevent these crimes from occurring in the future, and it worked. In addition they learned that the rate for bigger crimes went down as well. Apparently criminals that perpetrated the largest crimes also had a lifestyle in which they committed many smaller crimes each day.

To explain this better, when the NYPD caught a person for jumping a turnstile or urinating in public, he usually had a warrant out for his arrest or was in possession of an illegal gun or drugs, so the small misdemeaner arrest usually turned out to be a bigger felony arrest (Bratton, 1998). Similarly, rather than OSHA just waiting for a complaint or a fatal accident to occur, jobs that meet the spatial profile of a Latin American fatal accident can be scouted out and observed from the outside for the presence of any obvious safety violations. Once a safety violation is observed, a complete inspection should follow. If OSHA visits these jobsites and identifies hazards and has employers

correct these hazardous conditions, there is no doubt that many smaller accidents can be prevented, as outlined earlier in the accident pyramid, and hopefully prevent the Latin American immigrant worker fatalities as well.

This spatial strategy for preventing Latin American occupational fatal accidents can also be used by insurance companies that insure employers for workers compensation insurance in New York City. Most large insurance companies have loss control departments that conduct safety inspections of their insured's jobs to reduce insurance loss due to worker accidents. These insurance companies could also send their loss control representatives to job sites in these same geo-profiled areas for the purposes of preventing Latin American occupational fatal accidents.

One other possibility is that the results of this study could be used to inspire the U.S. government to eliminate the possibility of undocumented immigration. This could also naturally develop as a result of society increasingly becoming computerized and those computers becoming interlinked. For example, a simple task as taking the train or bus to work may soon require the scanning of an ID account card. In order to get this ID one would need to initially present proper credentials that only a documented resident of the U.S. would have. By the very nature of increased computerization, undocumented immigrants could be a thing of the past. If there are no undocumented Latin American immigrants in NYC, this would eliminate a large driving force for Latin American immigrants to want to work "off the books" and gravitate toward unsafe day laborer sites. This in turn would greatly reduce Latin American occupational fatal accidents.

Limitations:

This study only examines the counties of Manhattan and Brooklyn from 1995-2004, therefore it is possible that the findings here are only an artifact of these 2 counties during that timeframe and may not apply anywhere else, or in another timeframe.

Only in the year 2001 did OSHA start to keep consistent records with respect to the victim's ethnic group and English language ability. The author made use of this information for the part of the study from 2001-2004. For the timeframe from 1995 to 2000 the author used the names of the victims in a Google Genealogy Search on the internet to determine the victim's ethnic group. Therefore it is possible there could be some inconsistencies in the data from 1995-2000 when compared to the data from 2001-2004.

Future Research:

This study only applies to the geographic areas of Manhattan and Brooklyn in the timeframe from 1995-2004. Since the Latin American immigration patterns and worker population constantly change from time to time and place to place, the author recommends that additional research be done in different geographic areas, for different time frames, for a better understanding of the relationship of the variables from place to place and in different timeframes. The author also recommends that additional research be done with different immigrant groups and different non immigrant groups in order to add a larger field of perspective to this topic.

Appendix A

Data:

Dateof Fat	Latin	Non Latin	Zip code	calls/ zip/ 98	cit Zip-in-98	Union	HH income	Res-Pop Den	Worker Pop	job size	Construct
2004 1001	0	1	10001	14	1.14	1	37300	27539	87907	7	0
1997 0806	1	0	10001	14	1.14	0	37300	27539	87907	6	1
2002 0610	1	0	10002	9	2.78	0	23910	101593	17545	1	0
2000 1013	1	0	10002	9	2.78	0	23910	101593	17545	1	1
2002 0916	1	0	10003	12	4.5	0	47140	88888	45226	1	1
2001 1024	5	0	10003	12	4.5	0	47140	88888	45226	5	1
2000 0810	1	0	10003	12	4.5	1	47140	88888	45226	1	1
1997 1130	0	1	10003	12	4.5	0	47140	88888	45226	4	1
1999 0510	0	1	10004	3	1.67	1	50202	34900	25821	7	1
2003 0624	1	0	10005	3	2.67	1	53028	2260	32860	7	1
1997 1106	0	1	10005	3	2.67	1	53028	2260	32860	1	1
2003 0425	0	1	10006	6	1.83	1	29167	1200	20641	7	1
	0	0	10007	9	1.89		77966	15800	20641		
2002 0705	1	0	10009	6	3	0	32707	96843	4772	1	0
2002 0409	0	1	10009	6	3	1	32707	96843	4772	7	1
2003 1110	0	1	10010	2	7.5	0	56679	60228	73905	1	0
2000 1227	1	0	10010	2	7.5	0	56679	60228	73905	1	1
2000 0524	0	1	10010	2	7.5	1	56679	60228	73905	7	1
1999 1015	0	1	10010	2	7.5	1	56679	60228	73905	1	1
1999 0917	0	1	10010	2	7.5	1	56679	60228	73905	7	1
1999 0708	0	1	10010	2	7.5	1	56679	60228	73905	1	0
1997 0429	0	1	10010	2	7.5	1	56679	60228	73905	1	0
1995 0802	0	1	10010	2	7.5	1	56679	60228	73905	1	0

19950524	1	0	10010	2	7.5	1	56679	60228	73905	7	1
20020508	0	1	10011	10	2.6	1	48245	83447	46523	7	1
19990619	0	1	10011	10	2.6	1	48245	83447	46523	7	1
19990513	0	1	10011	10	2.6	1	48245	83447	46523	1	1
19981120	0	1	10011	10	2.6	1	48245	83447	46523	6	1
19980323	0	1	10011	10	2.6	1	48245	83447	46523	7	1
19960731	0	1	10011	10	2.6	0	48245	83447	46523	5	1
20020425	0	1	10012	12	2.25	0	42313	91747	23249	1	1
19961001	0	1	10012	12	2.25	0	42313	91747	23249	1	0
20000727	0	1	10013	39	2.18	1	37601	48198	47769	1	0
19990622	0	1	10013	39	2.18	1	37601	48198	47769	7	1
19980710	1	0	10013	39	2.18	1	37601	48198	47769	3	1
19960925	1	0	10013	39	2.18	0	37601	48198	47769	1	0
20030328	0	1	10014	19	3.58	1	53510	54855	26932	7	1
19980107	0	1	10014	19	3.58	1	53510	54855	26932	7	1
19960122	0	1	10014	19	3.58	1	53510	54855	26932	1	0
20000322	0	1	10016	12	2.42	1	54966	101482	67355	1	0
20000121	0	1	10016	12	2.42	1	54966	101482	67355	1	0
19990326	1	0	10016	12	2.42	1	54966	101482	67355	7	1
20001031	0	1	10017	15	2.8	1	55421	50973	117399	7	1
19981214	0	1	10017	15	2.8	1	55421	50973	117399	7	1
19970929	0	1	10017	15	2.8	1	55421	50973	117399	7	1
19970425	0	1	10017	15	2.8	0	55421	50973	117399	1	0
19961129	1	0	10017	15	2.8	0	55421	50973	117399	1	0
20000131	1	0	10018	10	1.3	0	47989	16170	85212	1	0
19960805	1	0	10018	10	1.3	1	47989	16170	85212	1	0
19950406	0	1	10018	10	1.3	0	47989	16170	85212	7	1

20041110	0	1	10019	14	0.93	1	41902	53923	114276	7	1
20020911	0	1	10019	14	0.93	1	41902	53923	114276	7	1
20010712	0	1	10019	14	0.93	1	41902	53923	114276	2	1
20000118	0	1	10019	14	0.93	1	41902	53923	114276	7	1
19990412	1	0	10019	14	0.93	1	41902	53923	114276	1	0
19980806	1	0	10019	14	0.93	0	41902	53923	114276	1	1
19980114	0	1	10019	14	0.93	1	41902	53923	114276	1	0
19970312	0	1	10019	14	0.93	1	41902	53923	114276	7	1
19961003	0	1	10019	14	0.93	1	41902	53923	114276	1	0
19990330	1	0	10020	3	0	1	24583	2060	34920	1	0
19971123	0	1	10020	3	0	0	24583	2060	34920	7	1
19960822	1	0	10020	3	0	1	24583	2060	34920	1	1
20020516	1	0	10021	5	4.4	0	68865	85755	42563	5	1
20010920	0	1	10021	5	4.4	0	68865	85755	42563	1	0
20000920	0	1	10021	5	4.4	1	68865	85755	42563	1	0
20000109	1	0	10021	5	4.4	1	68865	85755	42563	1	0
19991217	0	1	10021	5	4.4	1	68865	85755	42563	7	1
19990623	0	1	10021	5	4.4	0	68865	85755	42563	1	1
19990318	0	1	10021	5	4.4	1	68865	85755	42563	7	1
19960429	0	1	10021	5	4.4	1	68865	85755	42563	7	1
20021206	0	1	10022	7	2.71	1	72939	81050	130236	7	1
20001210	0	1	10022	7	2.71	1	72939	81050	130236	1	0
19990317	0	1	10022	7	2.71	0	72939	81050	130236	1	0
19970314	0	1	10022	7	2.71	1	72939	81050	130236	1	1
19950603	1	0	10022	7	2.71	1	72939	81050	130236	5	1
20020919	0	1	10023	2	3	0	59161	90154	28250	5	0
20020522	0	1	10023	2	3	1	59161	90154	28250	7	1

20010430	1	0	10023	2	3	1	59161	90154	28250	1	0
19980713	1	0	10023	2	3	1	59161	90154	28250	1	0
19970202	1	0	10023	2	3	1	59161	90154	28250	1	0
20040823	0	1	10024	2	4	0	60560	66282	14925	5	1
19970505	0	1	10024	2	4	1	60560	66282	14925	6	1
20040807	0	1	10025	3	2.33	0	42867	95883	11999	5	1
20000727	1	0	10025	3	2.33	0	42867	95883	11999	1	0
19990713	0	1	10025	3	2.33	0	42867	95883	11999	1	1
19971217	0	1	10025	3	2.33	0	42867	95883	11999	3	1
19961024	0	1	10025	3	2.33	1	42867	95883	11999	4	1
19961030	0	1	10026	2	3.5	1	18104	1032667	1868	7	1
20020402	1	0	10027	8	1.38	0	23474	53616	29035	5	1
19951208	5	2	10027	8	1.38	0	23474	53616	29035	1	0
19951008	0	1	10027	8	1.38	0	23474	53616	29035	3	1
20040917	0	1	10028	12	2.75	1	68706	172127	15132	7	1
20010212	1	0	10028	12	2.75	1	68706	172127	15132	1	0
	0	0	10029	4	1.25		22081	84216	26090		
	0	0	10030	0	0		17178	77027	2154		
20020816	0	1	10031	0	0	0	25565	97077	5470	5	1
19970414	1	0	10031	0	0	0	25565	97077	5470	1	1
20020702	0	1	10032	4	4.25	0	27092	88623	13321	7	1
19970701	1	0	10032	4	4.25	1	27092	88623	13321	6	1
19950907	1	0	10032	4	4.25	1	27092	88623	13321	7	1
20010815	0	1	10033	1	4	1	30315	71555	5753	7	1
19990818	0	1	10033	1	4	1	30315	71555	5753	7	1
19961031	1	0	10033	1	4	1	30315	71555	5753	1	1
19951016	0	1	10033	1	4	0	30315	71555	5753	1	0
	0	0	10034	1	1		30098	51270	3589		
	0	0	10035	5	3.6		18160	22065	11073		

20040812	0	1	10036	32	1.5	0	31327	35148	102831	7	0
20020823	0	2	10036	32	1.5	2	31327	35148	102831	7	1
20011206	0	1	10036	32	1.5	1	31327	35148	102831	1	0
19980626	0	1	10036	32	1.5	1	31327	35148	102831	7	1
19980420	0	1	10036	32	1.5	0	31327	35148	102831	6	1
19980213	1	0	10036	32	1.5	1	31327	35148	102831	1	0
19971209	0	1	10036	32	1.5	1	31327	35148	102831	1	0
19971117	0	1	10036	32	1.5	1	31327	35148	102831	1	0
19960417	0	1	10036	32	1.5	0	31327	35148	102831	1	0
19951104	0	1	10036	32	1.5	1	31327	35148	102831	1	0
20000425	0	1	10037	0	0	1	26150	55967	2144	7	1
20020218	0	1	10038	5	3.6	0	30128	44177	28254	1	0
19991103	0	1	10038	5	3.6	0	30128	44177	28254	1	1
19960915	0	1	10038	5	3.6	0	30128	44177	28254	1	1
	0	0	10039	2	3		21882	74947	1503		
19981105	1	0	10040	1	3	0	29373	73470	2887	1	0
19961220	1	0	10040	1	3	0	29373	73470	2887	1	0
	0	0	10044	2	2.5		57572	24870	3455		
20040929	0	1	10048	10	1	1	60000	104000	28391	7	1
20000207	1	0	10048	10	1	1	60000	104000	28391	7	1
20020819	0	1	10128	0	0	1	64605	115614	13859	7	1
	0	0	10280	0	0		94550	66140	780		
	0	0	10281	0	0		60000	10000	27204		
19970411	0	1	10282	0	0	1	60000	15740	170	7	1
20040602	0	1	11201	6	0.83	0	49287	30028	44327	5	1
20030424	0	1	11201	6	0.83	0	49287	30028	44327	1	0
20000502	0	1	11201	6	0.83	1	49287	30028	44327	7	1
19990708	0	1	11201	6	0.83	1	49287	30028	44327	7	1
19990311	0	1	11201	6	0.83	1	49287	30028	44327	1	0

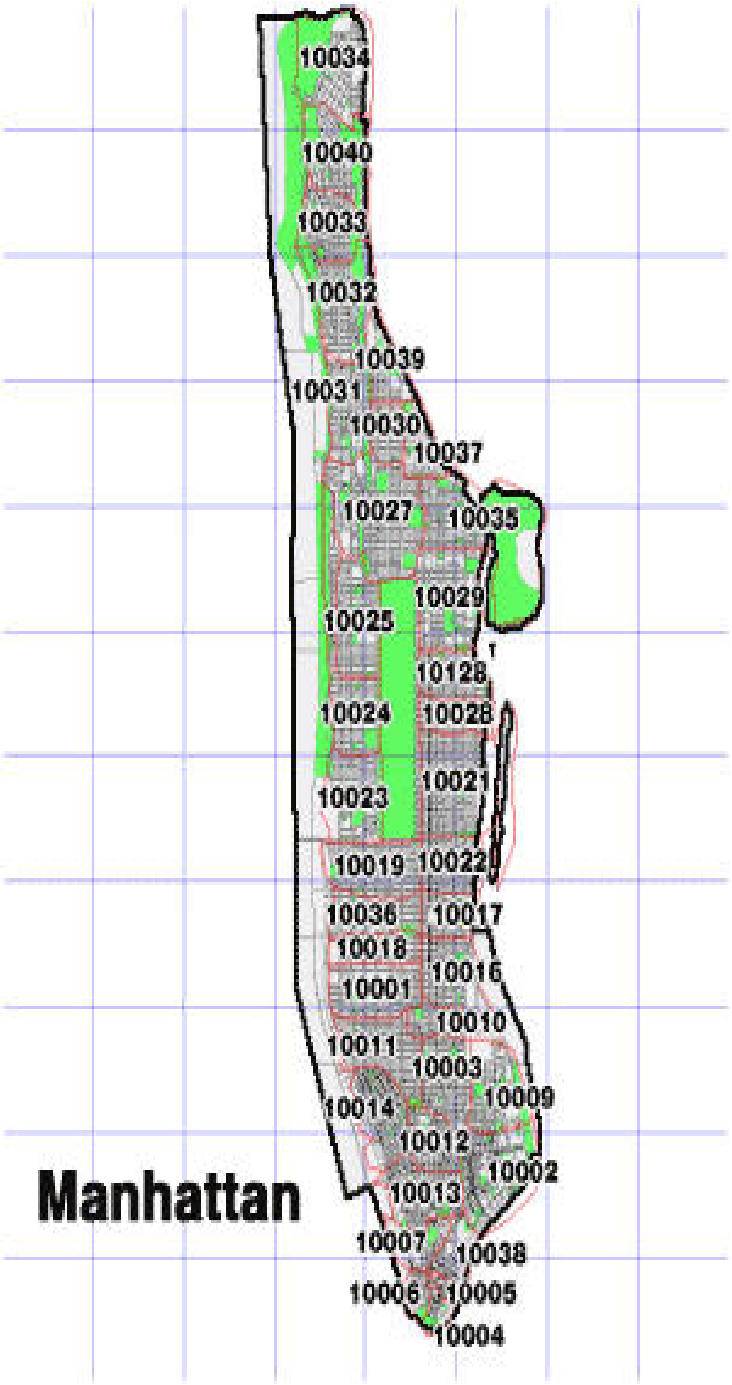
19960701	1	0	11201	6	0.83	1	49287	30028	44327	1	0
19971030	0	1	11203	0	0	0	43622	35850	18310	6	1
19981020	1	0	11204	1	1	1	35262	38481	7759	1	1
20010625	0	1	11205	13	4.92	1	30296	29078	10921	1	0
19981202	0	1	11205	13	4.92	1	30296	29078	10921	7	1
19981010	0	1	11205	13	4.92	0	30296	29078	10921	6	0
19980709	0	1	11205	13	4.92	0	30296	29078	10921	7	1
19980308	1	0	11205	13	4.92	1	30296	29078	10921	3	1
20030517	0	1	11206	6	2.5	0	18362	52504	14656	6	1
20012510	1	0	11206	6	2.5	1	18362	52504	14656	5	1
19991123	1	0	11206	6	2.5	0	18362	52504	14656	4	1
20040920	0	1	11207	5	1.6	0	27041	30911	13334	1	0
	0	0	11208	5	5.8		29938	21421	9165		
20040520	0	1	11209	1	0	0	42261	26510	11252	5	1
19990326	0	1	11209	1	0	0	42261	26510	11252	1	1
20040827	0	1	11210	1	1	0	43096	37189	5634	4	1
19951219	0	1	11210	1	1	1	43096	37189	5634	1	0
20020219	1	0	11211	12	1.67	0	22463	41664	18791	1	0
20010430	1	0	11211	12	1.67	0	22463	41664	18791	2	1
20000920	0	1	11211	12	1.67	1	22463	41664	18791	3	1
19960605	0	1	11211	12	1.67	0	22463	41664	18791	1	1
19960514	0	1	11211	12	1.67	1	22463	41664	18791	1	0
19960128	0	1	11211	12	1.67	0	22463	41664	18791	2	1
19950906	0	1	11211	12	1.67	1	22463	41664	18791	1	0
	0	0	11212	0	0		25201	57296	8631		
	0	0	11213	0	0		28484	58216	5114		
19960811	0	1	11214	3	2.67	0	35927	33754	10193	1	1
20000401	0	1	11215	15	1.8	1	45963	24925	11249	1	1
1995	0	1	11215	15	1.8	0	45963	24925	11249	3	1

1223											
20020426	0	1	11216	0	0	0	26239	56260	6626	1	1
19951116	0	1	11217	8	3.125	0	39277	42067	9867	5	1
20020925	0	1	11218	4	0.5	0	37763	40979	7881	2	1
19960206	0	1	11218	4	0.5	1	37763	40979	7881	1	0
19950419	0	1	11218	4	0.5	1	37763	40979	7881	1	1
19970106	0	1	11219	3	0.33	0	29688	47631	10864	1	0
19980908	0	1	11220	10	2.6	1	33164	43745	12033	6	1
	0	0	11221	4	1		24155	49412	5696		
20040902	0	1	11222	11	2.82	0	37336	21892	15736	1	0
20020918	1	0	11222	11	2.82	0	37336	21892	15736	1	0
20020220	0	1	11222	11	2.82	1	37336	21892	15736	7	1
19990814	0	1	11222	11	2.82	0	37336	21892	15736	1	1
19980806	1	0	11222	11	2.82	0	37336	21892	15736	1	0
19970501	0	1	11222	11	2.82	0	37336	21892	15736	1	0
19960228	1	0	11222	11	2.82	1	37336	21892	15736	1	0
	0	0	11223	9	3.33		35693	32221	8420		
20010806	0	1	11224	1	1	0	24256	36543	5054	1	0
19990708	0	1	11224	1	1	1	24256	36543	5054	6	1
	0	0	11225	2	2.5		35356	49321	4419		
20030815	1	0	11226	0	0	0	34687	84019	8368	1	0
19960820	0	1	11226	0	0	0	34687	84019	8368	1	0
19960725	0	1	11226	0	0	1	34687	84019	8368	4	1
20041110	0	1	11228	1	8	0	42656	25271	3238	1	0
20040304	0	1	11229	3	2.33	1	40843	31132	7491	1	0
19960229	0	1	11230	3	2	0	37389	39220	9705	3	1
20030403	0	1	11231	1	2	1	36730	20305	7934	2	0
19970715	0	1	11231	1	2	1	36730	20305	7934	7	1
19970620	0	1	11231	1	2	1	36730	20305	7934	7	1

19960422	1	0	11231	1	2	0	36730	20305	7934	2	1
20031119	1	0	11232	22	3.05	0	28054	17393	13989	1	1
19980403	1	0	11232	22	3.05	1	28054	17393	13989	7	1
19961217	0	1	11232	22	3.05	0	28054	17393	13989	4	1
19960321	0	1	11232	22	3.05	0	28054	17393	13989	1	0
19960215	0	1	11232	22	3.05	1	28054	17293	13989	1	0
20040909	1	0	11233	3	1	0	22026	47086	3982	1	1
20030429	1	0	11233	3	1	0	22026	47086	3982	1	1
20000323	0	1	11233	3	1	1	22026	47086	3982	7	1
19981222	1	0	11233	3	1	0	22026	47086	3982	4	1
20020320	0	1	11234	22	1	1	52421	7491	12513	7	1
19960815	1	0	11234	22	1	0	52421	7491	12513	3	1
	0	0	11235	2	5		33771	25358	12468		
19980423	1	0	11236	9	3.78	0	43599	21178	11001	1	0
19971110	0	1	11236	9	3.78	0	43599	21178	11001	1	0
19950725	0	1	11236	9	3.78	0	43599	21178	11001	1	0
20020419	0	1	11237	6	1.17	0	22497	45952	10373	1	0
20010323	1	0	11237	6	1.17	1	22497	45952	10373	1	0
19960821	1	0	11237	6	1.17	1	22497	45952	10373	1	0
19960612	1	0	11237	6	1.17	1	22497	45952	10373	1	0
19960322	1	0	11237	6	1.17	1	22497	45952	10373	1	0
19950928	1	0	11237	6	1.17	1	22497	45952	10373	1	0
20020703	0	1	11238	12	1	0	35307	35700	5079	4	1
	0	0	11239	0	0		22474	22240	857		

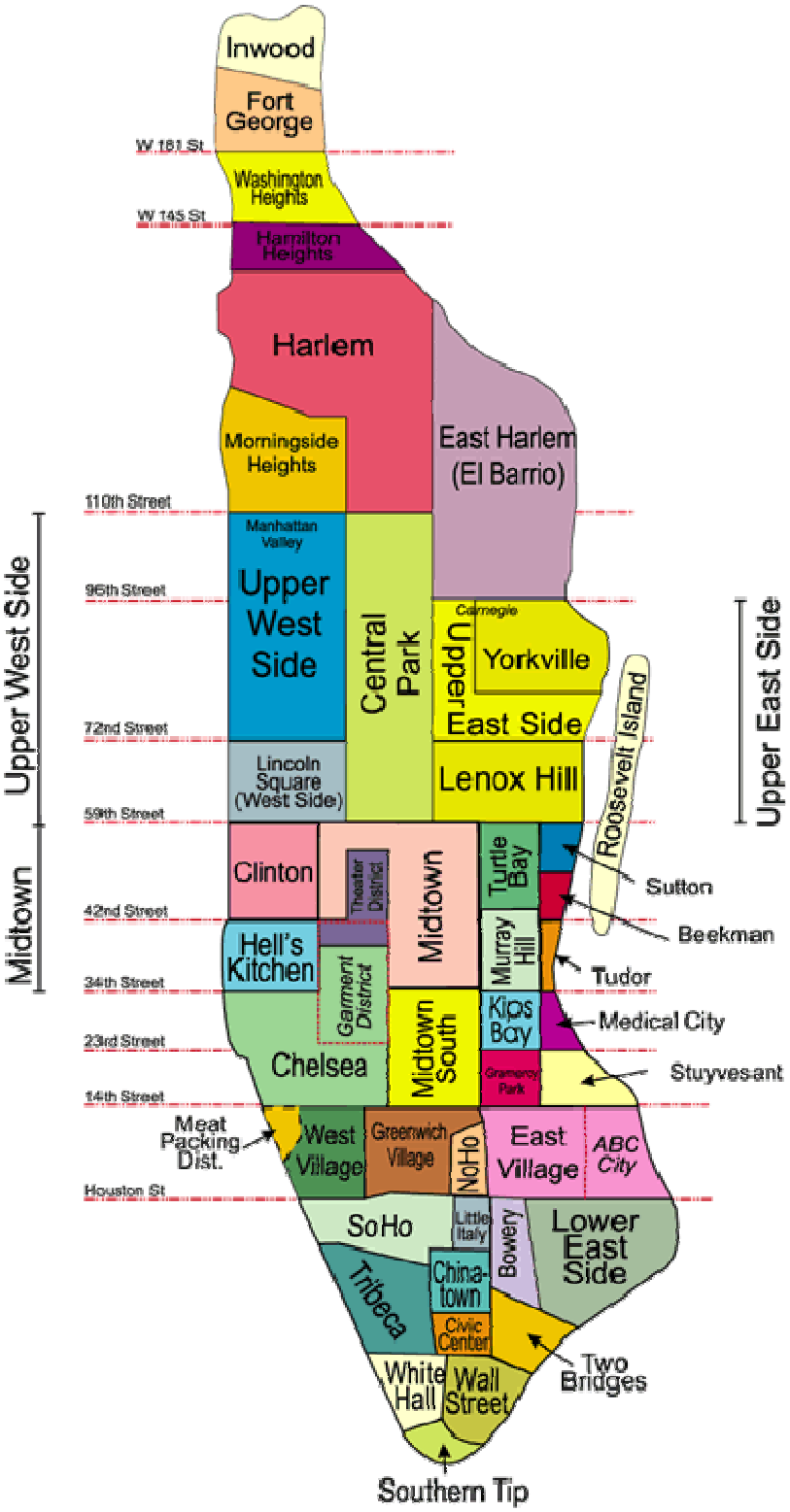
(CACI, 1994-1999; ESRI, 2000-2005; Google, 2007; Hagstrom, 1989; USDOL/OSHA FOIA, 2000; USDOL/OSHA, 2005-2009)

APPENDIX-B



Manhattan zip codes (Google Images, 2010)

Appendix- C



Manhattan neighborhoods (Google Images, 2010).

Appendix - D

Brooklyn zip codes (Google images, 2010).

Appendix - E

Brooklyn neighborhoods (Google images, 2010).

Bibliography

Airriess, Christopher A., and Miyares, Ines, M. "Exploring Contemporary Ethnic Geographies" Contemporary Ethnic Geographies in America. Rowman and Littlefield Publishers Inc., Lanham Maryland. (2007)

Alberts, Heike, "Geographic Boundaries of the Cuban Enclave Economy in Miami" Landscapes of the Ethnic Economy. ed. By David Kaplan and Wei Li. Rowman & Littlefield Publishers Inc. Maryland. (2006)

Bailey, A. J. and M. Ellis. "Going Home: The Migration of Puerto Rican-born women from the United States to Puerto Rico" The Professional Geographer 45, (1993): 148-158.

Barrett, Giles A and McEvoy, David, "The Evolution of Manchester's Curry Mile: From Suburban Shopping Street to Ethnic Destination" Landscapes of the Ethnic Economy ed. By David Kaplan and Wei Li. Rowman & Littlefield Publishers Inc. Maryland. (2006)

Bonacich, E. "A Theory of Middleman Minorities" American Sociological Review, Vol. 38 (1973):583-594.

Borjas, G. "The Self-Employment Experience of Immigrants" Journal of Human Resources. Vol.21. (1986):485-506

Bowen, William M., Sulling, Mark J., Haynes, Kingsley E., Cryan, Ellen J. "Toward Environmental Justice: Spatial Equity in Ohio and Cleveland" in Annals of the Association of American Geographers, Vol. 85, No 4, (December 1995): 641-663.

Bratton, William, Turnaround, How America's Top Cop Reversed the Crime Epidemic Random House: NY. (1998)

CACI Marketing Systems, The Source Book of Zip Code Demographics 9^{th}- 13^{th} editions. (covering years 1994-1998).CACI Marketing Systems, 1100 North Elebe Road, Arlington Virginia, 22201. (1995-1999).

City of New York, New York City Planning Commission, "Zoning Maps" (July 7, 1994)

Code of Federal Regulations 29 Labor, Parts 1900 to 1910.999, Published by The US Office of the Federal Register National Archives and Records Administration. (Revised as of July 1, 2006)

Collins, Jock, "Ethnic Diversity and the Ethnic Economy in Cosmopolitan Sydney" Landscapes of the Ethnic Economy ed. By David Kaplan and Wei Li. Rowman & Littlefield Publishers Inc. Maryland. (2006)

Cornell University, School of Industrial and Labor Relations website - www.ilr.cornell.edu.trianglefire – 2009.

Cottrell, Allin; Gretl statistical program and Gretl Manual:Gnu regression, Econometrics and Time-series Library. Department of Economics, Wake Forest University, (August 2005). Program and manual from Gretl website. http://gretl.sourceforge.net

Curran,Winifred, and Hanson, Susan."Getting Globalized: Urban Policy and Industrial Displacement in Williamsburg, Brooklyn" Urban Geography, 26, 6 (2005):461-482.

Ellis, Mark, Wright Richard, Parks, Virgina "Work Together Live Apart? Geographies of Racial and Ethnic Swgregation at Home and at Work" Annals of the Association of American Geographers 94 (3), (2004):620-637.

ESRI, The Source Book of Zip Code Demographics 14th-18th editions. (covering years1999-2004) Redlands California, 92373-8100. (2000-2005).

Ford, Larry. "Midtowns, Megastructures and World Cities", Geographical Review No. 4 American Geographical Society of New York. (1988):528-547

Freeman, Amy. "The Spaces of Graduate Student Labor: The Times for a New Union" Antipode 32:3 (2000):245-259.

Gilbertson, G.A."Woman's Labor and Enclave Employment: The Case of *Dominican* and Colombian Women in NYC" in International Migration Review, Vol. 2 (1995): 657-670.

Google, Genealogy Name Search, www.google.com, (2007)

Google Images. www.images.google.com, (2010)

Gould, Peter. The Slow Plague: A Geography of the AIDS Pandemic. Oxford, UK, Blackwell, (1993)

Hagstrom Map Company Inc., New York City 5 Borough Atlas, First Large Scale Edition Hagsttrom Map Company Inc. 46-35 54th Road, Maspeth, New York, 11378. (1989)

Harvey, David. "The Environment of Justice" Chapter 4 in: The Urbanization of Injustice eds. Andy Merrifield and Erik Swyngdouw. New York: New York University Press: (1997):65-99.

Heinrich, H.W., Industrial Accident Prevention, A Scientific Approach. McGraw-Hill Book Company, Inc, (New York, London), (1931)

Herod, Andrew. "Using Industrial Disputes to Teach About Economic Geography" Journal of Geography, 98, No 5 (1999):229-241.

Jokisch. Brad; "Migration and Agriculture Change: The Case of Smallholder Agriculture in Highland Ecuador". Human Ecology, Vol. 30, Number 4, (December 2002)

Jokisch, Brad; Pribilsky, Jason; "The Panic to Leave: Economic Crisis and the New Emigration from Ecuador" International Migration Review, Vol. 40, Number 4, (September 2002):75-102.

Kamber, Thomas, Mollenkopf, John H. and Ross, Timothy H., "Crime Space and Place, Analysis of Crime Patterns in Brooklyn" Chap 9 in Analyzing Crime Patterns, Frontiers of Practice edited by Victor Goldsmith, Philip G. McGuire, John H. Mollenkopf, and Timothy A. Ross. Sage Publications Inc. : Thousand Oaks, London, New Delhi: (2000):107-120.

Kim, I., "New Urban Immigrants: The Korean Community in New York" Princeton University Press. (1981)

Kraly, Ellen Percy, and Miyares, Ines, "Immigration to New York: Policy, Population, and Patterns" New Immigrants In New York. Edited by Nancy Foner, Columbia University Press, New York, (2001):33-79.

Loh, Katherine, and Richardson, Scott, "Foreign-born Workers: Trends in Fatal Occupational Injuries, 1996-2001" Monthly Labor Review of the US Dept. of Labor/ Bureau of Labor Statistics, (June 2004)

Massey, Douglas S., Arango, Joaquin; Hugo, Graeme; Kouaouci, Ali; Pellegrino, Adela; and Taylor, Edward, "Theories of International Migration: A Review and Appraisal", Population and Development Review. Vol. 19, No. 3, (Sept, 1993): 431-466.

Min, P. G. "Ethnic Business Enterprise: Korean Small Business in Atlanta" Staten Island, NY: Center for Migration Studies. (1988)

Miyares, Ines, M., and Airress, Christopher A., "Creating Contemporary Ethnic Geographies- A Review of Immigration Law", Contemporary Ethnic Geographies in America. Rowman and Littlefield Publishers Inc., Lanham Maryland. (2007)

Miyares, Ines M, "Little Odessa- Brighton Beach, Brooklyn: An Examination Of The Former Soviet Refugee Economy In New York City", Urban Geography, Vol. 19, No. 6, (1998):518-530.

Mountz, Allison., Wright, Richard., Miyares, Ines., and Bailey, Adrian J. "Methodologically Becoming: power, knowledge and team research" Gender, Place and Cultue, Vol. 10, No. 1, (2003):29-46.

Mountz, Allison., Wright, Richard., Miyares, Ines., and Bailey, Adrian J. "Lives in Limbo; Temporary Protected Status and Immigrant Identities" Global Networks Vol. 2 No. 4, (2002):335-356.

Murray, Malcolm A., "The Geography of Death in the United States and the United Kingdom" Annals of Association of American Geographers, Vol. 57, No.2, (1967):30

National Heart Lung and Blood Institute of Dept. of Health and Human Services, National Institute of Health Website. Available at: http://www.nhlbi.nih.gov; 2006. "Epidemiologic Research in Hispanic Populations, Opportunities, Barriers, Solutions" by Betheida MD (working group July 31-Aug. 1, 2003)

National Labor Relations Board website. Available at: www.nlrb.gov; (2007)

National Legal and Policy Center website. Available at: www.nlpc.org; (2009)

New York State Dept. of Labor website. Available at: http://www.labor.state.ny.us/workerprotection/safetyhealth/DOSH_PESH.shtm; (2007)

New York State Trial Lawyers Association of the US Department of Labor OSHA, "Lives in the Balance: Immigrants and Workers at Elevated Heights at Greatest Risk in Construction". (June 2005)

Occupational Safety and Health Act of 1970. Public Law 91-596, 84 STAT. 1590, 91st Congress, S.2193. (December 29, 1970 as amended through January 1, 2004)

Portes, A. and Zhou, M. "Gaining the Upper Hand: Economic Mobility Among Immigrant and Domestic Minorities." Ethnic and Racial Studies, Vol. 15, (1992):491-522.

Sall, John and Lehman, Ann, of SAS Institute Inc. Jump Start Statistics, A Guide to Statistics and Data Analysis Using JMP and JMP IN Software Belmont California, 94002: Duxbury Press an Imprint of Wadsworth Publishing Co. (1996)

Shannon, Gary W., Gerald F. Pale, and Rashid L. Bashshur. The Geography of AIDS: Origins and Course of an Epidemic. New York: Guilford, (1991)

Smith, James M., "Spatial and Identity Transformations of the Japanese American Ethnic Economy in Globalizing Los Angles" Landscaes o the Ethnic Economy ed. By David Kaplan and Wei Li. Rowman & Littlefield Publishers Inc. Maryland, (2006)

Smith, Robert, C., "Mexicans: Social, Educational, Economic, and Political Problems and Prospects in New York" New Immigrants In New York, edited by Nancy Foner. Columbia University Press, NY, (2001):275-300

Smith, Susan M., Perry, Teresa, and Moyer, Diana, Professional Safety, Des Plaines: Vol. 51, Issue 121, (Dec. 2006): 20.

Social Security Administration website. Available at: www.ssa.gov, (2007)

Stewart, Robert, "Determinants of Occupational Accidents" Unpublished Masters Paper In Partial Fulfillment of the Requirements for the Degree of Master of Arts (Community Health) at the Department of Health and Nutritional Sciences, Brooklyn College, (May 20, 1991):37.

Stewart, Robert, Field observations while conducting inspections in Brooklyn and Manhattan. (1990-2009)

Swartz, Charles, "The Spatial Analysis of Crime, What Social Scientists have Learned," Chap 4 in Analyzing Crime Patterns, Frontiers of Practice, edited by Victor Goldsmith, Philip G McGuire, John H. Mollenkopf, Timothy A. Ross. Sage Publications Inc.: Thousand Oaks, London, New Delhi: (2000):33-46.

Teixeira, Carlos., "Residential Segregration and Ethnic Economies in a Multicultural City: The Little Portugal of Toronto" Landscaes o the Ethnic Economy ed. By David Kaplan and Wei Li. Rowman & Littlefield Publishers Inc. Maryland, (2006)

Tonkin, Liza "Women of Steel: Constructing and Contesting New Gendered Geographies of Work in the Australian Steel Industry" Antipode Vol. 32 No.2, (2000):115-134

US Center for Disease Control website. Available at: www.cdc.gov, (2007)

US Census Bureau website. Available at: www.census.gov, (2006)

US Dept. of Labor website. Available at: www.dol.gov, (2007)

US Dept. of Labor Employee Standards Administration website. Available at: www.dol.esa.gov, (2009)

US Dept. of Labor/OSHA Field Inspection Reference Manual (2007)

US Dept. of Labor/OSHA LEP (Local Emphasis Program) for the Manhattan Area Office. (2007)

US Dept. of Labor/OSHA website. Available at: www.OSHA.gov, (2005-2009)

US Dept. of Labor/OSHA Freedom of information request for all Manhattan and Brooklyn inspections conducted in 1998, (2000)

US Dept. of State website. Available at: www.state.gov; (2007)

US Dept. of Transportation website. Available at; www.dot.gov; (2007)

US Dept. of Treasury/ Internal Revenue Service (IRS) website. Available at: www.irs.gov; (2009)

Vance, James E. "Human Mobility and Shaping of Cities" Chap. 5 in Our Changing Cities. Ed John Fraser Hart, Baltimore, MD: John Hopkins University. (1991): 67-87

Waldinger, R. "From Ellis Island to LAX, Immigrant Prospects in the American City" International Migration Review Vol. 30 (1996a):1078-1086.

Waldinger, R. Still The Promised City? African Americans and New Immigrants in Postindustrial New York. Harvard University Press, Cambridge, MA (1996b)

Waldinger, R. and M. Bozorgmehr, Ethnic Los Angeles. New York Russell Sage Publications. (1996)

Walsh, Jess "Laboring at the Margins: Welfare and the Regulation of Mexican Workers in Southern California" Antipode 31:4, (1999):398-420.

Wilson, F. and A. Portes. "Immigrant Enclaves: An Analysis of the Labor Market Experiences of Cubans in Miami". American Journal of Sociology 89 (1080): 295-319

Wright, Richard. Miyares, Ines. Bailey, Adrian J., and Mountz, Allison. "Legal Status, Gender and Employment among Salvadorans in the US" International Journal of Population Geography, Vol. 6, (2000):273-286.

Wright, R. and M. Ellis, "Nativity, Ethnicity, and the Evolution of the Intra-Urban Division of Labor in Los Angeles" Urban Geography Vol. 18, (1997):234-63.

Wright, Richard, and Ellis, Mark, "Immigrants, the Native-Born, and the Changimg Division of Labor in New York City" New Immigrants In New York., edited by Nancy Foner. Columbia University Press, New York, (2001):81-110.