The Impact of Affordable Housing
on
Taxable Property Valuation in a Poor City

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ABSTRACT OF THE DISSERTATION

The Impact of Affordable Housing on

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This research looks at the impact of affordable housing development on the tax base in a poor city. Viability of the tax base is a critical matter for municipalities to address as they plan revitalization strategies. Poor cities may include affordable housing development as a revitalization strategy to meet the needs of their housing cost burdened residents or to upgrade blighted or unproductive property.   Prior research has looked at the impact of affordable housing on concerns such as concentration of poverty, crime, racial segregation, and resale value of nearby housing, but not tax base.

While preliminary bivariate findings indicated that taxable property value increased at a greater rate in the zone closest to affordable housing development, the results of the discriminant analysis found that affordable housing had a minimal influence on taxable property value change, and that other factors were better determinants of the change. Quantitative and qualitative results suggest that in addition to prior taxable property valuation, social fabric within the community before affordable housing development is a better predictor of the change in tax value of surrounding property.

My friends and church family have been a continual source of encouragement and support. You know who you are. I love you for it.

I thank my family whose belief in education and scholarship grounded me in this pursuit. I especially acknowledge my late uncles Newton and Herman, and my uncles, Charles and Jerome, for standard they set and their insistence that I finish what I started.

Finally,

I dedicate this work to my loving husband, Jerome C. Harris, Jr.;

he is the "wind beneath my wings."

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INTRODUCTION

A city government's primary responsibility is to provide local public goods and services. This can be a formidable task for a poor city. Poor cities tend to have declining land values and higher proportions of poor residents who are likely to require more public services. Cities in many states, including New Jersey, are dependent upon local property taxes for revenue to make the provision of public goods and services possible. If municipal revenue is limited because of the devaluation of taxable property due to blight, lack of investment or some other impediment, the city must embark upon a revitalization strategy to correct the problem and enhance its capacity to fulfill its primary responsibility. Revitalization strategies for poor cities must be judged in part by the extent to which said strategies enhance the tax base. Has the revitalization strategy increased the value of the city's taxable property?

Residential property makes up the highest portion of the taxable property in most incorporated municipalities. Unfortunately poor households cannot afford most unsubsidized housing, and poor cities are generally not first choice locations for families who are not poor, to invest in housing. Freeman found that non-poor households, particularly white non-poor households, were less likely to move into a neighborhood with perceived high concentrations of poor people (L. Freeman, 2003). Without potential buyers for market rate housing, is it possible to revitalize a city with publicly subsidized housing, otherwise known as affordable housing?

Municipal officials may want or need to address affordable housing needs of city residents living in overcrowded or substandard housing, or spending over 30% of their income on shelter, considered housing cost burden, in an effort to improve the quality of life within the city for these residents. A city resident with affordable housing will have more income available to pursue other quality of life requirements such as education and training, health care and nutrition, transportation to work and so on.

This research considers whether affordable housing is an effective revitalization strategy. Can publicly subsidized housing built or renovated for persons of low to moderate income, "affordable housing," increase the value of land on which once stood abandoned, vacant, deteriorated buildings and improve the assessed taxable value of the surrounding taxable property? Or does it increase the concentration of poor residents in the city and the corresponding higher expenditure requirements that poverty brings to cities, and bring down the assessed value of surrounding properties? Are there factors which can help to assure affordable housing increases land value, or factors that can diminish the potential for affordable housing to decrease land values?

Selecting affordable housing as part of the 'right' revitalization strategy can create tension for poor cities. There are person-based and place-based revitalization strategies. Public officials may desire person-based strategies that provide direct assistance to constituents to improve what Ladd and Yinger (1989) refer to as "resident economic health," which is measured by the per capita income of a city's residents, whereas "standardized fiscal health" is the per capita municipal revenue and represents the city's

ability to deliver public services to its residents. According to Ladd and Yinger "cities with relatively poor resident economic health have relatively poor standardized fiscal health," because their revenue raising capacity tends to be low and their service costs tend to be high (Ladd & Yinger, 1989)."

Person-based strategies (e.g. education, job training, housing vouchers) are usually portable. That is they are tied to a person, they are not tied to any particular location. A city resident can benefit from the assistance of a person-based revitalization strategy provided by a city and then relocate out of that city. The resident's economic health may be improved but there is no guarantee that they will remain in the city to contribute to the city's fiscal health.

Even among place-based revitalization strategies which develop the city's land and its amenities, public officials must make difficult choices. Major public works projects create employment opportunities for residents, particularly when the public works projects house ongoing jobs that last longer than the construction phase. Unfortunately public facilities such as airports, arenas and convention centers do not usually pay taxes. When they are financed by the municipality until the debt service is retired, net income from these facilities to the city for the provision of public services is limited, if at all existent. And jobs created by a new public facility can be held by non-residents or by residents who after becoming employed chose to relocate out of the city.

In the poorest older American cities, restructuring of the economy during the mid 20th century brought about the closing of factories and the disinvestment of the manufacturing sector as major property tax payers (Downs, 2003). As a result these poor cities struggle to implement revitalization strategies to reinvigorate the local economy and compensate for lost revenue.

One revitalization strategy for cities has been to pursue other private firms to locate within their boundaries to replace the closed factories. As an incentive for many private firms to locate within a municipality, public officials grant tax abatements, although there is a school of thought that firms do not require such tax abatements and that public amenities have more impact on locational decisions than property taxes do. Perceived competition among municipalities to lure private investment has made tax abatement a common component of incentive packages (Dalehite, Mikesell, & Zorn, 2005; Reese, 2006; Wassall, Gregory and Daryl A. Hellman, 1985; Wassmer & Anderson, 2001). This tax program impedes the capacity of the city to generate new, additional revenue. The land, which is in limited supply, is removed from full tax obligation and has limited availability for future local revenue.

Many private firms, as well as higher level (state and federal) governments locating facilities in municipalities, make payments in lieu of taxes (PILOTs) to municipalities. These PILOTs generate considerably less revenue than a property tax would have, if the land had been developed to its highest and best use and fully assessed as a taxable property.(Espey & Owusu-Edusei, 2002) It may nevertheless yield in PILOT income

more revenue for the city than it did prior to the new development. In the best of situations the new facility may remove blight and improve the value of surrounding properties and even attract other property owners who pay full taxes.

This study focuses on redevelopment choices and challenges, faced by Trenton, New Jersey, but with implications for many old North American cities with an industrial past. The Brookings Institution Metropolitan Policy Program in a 2007 study describes the older industrial U. S. city as, "a set of communities that over the past several decades have experienced the steady loss of businesses and jobs, and whose role in the economy, and the economic stability of their residents, has diminished as a result." Of the 302 cities included in the study, 65 were considered weak, based upon the city's economic condition, measured by jobs and growth in business, and its residential economic well being, measured by per capita income and labor force participation. Trenton was one of those 65, roughly half of which had less than 100,000 residents in 2000. These are cities such as Harrisburg, Pennsylvania, Pine Bluff, Arkansas, Saginaw, Michigan, Youngstown, Ohio, New Bedford, Massachusetts, and Macon, Georgia (Vey, 2007).

Justin Hollander's book, **Polluted & Dangerous: America's Worst Abandoned Properties and What Can Be Done About Them**, also describes Trenton as a representative example of a city that suffered as a result of disinvestment by the manufacturing sector. He cites Trenton's HI-TOADS (High Impact Temporarily Obsolete Abandoned Derelict Sites) and notes that they are accompanied by other social and economic conditions that cry out for effective redevelopment (Hollander, 2009).

Trenton, New Jersey is a good location for this study because it made the decision to build affordable housing in one of its most challenged sections of the city, by developing a Homeownership Zone with the assistance of the United States Department of Housing and Urban Development. In the application submitted in 1997, the City of Trenton applied for designation and funds from the federal Homeownership Program to revitalize the Canal Banks section of Trenton. The Canal Banks area had a population of about 4800 residents in roughly 500 homeowner households and 1000 renter households. This is compared to a 50% home ownership rate across the city and 65% across New Jersey. Twenty-six percent of the Canal Banks households lived below the poverty level in 1990 as compared to 18% of households citywide, and 7.4% countywide. Median family income was $22,634 in the Canal Banks area as compared to $30,733 citywide and $48,490 countywide (City of Trenton, 1997).

The Homeownership Zone strategy involved a considerable amount of community outreach and participation. The strategy development process began with a series of five community meetings over three days to listen to residents, business people and area institutions. Task force groups were subsequently formed to plan around pressing community concerns such as housing, economic development, open space, and security. The reports from these task forces came together into a draft plan that was presented to the community for refining and then endorsement (City of Trenton, 1997). Therefore it is reasonable to assume that most property owners living in the area were aware of the plan for affordable housing development.

The City's strategy was a comprehensive one that in addition to housing development included new streetscapes including replacement of curbs and sidewalks, creation of green infrastructure planting of trees along the streets and developing passive parks and active play areas, and most critically the remediation of brownfields. There were also initiatives to help qualified renters become homebuyers, as well as opportunities for job training and placement, and some limited commercial development. In accordance with HUD guidelines, although all the units were subsidized, only 51 percent of the home buyers in the Homeownership Zone were required to be at or below the area median income level (Exceed Corporation, 2005).

The stated goal of the Homeownership Zone project was to increase the percentage of homeowners in the Canal Banks area from 33% to 45% with creation of 230 new or substantially rehabilitated affordable housing units most of them within one of six defined housing development areas (City of Trenton, 1997). This study will focus on one housing development that was built just prior to the Homeownership Zone designation and the first two homeownership housing developments to be completed as part of the project.

Main Research Question and Expectations

The criteria for an effective revitalization strategy for a poor city should include an evaluation of the strategy's impact on the valuation of the city's taxable property. A city must be conscientious in protecting its revenue source or ratable base, determining the best and highest use for its taxable land. Zoning to promote land uses which enhance revenue potential for the city while precluding increased expenditure obligation is a key municipal objective.

During my tenure in municipal government as business administrator and then chief of staff in Trenton, New Jersey, I was presented with the responsibility of devising a means to balance the city budget and oversee the city's redevelopment strategy. Having previously served as director of health and human services, I understood the competing needs. I vividly remember struggling to convince members of City Council of the merits of particular affordable housing development projects. I remember their skepticism, not about the projects per se or the need for the projects, but rather about how affordable housing would impact the city's bottom line. I want this research to assist future city officials as they are confronted with similar policy decisions regarding revitalization strategies for their municipality.

It is my hypothesis that affordable housing development in a poor city will increase the assessed value of taxable properties in adjacent neighborhoods. This will be tested by reviewing the impact of selected affordable housing developments in Trenton, New Jersey. I compare assessed value of taxable property in neighborhoods located in two

concentric one-eighth mile bands or zones around affordable housing development to see if the value of the properties in the band closest to the affordable housing changes in value at the same rate and direction as the properties in the outer band.

The comparisons take into account size of lots and land use, as well as characteristics of housing and households within the neighborhoods. I use several analytical techniques in this investigation, including simple descriptive analysis, as well as bivariate analysis, regression analysis, and discriminant analysis. The original dataset consists of roughly 3000 tax block lots or cases and has been constructed from:

- the City of Trenton's tax assessor's 1996, 1999, 2002 and 2005 reports,

- GIS reports, and

- the 1990 and 2000 census reports.

This information is supplemented by interviews with Trenton City Officials and the developers of the actual affordable housing.

I expect to find in the immediate neighborhood where the housing is developed, that affordable housing is indeed an effective redevelopment strategy, in terms of reducing the amount of vacant abandoned housing which can contribute to neighborhood blight. In the contiguous, surrounding neighborhoods, I expect that affordable housing will increase valuation of taxable residential property. One concern is that the time between the development of the affordable housing and the most recent assessed valuation will not reflect the full potential of the impact of the newly developed affordable housing in stabilizing the affected neighborhoods.

Organization of the Thesis

This study is divided into six chapters. Following this introductory chapter, I review the relevant literature regarding the impact of affordable housing, highlighting past and current thinking about affordable housing as an asset and as a detriment to community revitalization, and then delineating how past research has shaped my hypothesis. Because quantitative research has generally looked at the impact of affordable housing on market value as opposed to the assessed value of property, and my dataset is comprised of assessed values, the relationship between market value and assessed value is discussed.

Chapter 2 describes the data, its uniqueness and its limitations and the methods used in the analysis. The independent variables are categorized into three groupings, including (1) characteristics of the tax block lots to include land use, changes in land use, taxable valuation, and proximity to affordable housing; (2) characteristics of residential property in the community; and (3) characteristics of households in the community. Included with the descriptions of the variables are theoretical discussions as to how each independent variable is thought to influence the dependent variable(s), as anticipated from the literature review. The rationale for the methods selected is also discussed. The dataset was pared down by eliminating cases with missing values. This chapter describes the cases that were excluded from the final dataset and the analysis used to compare those cases with the cases that remained for further analysis in this study.

The Chapter 3 follows describing the quantitative results of the research and then Chapter 4 examines the qualitative outcomes. These outcomes are then interpreted in the concluding chapter, which summarizes the research within the context of policy recommendations, its contribution, its limitations, and additional research questions raised by this investigation.

CHAPTER ONE

REVIEW OF RELEVANT RESEARCH

Revitalization of a Poor City

A poor city in need of revitalization for the purpose of this research refers to a city in jeopardy of not having the necessary resources to meet its primary function, to provide needed local public services. This situation has come about due to flows of population and capital from central cities to suburbs during the latter half of the last century as well as flows of capital to locations outside of the United States.

National housing policy promulgated by the Federal Housing Administration and the Veterans Administration, coupled with the increased use of the automobile and improved and expanded highway systems, opened the suburbs to upwardly mobile city dwellers. Downs (2003), among others (Bradbury, Downs, & Small, 1982; Fainstein, 1986; Kaplan & James, 1990; Ladd & Yinger, 1989), describe how this phenomenon drained fiscal and human resources away from the older urban centers and weakened the ability of local governments there to provide services. Not only has population density declined in these cities but so has per capita income in relation to the income of larger metropolitan area. Poorer households have remained in the city.

Financial capital, in the form of jobs and viable firms moved out of the city seeking locations favorable to their needs, usually in close proximity to their workforce and or their customer base. This has served to create an economic and tax base in the new suburban location, but often times also an economic and tax void in the city from which

they moved.   The resultant concentrations of poor people in central cities has been what Downs refers to as social and technological obsolescence – poorer quality public services with respect to poorly performing public schools, high crime rates, decaying and obsolete water and sewer systems, obsolete telecommunications infrastructure, and deteriorated buildings poorly designed for rehabilitation for modern use (Downs, 2003).

Rusk (1995) describes the poor city as an inelastic city; one that cannot grow in land area and is losing its population, primarily its middle class population to its neighboring suburbs. It can have a per capita income that is 70% of its neighboring suburbs and it generally has a concentration of racial minorities. Commercially used property does not provide these cities with the necessary level of revenue to compensate for the concentrated poor residential population. As a result, the city has diminished capacity to provide for public services.

Rusk observes that most of the residential growth since World War II has been low density, suburban growth. State laws restrict the ease with which cities can annex outlying land and/or state laws allow the incorporation of new municipalities without careful consideration of the impact on existing older municipalities. Cities that cannot grow start to shrink. Instead of population growth there is population loss. Instead of business development, cities lose their agglomeration proclivity and consequently jobs. Furthermore, it is Rusk's opinion that cites cannot be rebuilt from within once they have reached a critical point (Rusk, 1995).

Federal policy and social trends have negatively impacted the fiscal capacity of cities as has the restructuring of the economy from industrial to information services, the suburbanization of middle class households, the population migration from older cities in the northeast to the younger cities of the southwest, and federal devolution of fiscal responsibility and financial aid for cities, along with the urbanization of poverty, have all contributed to the fiscal distress of the city. Ladd and Yinger conclude that a city's fiscal capacity depends upon economic, social and institutional factors that are largely outside the city's control. Cities have not been able to secure replacement dollars for the previously enjoyed federal assistance or the lost financially better off households and firms (Ladd & Yinger, 1989). Recognizing this dire situation for many cities, it is incumbent upon officials responsible for poor cities to promulgate policy that at the very least does not further diminish its primary own source revenue, property taxes.

Assessed Property Value

Assessed property value is important because of its relationship to the property tax. The property tax is the primary own-source (self generating) revenue for most municipalities in the New Jersey as well as many other states across the country. It is based on the assessed or taxable value of the property and apportioned among all property tax payers according to the value of their respective property. A municipality determines its spending needs (the funds required to provide local public services e.g. police and fire services, streets, parks, libraries, schools and courts, etc.), subtracts all revenue from non-property tax sources and divides the remaining amount by the total value of all taxable property within its jurisdiction to arrive at a tax rate. That tax rate is then multiplied by

the assessed value of each taxable property (International Association of Assessing Officers, 1977).

As defined by the tax assessors' handbook, "real property is the sum of tangible and intangible rights in land and improvements (IAAO, p. 35). Value connotes the ability of one commodity, in this case property, to command another commodity in exchange. In the context of real estate, value is the present worth of future benefits arising from the ownership of real property (IAAO, p. 16).

Raimondo (1992) affirmed that true property value is determined through one of three procedures: replacement cost, comparable sales, and income generation. Under the cost procedure the cost of the buildings or other improvements on the land is separated from the cost of the land, the cost to reproduce the improvements is estimated and then depreciated based upon age, to determine the market value. The sales or market procedure is a determination of resale or market value made by comparing the property to similar properties in the marketplace on sale or recently sold and assuming highest and best use of the property to establish value. The income procedure estimates the market value of income generating real property, accounts for operating costs to derive net income, and then translates future earnings into present income using a capitalization rate to determine value.

Raimondo goes on to indicate that all property is not taxed, some is exempted. Exempted property that does not yield revenue to the city in any other form (e.g. Payment in Lieu of

Taxes, fees) account for lost tax revenue which Raimondo terms a tax expenditure. Tax expenditures increase the tax burden on those not eligible for tax exemptions. This view of tax expenditure could alternatively be called an opportunity cost or what must be given up in order to pursue a chosen course of action. Public officials should have good justification for public investments that cause tax expenditures and shifting of tax burdens. A good justification ought to indicate that the forgone tax revenue is expected to compensate for or stimulate a public good (or service) valued by the community (Raimondo, 1992).

The market value is distinguished from the assessed value only when property is not taxed at 100% market value. This is accomplished through an assessment ratio which is applied to determine the actual taxed value. State law dictates the parameters of assessment ratios, thereby determining under what circumstances local taxing authorities may or must tax: at or below market value. Assessment ratios are used to provide tax breaks to some classes of property (e.g. agriculture, or primary residences versus vacation homes) (Rafool & National Conference of State Legislatures, 2002).

Because the revenue base is limited to the property within the geographical jurisdiction of the municipality, communities that are fully developed and/or landlocked cannot easily increase their existing property tax base. Therefore, if the assessed value of property and the non-property tax revenue stay the same but the budget goes up, the tax rate will go up and the tax burden of tax payers is increased. If the budget stays the same but the assessed property value goes down because of tax expenditures, the tax rate must go up to

compensate for that loss, increasing the tax burden of property tax payers. Any action or policy that impacts the valuation of taxable property, impacts the potential of the municipality to provide local public services.

Residential (non-farm) property comprises the major share of local government's taxable property. Homeowners' capacity to pay is not factored into the property tax levy but nevertheless, is a factor in considering a local government's fiscal health, that is, its ability to provide local public services. As Ladd and Yinger distinguish, a city's economic health is linked to the wages and salaries generated in the city per resident, but the economic health of city residents is measured by per capita income. That is, a city may generate lots of jobs per resident but at the same time have lots of impoverished residents. This circumstance is seen frequently in central cities where the local jobs are held by commuters.

A municipality's revenue raising capacity is largely based upon taxpaying residents' ability to pay which is measured by resident income, as well as the extent to which the city can export its tax burden to non-residents. Income does not bear a straightforward relationship to the tax revenue actually collected, but is an indicator of the economic health of city residents (Ladd & Yinger, 1989).

Fischel points out, building on the 'benefit view' expounded by Charles Tiebout (1961), some homeowners choose to locate in a particular municipality expressly because of the array of public services and the corresponding taxes; the benefits of such local public

service programs and their associated costs are capitalized into the local property values. Homeowners want local officials to choose the mix of spending, taxes, and land use regulations to maximize the market value of their homes (Fischel, 2001). If local government's primary own source revenue available to fund the array of local public services that led residents to invest in a home in their municipality is taxable property, local government is expected to protect and indeed enhance the value of that taxable property. To do otherwise would either increase the tax rate and associated tax burden, or require a reduction in the municipal budget and associated local public services, either of which would subject the city officials (board of directors) to disciplining by the voter residents (municipal home-owning shareholders) (Fischel, 2001).

This body of literature makes the case for using assessed property valuation as the measure of community revitalization as it is the basis of the community's primary own source revenue to pay for local public services and amenities that shape the character and quality of life in that community. The literature also highlights specific local government responsibility in decision making which can maximize or depreciate the value of taxable property, thereby impacting resident economic health and municipal fiscal health. Deciding to allow affordable housing to be built in a poor city, particularly when that affordable housing will be tax abated (exempt) for period of time, cannot be a decision that is taken lightly. Such due diligence should follow whether the development is truly exempt or is abated but generating a payment in lieu of taxes.

Affordable Housing

A rose by any other name could smell as sweet…and so would 'affordable housing' or subsidized housing' or 'assisted housing development' or especially 'public housing'. The concept, however you name it, conjures up a range of impressions and assumptions, usually negative. Husock demonstrates this negative perception in his article, "How Public Housing Harms Cities." He contends that publicly subsidized housing is 'noxious' for the cities that surround them, as they "radiate dysfunction and social problems outward, damaging local businesses and neighborhood property values…It concentrates together welfare dependent, single-parent families, whose fatherless children disproportionately turn out to be school dropouts, drug users, non-workers, and criminals"(Husock, 2003). That perception can get in the way of clear policy-making regarding the use of affordable housing in the revitalization of poor cities. It is imperative therefore to look beyond perception to discern what affordable housing is and is not; and what its objectives are.

According to the United States Department of Housing and Urban Development, housing affordability is achieved when a household pays no more than 30% of its annual income toward housing. Housing is made affordable either by subsidizing the costs of developing the housing units to lower the cost of occupancy or by assisting income eligible households in renting, rehabilitating or purchasing housing. An estimated 12 million renter and homeowner households now pay more than 50 percent of their annual income toward housing, and a family with one full-time worker earning the minimum

wage cannot afford the local fair-market rent for a two-bedroom apartment anywhere in the United States (*Affordable housing.*2009).

Katz, Turner, Brown, Cunningham and Sawyer (2003) in a review of 70 years of affordable housing strategies, policies and programs contend that the objectives of affordable housing programs have been viewed too narrowly. In addition to creating new affordable housing units or reducing the housing cost burden of households, Katz et al maintain that affordable housing should also promote healthy families and communities, promote economic and racial diversity in residential neighborhoods and help households build wealth. With those objectives in mind, the authors evaluated the performance of affordable housing. They began by separating affordable housing programs into rental, homeownership, and land use regulation to assess the differential impact of each of the three strategies. The rental and homeownership programs were then subdivided into supply side and demand side programs. The categorization of affordable housing strategies as either supply side (housing development) or demand side (vouchers or certificates to promote direct affordability) focuses on the basic dichotomy or duality of revitalization strategies as place-based and/or person-based strategies. The housing programs were then assessed by Katz et al, through a comprehensive literature review to determine how well they addressed objectives that the authors consider key to promoting healthy families and communities.

Katz et al found that the effectiveness of rental assistance programs is not guaranteed and that location is a key factor. Affordable housing alone cannot revitalize a distressed

neighborhood, although using housing production programs to expand the availability of affordable rental housing in healthy neighborhoods promotes economic and racial diversity and broadens opportunities for low income households.

Demand side vouchers can help stabilize a faltering housing market, enable low-income households to compete in a tight market, provide struggling landlords with sufficient rent revenue to maintain their properties, and prevent existing rental units from deteriorating and being taken out of the available housing stock. The authors maintain that while production is a necessary component of responsible affordable housing policy, insufficient household income for people in need of housing, remains the principal barrier to obtaining affordable housing, rather than lack of housing availability.

The homeownership assistance programs considered in this study addressed the actual affordability issue. Katz et al found that making mortgage credit more affordable and accessible has in the cases studied, generally been effective in expanding access to homeownership. On the other hand their research indicated that promotion of affordable homeownership has a mixed record relative to supporting metropolitan growth, but has a clearly beneficial impact at the neighborhood level. The authors cited several studies indicating that affordable homeownership revitalizes neighborhoods most when accompanied by a comprehensive package of initiatives including improved infrastructure and services. What was not stipulated was whether that revitalization enhances the tax base. It should be noted that the economic downturn of 2008 through 2009 evidenced by a spike in mortgage foreclosures exposed the vulnerability of

homeowners with insufficient household income. Much of the foreclosure crisis was brought about by 'adjustable rate mortgages' sold to households with insufficient income to cover the mortgage when the rate was adjusted, leading to a destabilization of the housing market in many marginal communities across the country, particularly in poor cities.

Katz et al also studied the effectiveness of land regulation as a strategy. He and his associates found that inclusionary zoning programs "generally do not produce housing units that are affordable for the poorest households" (this could also be said about home ownership programs). Rent control on the other hand did prove effective in lowering rent levels in volatile markets, although they reported some indication that rent control discouraged private investment in rental housing which in turn can limit the amount and condition of the affordable housing stock.

State and local land use regulation can help promote balanced metropolitan growth while assuring that affordable housing is available throughout the region. At the same time the authors pointed out instances where land use regulation was used to undermine this goal. The biggest constraint on the use of this strategy is fragmentation across municipalities within regions – a significant issue in New Jersey. Effectiveness is dependent in large part on state level empowerment of regional decision-making and/or the limitation of individual, independent local government regulation in this area (Katz et al., 2003).

In his review of the history of publicly assisted housing, Freeman (2004) harkens back to the United States Housing Act of 1937 which authorized the federal government's Public Housing Program as a measure 'to raise the living standards of typical employed families of very low income...' (L. Freeman, 2004) clearing slums and providing housing for the 'deserving poor,' in other words, a redevelopment strategy to address both the needs of place and people.

That focus shifted after World War II. The Federal Housing Administration[1] (2006) and the Veterans Administration began targeting mortgage subsidies to white suburban homeowners and then through the Housing Act of 1949 targeted public housing to the very poor and those displaced by urban renewal. Both housing subsidy programs, demand side mortgage subsidies and supply side public housing, were intended to make housing affordable.

This occurred at the time of the Great Migration of blacks from the agrarian southern states to the northern industrial cities; these cities, according to Freeman, began using public housing projects to house the black in-migrants who were barred from white neighborhoods (Freeman, 2004). By the mid-twentieth century public housing projects were home to increasing numbers of poor and minority individuals and families, and were located among the worst sections of towns. Freeman cites numerous studies demonstrating discriminatory practices that located segregated public housing developments in poor minority neighborhoods across urban America.

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[1] The FHA helped to spark the production of millions of units of privately-owned apartments for elderly, handicapped and lower income Americans.

It took the civil unrest of the 1960's and 70's as well as several lawsuits to draw attention to the racial discrimination by local housing authorities and the U.S. Department of Housing and Urban Development in the siting of low-income housing. The federal government, in an effort to mitigate the perceived failures of the public housing program, sponsored other approaches to the provision of affordable or subsidized housing. These approaches included the Section 236 program as part of the Housing and Urban Development Act of 1968 and the Section 8 new construction and rehabilitation program through the Housing and Community Development Act of 1974.

Even with these new approaches, the negative characteristics of public housing continued to cast a shadow over all federally assisted housing programs and in time 'affordable housing' became synonymous with 'the [public housing] projects.' In fact, once the U.S. Department of Housing and Development (HUD) changed its policy and required that some federally assisted housing be developed outside of minority- or poverty-concentrated areas, 'not-in-my-backyard' local protests stopped most HUD-sponsored projects in their tracks. Perception got in the way of clear policy-making regarding the use of affordable housing (L. Freeman, 2004).

Husock (2003) points out that the original target population for public housing, the lower-middle-class working families, moved to the suburbs after World War II. Then by his account, subsequent residents and those left behind drove neighbors of public housing who could afford to move to flee, draining urban vitality. Husock also criticizes HUD's

latest major public housing initiative, HOPE VI, calling it the latest "in an endless series of failures." (Husock, 2003) Bearing in mind that HOPE VI entails demolishing high rise public housing development projects and replacing them with town houses occupied by a mix of higher income households along with poor, Husock's assessment is particularly harsh.

He does not believe that HOPE VI can strike a positive balance through economic integration and create stable neighborhoods. In his view, "Why assume that the poor and dysfunctional will learn from the more successful? Isn't it just as likely that the children of the dysfunctional will set a bad and potentially damaging example for the children of the successful?" he asks (Husock, 2003).

Impact of Affordable Housing

Given this type of impressionistic portrayal of affordable housing, researchers and scholars have sought empirical evidence to describe the actual impact of government assisted affordable housing on the communities that host it. The following is a survey of major research assessing the impact of affordable housing, by affordable housing type and dependent variable, in an effort to set a context for asking the question, is affordable housing an effective redevelopment strategy for poor cities?

Newman and Schnare (Newman & Schnare, 1997) evaluated the performance of one of the goals established in the 1949 Housing Act, to provide 'decent' housing in 'suitable neighborhoods'.   It is the *suitable* component of the goal or neighborhood quality that

this study focuses upon to inform decision-making regarding the future of public housing and older publicly assisted housing developments. They compared three types of rental housing assistance programs (two supply side and one demand side): project based public housing and privately owned developments; and tenant based certificates and vouchers.

At the time of the study roughly 6 percent of the nation's housing stock and one-fifth of all rental units received some form of subsidy either tenant based or project based. More than 60 percent of public housing was located in the nation's central cities, a rate more than one third higher than that of other assisted housing programs or general housing stock.

Newman and Schnare examined neighborhood quality relative to economic status, quality of housing stock, concentration of assisted housing, and racial and ethnic mix. Additionally they examined the extent to which the assisted housing was located in 'underclass' neighborhoods, measured by high school dropout rate, prime age males' lack of attachment to the labor force, welfare (public assistance) dependence, and female headed households.

These researchers found through multivariate analysis that project based assistance programs appear to do little to improve the quality of tenants' neighborhoods, even when compared to neighborhoods with concentrations of welfare recipients. Public housing, rather than foster integration, appeared to encourage economic and racial segregation.

Low Income Housing Tax Credit supported developments performed much better than other project based assisted housing but not as well as certificate and voucher or state assisted units. Although voucher and certificate households profiled similar to public housing households, certificate and voucher rental units were rarely found in areas with extremely low incomes, high unemployment, or high concentrations of minority households.

Newman and Schnare raised significant concerns about any large investments in public or privately owned assisted housing stock. Accordingly they contend that assisted housing should be located in "decent neighborhoods" or at least those that show clear signs of improving. With particular emphasis on the latest HUD initiative, HOPE VI, the researchers stressed that, "Unless neighborhood viability is taken into account as an explicit, highly rated criterion for judging the soundness of these investments…we question their ability to succeed" (Newman & Schnare, 1997). Therefore one cannot interpret Newman and Schnare to encourage the use of rental affordable housing as a redevelopment strategy for a poor city.

Guhathakurta and Mushkatel (2002) examined the impact of Section 8 subsidized households on the housing quality of adjacent units. Their findings suggest a significant although small negative impact on housing quality within a half-mile range of all assisted housing units but positive impacts if the assisted housing household was a female headed household. There were two major differences in the approach of this study that stood out.

First, it measured housing quality through an actual survey of the units in question using a Housing Condition Evaluation Survey rather than relying upon market or assessed value of the unit. The researchers asserted the differentiation between a change in housing <u>condition</u> triggering a change in housing value, and a change in housing <u>market</u> factors, other than the structure itself and its host community, triggering a change in housing value. Secondly, it utilized a database that included detailed information as to the race, ethnicity, marital status and the like of the publicly subsidized household, which allowed the researchers to disaggregate the data to determine if the findings changed for various type households.

They found in the disaggregated model, Section 8 housing has an insignificant impact on the adjacent housing quality. Surprisingly there was a positive impact on housing quality within a half mile of Section 8 female-headed households. Both minority as well as non-Hispanic white Section 8 households had an adverse impact on housing condition within .50 miles, .25 miles or both after accounting for female heads of households and other neighborhood characteristics (Guhathakurta & Mushkatel, 2002). Again this study does not indicate a relationship between housing condition and assessed value of housing.

Lee, Culhane and Wachter (1999) studied the impact of affordable housing on property resale values. This research, although limited to Philadelphia, is significant because it compared various types of subsidized housing in proximity to other housing that sold between 1989 and 1991 to determine impact on resale price of each of the affordable housing program types. By considering the affordable housing within a 1/8 mile radius

and then a 1/4 mile radius of each property sold between 1989 through 1991, they were able to determine whether the affordable housing by affordable housing type, impacted the resale value. They initially found that all publicly subsidized housing, except for Federal Housing Administration sponsored housing, had a negative impact on property values.

In a subsequent model the researchers controlled for neighborhood quality and found the results to be less negative. Public housing developments' negative impact went from a T statistic of -10.19 down to -2.00, and Section 8 certificate negative impact was reduced from -19.5 to a T statistic of -4.54. Federal Housing Administration assisted units, public housing homeownership housing, and Section 8 New Construction and Rehabilitation units all changed to a modest positive impact. LIHTC sites continued to have a negative although not significant impact which the authors suggest may reflect the lack of lag time for the positive results they hypothesized to be produced. The other units studied had been in existence longer than the LIHTC units at the time of the study. Overall, homeownership affordable housing programs had a more beneficial impact on property values than any type of rental assistance program (Lee, Culhave, & Wacher, 1999).

Green, Malpezzi and Seah (2002) focused specifically on the impact of Low Income Housing Tax Credit (LIHTC) financed housing on (resale) property values. Generally a state administered supply side affordable housing program, the authors reported that in 2002 tax credit units had come to comprise upwards from 40 to 50 percent of total multi-family construction (Green et al., 2002). Green et al noted the advantages and

disadvantages of using repeat sales to determine impact of affordable housing. The primary advantage is that the data is widely available and timely yet there is no information required on the characteristics of the unit. On the negative side this method only estimates price changes, is limited to few transactions during the test period, and those units which turn over may not be representative of the other housing within the neighborhood. Additionally this method assumes that there has been no significant change in the quality or quantity of housing produced during the period.

Using a "gravity measure of distance" based upon both distance from and size of the affordable housing development, the researchers' found that LIHTC developments are best sited in affluent communities, away from concentrations of poverty. They found no evidence LIHTC units caused property values to deteriorate in any location, but values did appreciate more rapidly in locations further away from LIHTC developments (Green et al., 2002).

Galster, Tatian and Smith studied the sale prices of single-family homes surrounding Section 8 sites to determine impact this type of assisted housing had on property value. They included 43,361 home sales between 1991 and 1995 across Baltimore County. They were especially interested in determining the sales trends pre- and post Section 8 household occupancy within a neighborhood in an effort to specify whether Section 8 was having a true impact on the neighborhood and its property value or whether Section 8 households were merely attracted to neighborhoods with certain property value trends.

The researchers found that positive sale price impacts from houses in close proximity to Section 8 sites do not occur in all kinds of neighborhoods but appeared strongest in (1) census tracts that rank in the highest third of 1990 median house value, (2) had real appreciation of median values from 1990 to 1996, and (3) were overwhelmingly occupied by whites. On the other hand negative price impacts appear confined to neighborhoods comprised of low- to moderate-value homes that declined in real value since 1990. Hence Section 8 housing does not appear effective in revitalizing low income neighborhoods.

Additionally they found that if too many Section 8 households or sites cluster in a small area within a vulnerable neighborhood, it results in increasingly negative price impacts. Conversely, net positive impacts are enhanced if more Section 8 tenants occupy a single site or structure, as opposed to the same number of tenants scattered across an equal number of sites. All in all they found that the impact on property value was complex and mixed depending upon neighborhood type, distance and the number of nearby Section 8 sites and occupied units. They also infer a threshold phenomenon or optimal level with respect to impact where there is a concentration of Section 8 housing (Galster, Tatain, & Smith, 1999).

Freeman and Botein (2002) contend that the negative perception toward subsidized housing is attributable to two factors: (1) people who without the subsidy could not afford to live in the housing occupy it; and (2) the occupants of the housing are poor. People living in subsidized housing are considered undeserving poor and therefore undesirable

neighbors. Status in this society is determined in part by where one lives and living next to poor people does little to enhance one's status. This perception therefore leads to negative impacts on the neighborhoods surrounding the affordable housing.

Freeman and Botein set out to discern the extent to which these perceptions were true. Imbedded in their consideration was also a question about threshold, is there an optimal point under which affordable housing has an innocuous effect and above which the negative perceptions of affordable housing do indeed bear out as true. They reviewed available research (17 studies from 1963 to 2001) to evaluate whether subsidized housing resulted in negative neighborhood impacts relative to property values, racial transition, poverty concentration, and crime.

With respect to property values their review found that the presence of subsidized housing does affect property values, but 'the impact can be both positive and negative'. They advise that further research that stratifies by neighborhood type may help to ascertain how subsidized housing impacts differ across neighborhoods; additionally, structural design and size need to be studied more with respect to their influence. On the question of affordable housing impacting poverty concentration, Freeman and Botein reported in their review that many studies based upon flawed research found a positive relationship between affordable housing and concentration of poverty, and erroneously attributed the poverty concentration to the housing. The flaw involved researchers not considering the preexisting trend of property values prior to the development of the housing. As a result the research can not indicate whether the property values were

declining before the housing was sited and the housing was not able to reverse that trend or whether the new housing actually caused the decline in property value (L. Freeman & Botein, 2002).

Freeman (2003) in a related study found no relationship between the existence of subsidized housing in a neighborhood and individual dynamics associated with poverty concentration. The key methodological difference is that he looked at neighborhood trends before and after the siting of the affordable housing to discern spillover effect from the affordable housing. He found that subsidized housing tended to be built in neighborhoods where there was *already* a concentration of poverty and/or where neighborhoods were *already* getting poorer! Once appropriate statistical controls were put in place, subsidized housing could no longer be shown to cause the neighborhoods' concentration of poverty (L. Freeman, 2003).

Racial transition of a neighborhood from white to black, or more white to less white, or less black to more black has not been the subject of a lot of empirical research. According to Freeman and Botein (2002) the credible research that has been completed suggests that the development of subsidized housing does not lead to neighborhood racial transition. Again they were skeptical of any study that did not consider the 'chicken and egg' question; although there may have been an association between affordable housing and racial transition in a neighborhood, it was not clear the extent to which the racial transition was a phenomenon with its own drivers separate and apart from affordable housing.

Regarding affordable housing's relationship to crime, the limited research which Freeman and Botein were able to find did indicate a positive relationship. The authors were concerned that the type of neighborhood was not controlled for in the research model nor has there been a comparison across different types of assisted housing (e.g. public housing, Section 8 vouchers, LIHTC, and the like) (L. Freeman & Botein, 2002).

This study is informative in that it brings together much of the work that has been done in the field, struggles with the methodological problems of this body of research and raises questions that need to be addressed through future research. Key among the findings of these authors for my research is that they found no reason to indicate that affordable housing is an inherent detriment to the redevelopment of a poor city. The question of threshold nevertheless does bear special consideration.

Concentrating principally on affordable housing homeownership programs which when compared with affordable housing rental programs appear to perform better (Katz et al., 2003) HOPE VI has been promoted by the United States Department of Housing and Development as the current key strategy to advance the redevelopment of economically distressed communities. Zielenbach (2003) analyzed the economic impact of this new strategy in eight communities across the country.

He found that the HOPE VI neighborhoods have experienced improvement since the early 1990's. Per capita incomes have increased to 58 percent, up from 41 percent of the

citywide average in 1989. Poverty rates have decreased from 51 percent to 32 percent. Residential loan rates have almost doubled and median rents have increased in real terms by 27 percent. Overall crime rates in 2001 were about half what they were in 1993; violent crime rates fell by nearly two-thirds. When compared with other high poverty areas, HOPE VI communities are doing much better.

Zielenbach acknowledges that it is not possible to determine causality for these improvements, although HOPE VI redevelopments have likely been a major factor. The enforcement of the federal Community Reinvestment Act is also considered to be a major contributor, as was the national economic expansion of the 1990's. He concludes therefore, "No one factor, individual or institution can single handedly turn an urban neighborhood around. Revitalization requires the resources of multiple actors and multiple programs, each playing a critical role in the process" (Zielenbach, 2003).

On the other hand Cummings, DiPasquale and Kahn (2002) studied two Nehemiah projects in Philadelphia using a survey methodology with a control group to compare the Nehemiah homeowners' responses. The Nehemiah Housing Opportunity Program is one under which the United States Department of Housing and Urban Development made grants to not-for-profit organizations, which in turn loaned the money to families to purchase of renovate homes (*HUD*1990). Cummings, et al found that although the new homeowners improved their housing condition, they actually experienced weakened community attributes in terms of greater exposure to higher crime rates and lower public school performance. The authors questioned whether this was a matter of scale in the

Nehemiah projects as the two projects were only 135 units and 176 units, respectively. There may not have been enough of a critical mass to influence significant change in the census tracts where they are located. Size of project is a major difference when compared to the two projects in the following New York Nehemiah study (Cummings, DiPasquale, & Kahn, 2002).

Ellen, Schill, Susin, and Schwartz (2001) examine the impact of two subsidized home ownership programs on surrounding property values in New York City. The programs, Nehemiah, and the New Homes program of the New York City Housing Partnership, subsidize the construction of affordable owner occupied housing in distressed urban neighborhoods. Local officials contended that programs such as these would yield positive spillover effects within these communities, one, because they replaced blight and two, because they bolstered the number of homeowners in the community.

The researchers viewed the housing as a composite good with the housing price representing (as a capitalized value) the quantity of housing services attached to the property and its structure and location. They control for previous trends, and estimate the difference in prices of properties in rings close to the affordable home ownership housing with comparable properties that were outside of the rings but in the same general neighborhood.

Ellen, et al found that the two home ownership programs have had a positive effect on property values in their immediate neighborhoods. The cause of the positive spillover is

not clear. It may have been due to the transformation of blighted property into attractive, habitable homes; it may have been attributable to the in-migration of higher income residents to the neighborhood; or it may have been caused by the overall higher rate of home ownership in the neighborhood (Ellen, I. G, Schill, M. H., Susin, S., & Schwartz, A. E., 2001).

Although there is limited research on the impact of homeownership affordable housing as a revitalization tool, that that does exist is encouraging. This research has informed the structure of my research in a number of ways. Consideration will be given to the rate of increase or decrease in value prior to the affordable housing development so as not to attribute change erroneously to the affordable housing development. The issues of critical mass in order for an impact to be felt, good or bad, and threshold effect or optimal level, wherein the affordable housing development creates a positive impact, but beyond which its impact is negative will also be taken into consideration. Organizing the properties to be studied into rings or zones, based upon distance from the new affordable housing is also an approach which I will employ.

None of the reported research specifically addressed the potential of affordable housing to enhance the revenue base of its host municipality; this is my focus of my research. Can home ownership affordable housing serve as a revitalization strategy for a poor city by having a positive impact upon the assessed value of surrounding taxable property?

CHAPTER TWO

DATA, METHODS AND TESTS OF MISSING DATA

In order to test the supposition that affordable housing development in a poor city will increase the assessed value of taxable properties in adjacent neighborhoods, I studied the impact of three affordable housing homeownership developments in Trenton, New Jersey, Monument Crossing I, Monument Crossing II, and Willow Green. Each of these housing developments is located around the Battle Monument area in the center of the city and the latter two represent the first housing developments in the Canal Banks Homeownership Zone.

The Battle Monument area of Trenton has a rich history dating back before the Revolutionary War. It was a transportation hub that linked the King's and Queen's Highways during colonial times. It was the site where George Washington positioned his cannon during the Battle of Trenton. During the 1800's it served as a node where the Reading Railroad, the Delaware and Raritan Canal and the trolley system joined the major highways. This made the area valuable to the burgeoning manufacturing sector of the day.

Neighborhood decline set in by the 1950's due largely in changes to the transportation patterns and the outmigration of major manufacturers. While the area was home to many Black professionals, as desegregation opened up the option to live in suburban areas, they began to join the middle class urban flight (Exceed Corporation, 2005). The Battle Monument, a federal memorial, was closed to tourist in the early 1990's because the area

had become so dangerous. By the mid-1990 the neighborhood was one of Trenton's poorest and most blighted areas. Hence, the City of Trenton applied for Homeownership Zone designation for this community. As stated in the United States Department of Housing and Urban Development's Notice of Funding Availability:

> "the Homeownership Zones Program is dedicated to large-scale development projects designed to reclaim distressed neighborhoods by creating homeownership opportunities for low- and moderate-income families, and to serve as a catalyst for private investment, business creation, and neighborhood revitalization" (Exceed Corporation, 2005).

Figure 1
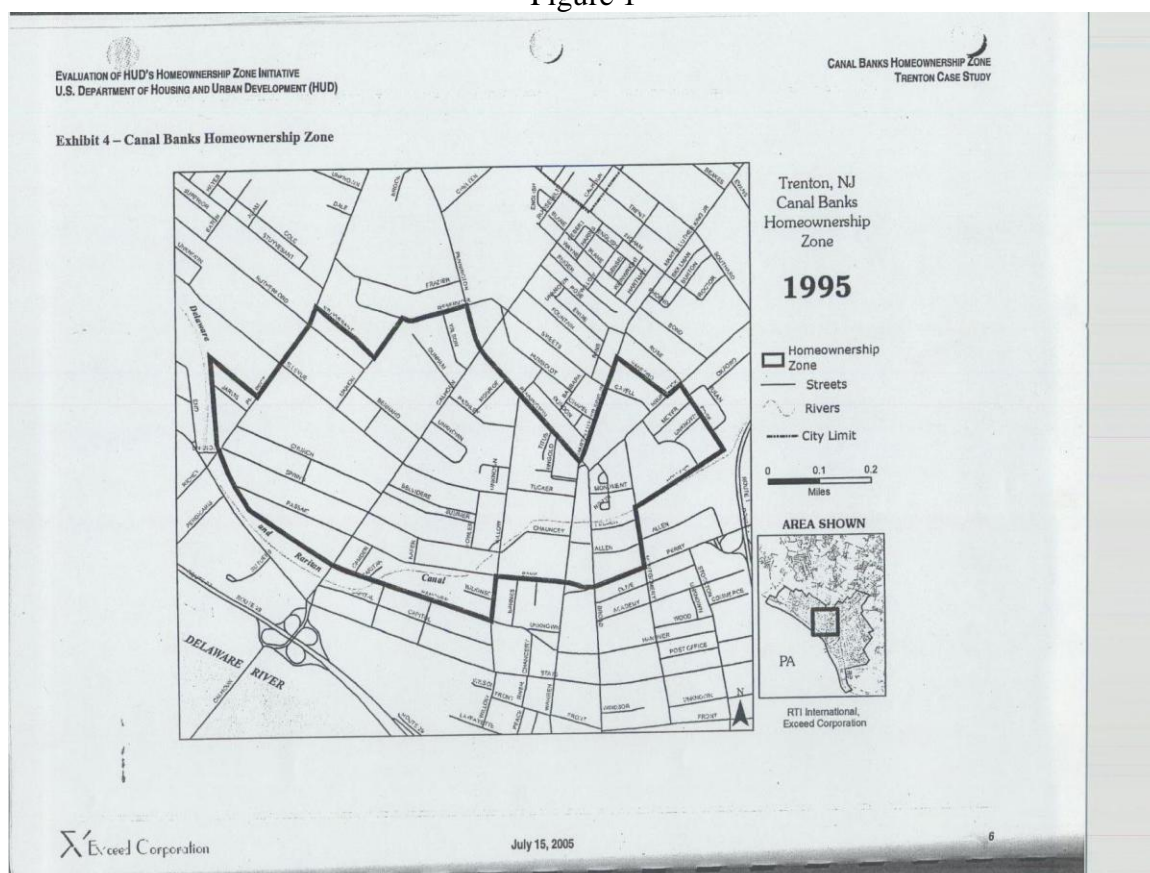
Inserted box to the right in picture above indicates Homeownership Zone in the heart of the city.

Trenton, New Jersey's Homeownership Zone
(Exceed Corporation, 2005)

Monument Crossing Before

Kearns Bottling Company
at Monument Crossing site

typical former residence (right)   vacant commercial/industrial site (left)

Monument Crossing After

(City of Trenton, 2009)

Data

I constructed a dataset of tax block lots in Trenton, New Jersey that make up the city's

Homeownership Zone and surround three affordable housing developments in the Zone,

Monument Crossing I, Monument Crossing II and Willow Green. Monument Crossing I

came on line first with 38 home ownership units, followed by Monument Crossing II

with 46 units and Willow Green with 28 housing units.

Figure 2
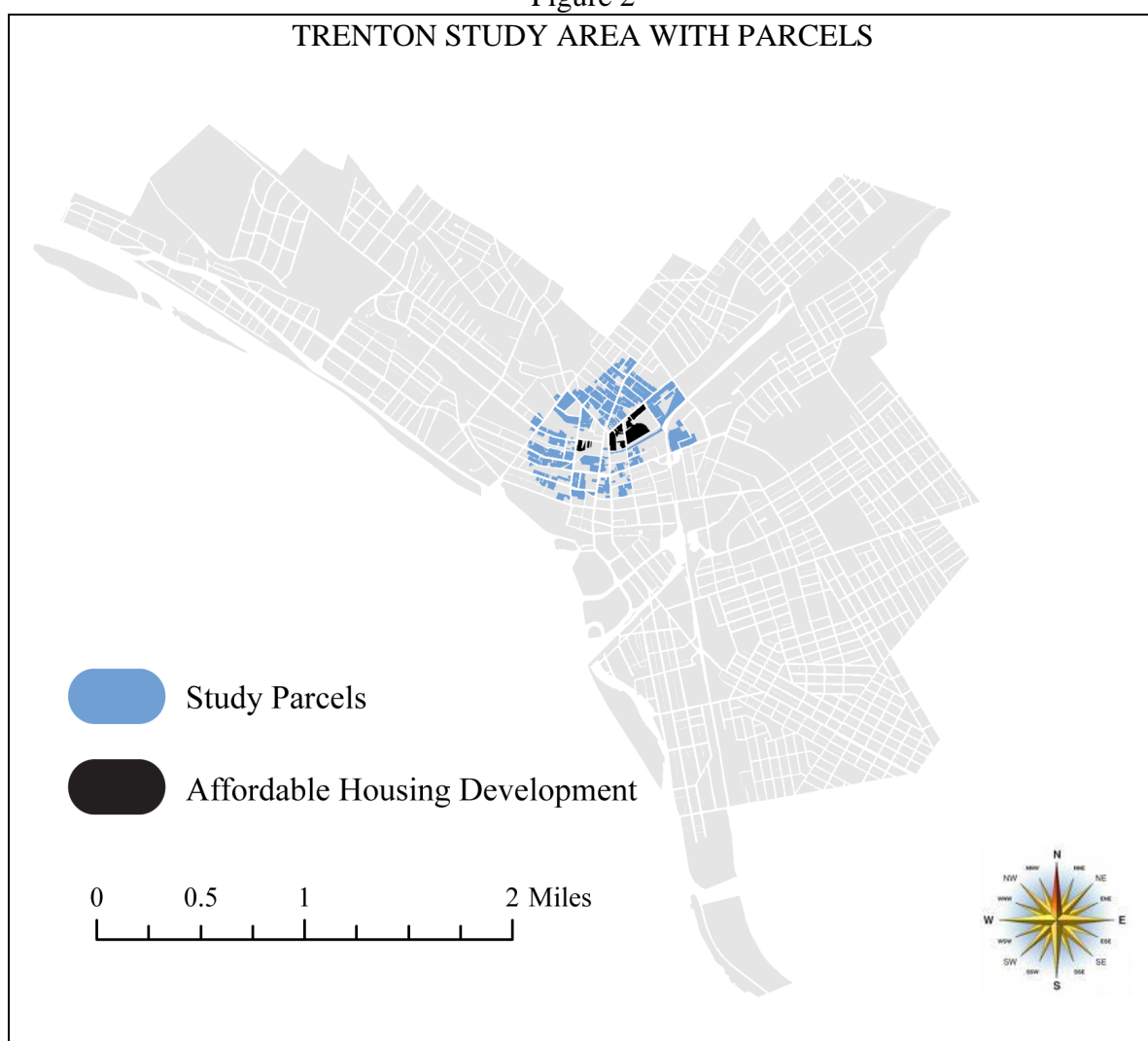
This figure depicts all City of Trenton parcels with the parcels included in this study in
blue and the affordable housing development in black. Source: GIS by CamConnect

The dataset was developed from the tax assessment and geographical information system records of the city of Trenton. The City Assessor is charged with maintaining an up to date record of all land parcels within the municipality, and based upon use, is further charged with determining each land parcel's taxable value. Each parcel is given a numerical designation, which when combined with a block grouping number designation, has a unique designation within the municipality. Tax block groupings are groups of lots that can be isolated from other parcels by boundaries usually roadways or rivers, but sometimes merely a labeled property line. This information with the numerical designations is displayed on what is referred to as the Municipal Assessor's Tax Map (Standard on manual cadastral maps and parcel identifiers.2004).

The dataset could have been assembled using market values rather than assessed values. As stipulated in the previous chapter, the taxable value of a parcel is a percent of market value. Indeed much of the research studying the impact of affordable housing has used market value. The limitation of using market value is that it relies upon recent sales of property to accurately represent the changes in value to the property. As such the sample from which market value is extrapolated could conceivably be very small if sales are depressed. Additionally, external factors not intrinsic to the property can effect housing demand and hence its market value, for example, a company moving in or out of the area.

On the other hand assessed value also has limitations. The Assessor is responsible for revaluating property on a regular basis to ensure that the assessed value reflects market

value. Municipalities do not always maintain a timely schedule for revaluating property for a myriad of reasons ranging from lack of resources to pay for a comprehensive study to the political unreadiness to hear complaints from constituents faced with higher tax bills due to increased assessed value determined through a revaluation study. This can result in deflated assessed value and foregone property tax revenue. Municipalities must therefore report their ratio to true market value. As the ratio of assessed value to market value approaches 100, the greater the accuracy. At the time points that I collected data, the ratio for Trenton was very much up to date, as indicated on the chart below.

Table 1

YEAR	RATIO OF ASSESSED VALUE TO MARKET VALUE
1996	103.20
1999	101.70
2002	100.33
2005	94.59

Source: City of Trenton Assessor's Office

The City had completed a comprehensive revaluation study just prior to 1990, and each year afterward updated their records relative to changes in property valuation one section of the city at a time. This continued until around 2005 when the State of New Jersey indicated that municipalities could no longer update valuation piecemeal, they had to update records for all parcels within the city at the same time. Even with that, the 94.59 ratio in 2005 is very close to 100 and assessed value can therefore be considered to reflect market value fairly well at that time. As such we can conclude that the assessed valuation of the properties in this study reflect market value for each of the years that data

was collected.[2] Taxable valuation information is obtained at two points of time prior to the construction of the affordable housing 1996 and 1999, and again at two points after, 2002 and 2005.

In total there were between 24 and 28 tax blocks involved in this study, depending on whether the old block designation or the more recent GIS block designation is used. Four tax blocks host the affordable housing developments. Willow Green crosses two tax blocks the other two developments are hosted by one tax block each. Monument Crossing I (Block 80) was the first of the three affordable housing developments to be built. Its permit to begin construction was issued in May of 1998 and the certificate of occupancy was issued in April of 2001. Monument Crossing II (Block 81) was the second affordable housing development in the Homeownership Zone to be issued a construction permit. Due to environmental problems with soil on the site, its completion was delayed. Willow Green (Blocks 38 and 39) which received its construction permit in September of 2000 and its certificate of occupancy in October of 2001. Monument Crossing II took until January 2004.

Each of the tax blocks is comprised of approximately 100 lots. Information about these lots was obtained from the City of Trenton's tax records to determine size, land use, taxable value prior to the affordable housing development in 1996 and 1999 and after in 2002 and 2005. The following chart depicts the value at each of the designated four years for taxable property. The first is '$ per square foot,' computed by dividing the reported land area of all taxable lots in the tax block by the combined assessed value of

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[2] Personal Correspondence with Patricia Hice, Tax Assessor City of Trenton, Email, March 31, 2009

those same taxed lots for that year. The 'value of taxable property' is merely the total assessed value of all taxable lots in the tax block irrespective of land use and unadjusted for inflation as they are assessed values current to the year reported.[3] This chart reflects increases and decreases in value per square foot occurred across the area studied and over the time studied. Tax Blocks 4, 36 and 37 show substantial increase in value from 1996 to 2005, while Tax Blocks 34, 39, 40, 47, 65, 74, 82 84 all reveal considerable decrease in value. The extent to which these changes were impacted by affordable housing development will be explored in the next chapter.

TABLE 2: LISTING OF TAX BLOCKS AND THEIR TAXABLE VALUES
(NOT ADJUSTED FOR INFLATION)

TAX BLOCK	$ PER SQUARE FOOT VALUE				VALUE OF ALL TAXABLE PROPERTY IN BLOCK			
	1996	1999	2002	2005	1996	1999	2002	2005
4	$50.85	$44.00	$43.00	$48.00	$4,685,550	$7,548,050	$7,169,800	$7,970,816
5	$40.10	$40.08	$46.91	$45.48	$7,395,490	$7,662,496	$8,153,898	$8,084,898
21	$17.22	$17.52	$18.94	$16.96	$6,943,500	$6,742,700	$6,771,000	$6,135,600
23	$22.51	$22.42	$24.41	$25.27	$6,216,400	$5,932,300	$5,558,400	$5,653,400
34	$44.61	$33.93	$33.41	$33.40	$9,041,541	$6,877,040	$6,769,899	$6,769,299
35	$36.78	$34.20	$35.09	$47.93	$9,234,258	$9,434,699	$8,390,240	$11,972,383
36	$44.45	$40.10	$32.07	$63.54	$10,332,120	$9,338,080	$6,805,200	$13,014,700
37	$22.59	$22.57	$48.87	$51.95	$7,148,862	$5,976,820	$13,631,100	$13,432,573
38	$7.61	$6.42	$8.37	$6.28	$1,287,300	$1,033,000	$1,478,349	$1,125,900
39	$16.58	$12.68	$12.17	$12.04	$2,038,400	$1,336,350	$1,262,400	$1,081,700
40	$17.88	$15.90	$20.41	$13.35	$6,062,400	$4,417,550	$5,864,800	$4,032,100
41	$14.03	$14.31	$14.01	$14.10	$1,196,900	$1,111,000	$982,600	$1,077,100
45	$17.71	$15.16	$15.91	$13.57	$3,305,001	$3,514,200	$3,360,400	$2,822,150
46	$12.35	$10.91	$10.57	$10.59	$4,892,501	$4,460,300	$4,173,100	$4,284,500
47	$13.29	$11.55	$10.66	$11.01	$5,283,400	$4,416,200	$3,841,000	$4,254,409
65	$14.85	$28.45	$19.62	$9.16	$2,249,300	$1,285,200	$1,055,300	$1,038,300

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[3] Personal Correspondence with Patricia Hice, Tax Assessor City of Trenton, Email, March 31, 2009.

TAX BLOCK	$ PER SQUARE FOOT VALUE				VALUE OF ALL TAXABLE PROPERTY IN BLOCK			
	1996	1999	2002	2005	1996	1999	2002	2005
66	$15.91	$15.27	$17.52	$18.54	$6,051,350	$5,849,050	$5,834,350	$5,204,200
67	$13.65	$15.01	$16.04	$15.64	$4,667,200	$4,431,551	$4,385,349	$4,236,050
70	$17.61	$18.83	$17.92	$18.31	$6,256,100	$6,485,401	$5,904,102	$5,926,018
71	$15.02	$18.10	$14.56	$13.64	$1,531,190	$972,590	$882,500	$1,267,100
73	$8.36	$7.94	$5.87	$9.34	$1,295,970	$1,231,670	$1,233,800	$1,149,900
74	$19.65	$12.94	$12.94	$12.94	$6,521,000	$4,295,400	$4,295,400	$4,295,400
80	$19.74	$12.69	$24.51	$11.41	$1,127,900	$1,211,250	$3,586,350	$1,618,000
81	$3.88	$11.61	$7.11	$9.63	$1,044,900	$626,500	$926,200	$1,062,700
82	$7.30	$9.06	$15.06	$6.74	$3,791,800	$3,788,149	$2,976,750	$1,342,142
83	$14.83	$15.22	$15.37	$15.40	$2,845,440	$2,629,540	$2,807,040	$2,812,040
84	$16.46	$18.00	$17.45	$17.27	$6,028,040	$5,247,190	$5,037,000	$4,687,750

Source: Microsoft Excel Worksheet; original dataset

The remaining quantitative data were gathered from the 1990 and 2000 United States Decennial Census Reports, consisting primarily of community, housing and household characteristics. Unfortunately this information is not available at the block, lot or case level within Trenton, and therefore census block group level data were obtained and generalized to all cases within that block group. Because the census data was not available at the case level those data will not be as sensitive as the case level data derived from the city tax office.

Furthermore, the city tax blocks and the census block groups are not congruent; their boundaries do not correspond. The working dataset resulted in 28 city tax blocks for which land use and assessed valuation data was obtained, and 22 census block groups for which demographic data was obtained. Therefore findings of differences or changes in

land value due to characteristics described through census data may not appear as significant as they may have were the data obtained at the same level (block or lot). The 2000 census information was later deleted from the dataset as the timing was too close to the housing development and could not be used to clearly reflect communities <u>after</u> the housing was occupied. Certificates of Occupancy were obtained for two of the three housing developments in 2001. The 1990 census information on the other hand more clearly reflected conditions of all communities <u>before</u> construction.

There are limitations within the dataset relative to individual variables, and these are discussed as general comments in the Table of Variables (Appendix A). Of particular note, unless a lot was reconfigured because it was split or combined, changes in lot size have not been tracked over time, but rather the lot size is assumed to have stayed the same from 1996 to 2005. Changes in value of exempt properties that were exempt throughout the period of the study are not available, as the City stopped assessing value to non-taxable properties as a cost saving measure. For this reason and because the research question is specific to impact on taxable valuation, exempt properties which were exempt for the entire duration of the study were also excluded from the final dataset.

Variables

As discussed in Chapter 1 a considerable amount of research has been conducted that looked at the impact of some form of publicly subsidized housing on property values and or other aspects of housing or community characteristics. Variables selected for this

research builds upon what has been learned from prior efforts. As such independent variables are organized into three categories:

 (1) characteristics of the community,

 (2) characteristics of the housing, and

 (3) characteristics of the households or people who live within the housing.

The independent variables associated with characteristics of the community include:

- Land use classification which consists of:
  - vacant land (1),
  - residential (2),
  - commercial (4-a),
  - industrial (4-b)
  - apartment 4-c),
  - public (15-c),
  - religious (15-d), or
  - otherwise exempt (15-f).

  The classification for each case was recorded for 1996 and 1999 before the affordable housing development and again in 2002 and 2005 after the development.

- The size (square footage) of lots in the community.

- The distance from affordable housing development, categorized by zone.

- The assessed value of the property prior to affordable housing development.

- Total population of the community prior to affordable housing development.

The independent variables reflecting characteristics of the housing consist of:

- Number of housing units in census tract block group

- Owner occupied housing units in census tract block group

- Year housing units in census tract block group were built

- Boarded up vacant housing units in census tract block group

- Number of rooms per housing unit in census tract block group

- Number of persons per occupied housing unit in census tract block group

- Percent of detached single family homes in census tract block group

- Percent two family attached single family homes in census tract block group

- Percent 10 or more units of attached housing in census tract block group

The independent variables describing household characteristics are:

- Racial composition of households in census tract block group

- Number of persons per household in census tract block group

- Percent of persons in census tract block group born in New Jersey

- Percent of persons in census tract block group foreign born

- Educational level of persons in census tract block group

- Median income of households in census tract block group

The theoretical basis for this grouping of variables builds on the work of researchers who stressed the importance of differentiating between the condition of the neighborhood (e.g., land uses, blight) from the housing structures (e.g., number of rooms, single family or multi-unit).   Research which addressed property, its structure and location includes

that done by Ellen, Schill, Susin, and Schwartz (Ellen, I. G, Schill, M. H., Susin, S., & Schwartz, A. E., 2001); while Cummings, DiPasquale and Kahn (Cummings et al., 2002) focused more on community condition. Guhathakurta and Mushkatel (2002) took pains to evaluate the housing condition in their research. Lee, Culhane and Wachter (1999) focused on types of housing. Freeman and Botein (2002) reviewed significant research which looked at the impact on people who lived in or near affordable housing.

Methods

The parcels were divided into zones based upon their distance from the affordable housing development. Zone 1 was comprised of parcels within a one-eighth mile (660 feet) radius around the affordable housing and Zone 2 was comprised of parcels between Zone 1 and one-quarter mile (1320 feet) from the affordable housing being studied. I then used descriptive analysis, crosstabs, simple regression, and discriminant analysis to determine the impact of the affordable housing development on the valuation of taxable property within a one-eighth mile radius, Zone 1, as compared to taxable property within a one-quarter mile radius of the affordable housing development, Zone 2.

Figure 3

STUDY AREA WITH ZONES AROUND AFFORDABLE HOUSING
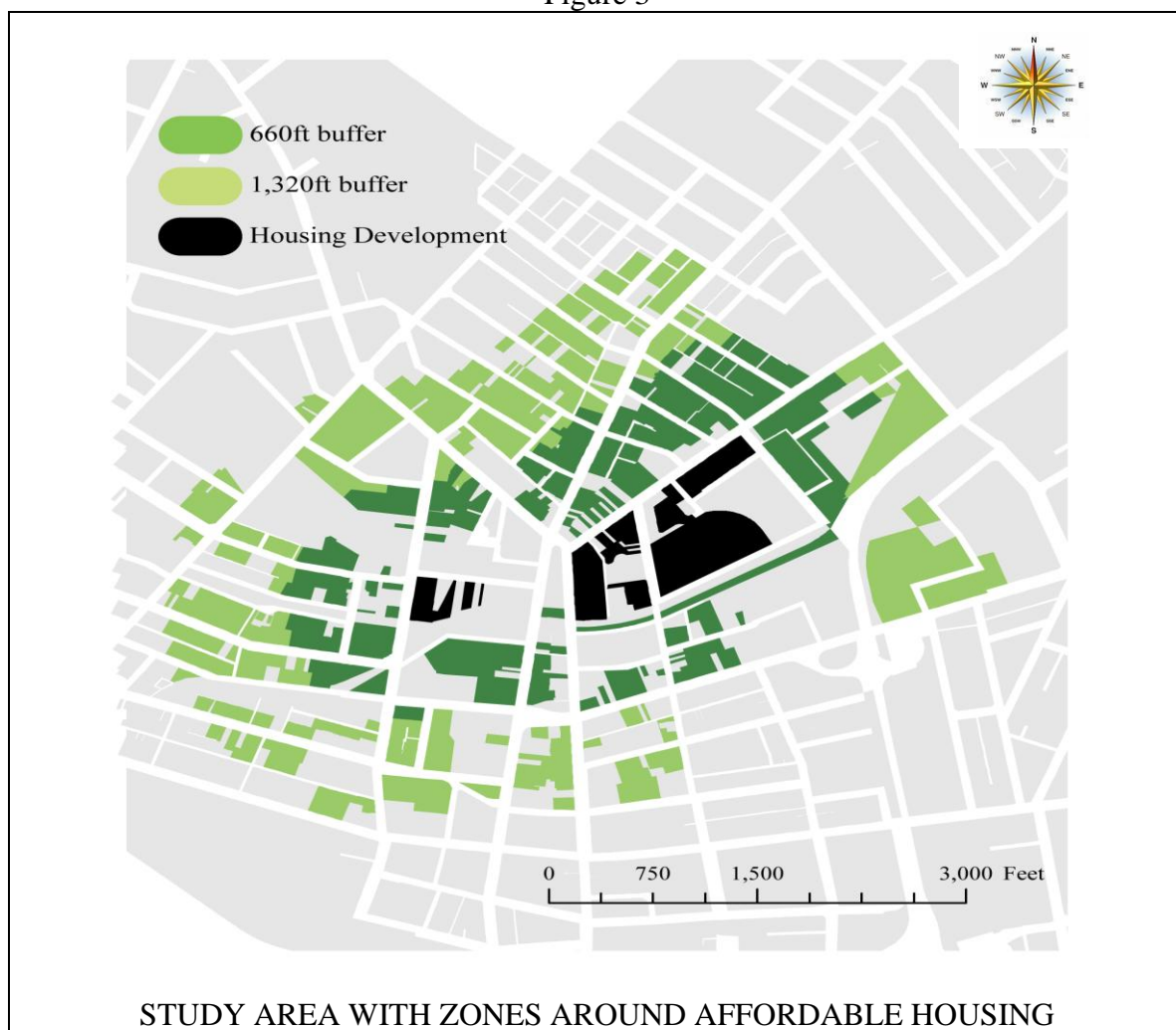
Source: GIS by CamConnect

Missing Data

There were complications in the compiling of the dataset. The City of Trenton restructured its block and lot designations when it converted to a geographic information system around 2000. Not only were tax block and lots renumbered, several lots were combined which reduced the number of lots and lot designations. At the same time some tax block lots were split to more clearly reflect the patterns of development that had occurred over time. Additionally individual tax block lot boundaries were reconfigured.

These changes are in addition to the changes that occurred specifically to assemble land parcels for the affordable housing development. The new affordable housing development caused tax block lots to be combined and reconfigured, and then split and renumbered to reflect the new configuration. As a result there are some cases that did not have values reported by the City of Trenton for all four of the years that this study reports data because they did not exist at all four points in time. Every effort has been made to impute those values.

This was accomplished by reviewing the City's list of tax block lot deletions and comparing it to the remaining lots in the dataset and their associated values over time. The values for the final dataset were taken from tax records for 1996, 1999, 2002 and 2005. Where the tax block lots were split after one of the earlier years, resulting in more lots for the subsequent time period(s), I created matching 'dummy' cases (lots) for the earlier years. To do this I took the value for the actual earlier year lot and divided that value by the number of resultant cases, thereby matching the number of cases with values across all for time periods.

The objective was to have the same number of cases with associated values representing the same geographical area for each of the data collection years. Where there were less than three of the four time intervals with reported values, and the missing values could not be imputed, the cases were dropped from the dataset. Consequently, while the original dataset included 3196 cases, a dataset of 2651 cases remained after combining

lots and eliminating cases with missing values. I compare the means of the dropped cases with missing data to the cases that remain to discern differences between the two groups.

Analysis of Missing Data

In an effort to determine how similar or different the missing lots (cases) were from the lots that comprised the working dataset, I first assessed the distribution of land use classification across the two groups of cases with a simple crosstab.

TABLE 3: TABLE OF REMAINING AND OMITTED CASES BY LAND USE CLASSIFICATION

Land Use Classification	Remaining cases		Missing/omitted cases	
Total cases	2651	100%	725	100%
Exempt property	91	3%	513	71%
Vacant Land	228	9%	10	1%
Residential	1690	64%	9	1%
Commercial	483	18%	15	2%
Other	3	0%	7	1%
Unidentified or undesignated	156	6%	253	22%

Source: Excel Worksheet, original dataset

There are great differences between the missing cases and the remaining cases with respect to land use classification. The largest category of missing/omitted cases are cases that were exempt public property throughout the 10 years of the study because the City ceased its practice of assessing such properties, and the cases would not have reflected any change taxable value. Unidentified and/or undesignated land use cases were the next largest category of the missing/omitted cases; these cases were excluded from the working dataset because that the case was missing 20% or more of the case information. This translated into cases where in two of the four time periods of the study there were missing block lot identifiers and corresponding assessed value.   Therefore, for the

purpose of this thesis, the deleted cases are largely tax exempt lots and cases with missing data.

It is not surprising that 71% of the omitted cases were exempt properties. The implications of this finding on the research results should be insignificant as the research is looking at change in taxable valuation. These properties did not change land use or taxable value during the time of the study, hence their taxable value was not impacted by the development of affordable housing. Vacant land, residential property, and commercial property were heavily represented among the final cases included in the working dataset.

Unidentified or undesignated cases generally occurred in situations where properties had been assembled and then split into smaller lots for a new purpose. For example, large industrial properties were assembled and then broken into small residential lots over the period of the study, resulting in lots that did exist in the 1996 but did not exist in 2002 as well as lots that did not exist in 1996 but were created later when land was reconfigured. Where there was enough information to follow a trail of sorts, I imputed the missing values and the case was included; but in the cases where there was not sufficient data, the case was dropped. It is my belief that much of the reassembling of property, occurred because of the ongoing work within the larger Homeownership Zone. That is to say, as the City assembled property for other development, reconfiguring of lots and changes in land use and taxable status occurred.

A difference-of-means test to compare the working dataset with the omitted cases was conducted to see get an enhanced look at the similarities and differences between the remaining and omitted cases. Variables selected for the comparison of means include those that reflect the community the lots are in (size of lots, value of property); the housing that sits on the lots (year built, vacant/boarded); and the people that live in the housing (race, education). The findings are as follows in Table 4.

TABLE 4: COMPARISON OF MEANS INCLUDED AND EXCLUDED CASES

VARIABLE	DESCRIPTION OF VARIABLE	INCLUDED [1] EXCLUDED [2]	N	MEAN	STD. DEVIATION
TPOP90	Total population in tax block in 1990	1.00	2651	821.09	378.296
		2.00	725	781.62	375.338
vacantboarded%90	Percent of structures that were vacant boarded in 1990	1.00	2649	36.1892	19.58714
		2.00	690	39.7373	16.60000
YEARBUILT	year structures within the block were built	1.00	2615	1943.00	8.770
		2.00	683	1944.86	9.959
ownr%90	Percent owner occupied housing in 1990	1.00	2651	33.51	19.316
		2.00	682	31.88	19.743
Shape_area	Square footage of lot	1.00	2509	3102.48	7981.960
		2.00	389	17316.34	4162.194
val96persqft	Value of the lot per square foot	1.00	2376	27.68949	178.260207
		2.00	296	54.38149	458.548436
BFtrend	Rate of value changed before affordable housing was built	1.00	2335	-1.7699	57.43092
		2.00	294	-10.5407	186.43330
T%hisp90	Percent of the population who are Hispanic in 1990	1.00	2651	19.44338	24.698707
		2.00	682	15.10504	22.141331
T%blk90	Percent of the population who are Black in 1990	1.00	2651	76.66711	25.716429
		2.00	682	80.80090	22.703752
forgnbrn%90	Percent of the population who are foreign born in 1990	1.00	2651	3.92106	3.652393
		2.00	682	4.01014	3.647340
ed<BA%90	1990 Percent of population with College degree or more	1.00	2651	5.03	6.401
		2.00	682	4.61	5.690
$ value	Value of property in 1990	1.00	2651	21320.85	10625.251
		2.00	683	18392.43	8512.513

Source: SPSS Software Package

A review of the t-test results reveals no noteworthy difference between the remaining cases and the omitted cases with respect to age of built structures, population per tax

block, percent of owner occupied housing, Black and foreign born residents, or residents with at least a college education. On the other hand there was a significant difference in the average 1990 value of properties in the two categories, with the included cases being of higher value. The size of the lots of the included cases was generally smaller than the omitted cases. Assessed value per square foot in 1996 was also higher for the cases that remained in the dataset. There was a difference in the rate of value change between the two categories with the omitted cases losing value at a higher rate than the included cases, yet there were a higher ratio of vacant and boarded houses among the included cases than the omitted cases.

That is to say that according to the 1990 census, while similar kinds of people lived on the two sets of lots (remaining and omitted) there is a difference in the size and value of the properties in the two categories. This is consistent with my earlier supposition that the omitted cases have a higher representation of larger tracts of land being transitioned from industrial to smaller residential, thereby creating the considerable number of unidentified or under identified cases with missing data. If time had stood still and these lots had not been reconfigured during the study period, the impact of the three affordable housing developments would be clearer. Time did not stand still, and as such this research must accept this limited shortcoming.

Framing the Final Dataset

From the remaining cases the final dataset was established. The intent was to center the first three affordable housing developments in the Homeownership Zone within two

concentric bands of taxable properties to compare any changes in taxable valuation over time across the two bands and for the cases within those bands to comprise the final dataset. The first attempt used 1,000 feet bands around the affordable housing but the cases in the bands were not concentric as the outer band had far fewer cases on the eastern side of the affordable housing.

The band width was therefore reduced to one-eighth of a mile (660 feet) bands using the parameters set by Guhathakurta and Mushkatel in their study of the impact of Section 8 housing on adjacent housing quality (Guhathakurta & Mushkatel, 2002). This provided a much better representation of properties in the two bands, but reduced the overall number of cases in the final dataset to 1521 with 680 cases in the first band immediately adjacent to the affordable housing and 841 cases in the outer band. The cases in the final dataset are tax block lots organized into the two zones. The first zone is made up of tax block lots within a one-eighth mile of the three affordable housing developments, Monument Crossing I, Willow Green, and Monument Crossing II. The properties in the second zone are between one-eighth and one-quarter mile or 1320 feet of the zone of the three affordable housing developments. I worked hard to stay within the natural and political boundaries of the community being studied, not to cross major highways and to stay within the Homeownership Zone, no small feat given Trenton is only seven and a half square miles. Where a lot was in two zones due to its proximity to all three of the affordable housing developments, I assigned them to the zone closest to the affordable housing. For example, a lot near Monument Crossing I would be a Zone 1 lot as it is within the 660 foot area, but it may also be within 661 and 1,320 feet of Willow Green,

giving it a potential Zone 2 designation; in all cases such as this the lot would be assigned as a Zone 1 case only. My hypothesis is that the tax block lots in the zone adjacent to the affordable housing (Zone 1), will appreciate in assessed taxable value at a rate greater than those in the zone furthest from the affordable housing development (Zone 2).

CHAPTER THREE

QUANTITATIVE RESULTS

This chapter is divided into three parts. First I describe the data and explain data transformations that were completed to make the data useful. Next I report the preliminary data analysis conducted, cross tabs, and t-tests. Finally I discuss the multivariate analysis carried out to help address the research questions.

Data

There are over fifteen hundred cases described for the most part by continuous variables, creating unwieldy output. Shape area was measure in square feet and ranged from 26 square feet to 208,703 square feet, with a variance of 63,856,225.9! I chose to convert the five smallest outliers 26, 30, 38 and 76 (cases 85, 484, 1928, and 1908) to the next reported size up, 158 square feet; and the three largest outliers 129,769; 206,615 and 208,703 (cases 1350, 1934 and 2044) to the next reported lot size down, 85,551. The overwhelming majority of the lots are still less than 20,000 square feet.

Likewise, value per square foot for 1996 cases ranged from $.08 to $2525.39; 1999 cases from $.02 to $8206.02; 2002 cases from $.05 to $8095.69; and 2005 cases from $.13 to $367.84. As a result I reduced the outliers on the high end for years 1996, 1999 and 2002. The 1996 cases $2525.39 (block 8101, lot 8) and $833.69 (block 8101, lot 9) were reduced to $345.00. The 1999 case $8206.02 (block 504, lot 30) was reduced to $461.16; and in 2002 case, $8095.69 was reduced to $434.16. Nevertheless, as the comparison of

means to median will signify, most of the lots are of lower value per square foot, as reflected by a left skew.

To facilitate manipulation of the variables, I divided the continuous (interval ratio) and ordinal variables with high frequencies into quintiles, in each case 5 represents the highest quintile value. As such variables like percent of owner occupied housing, percent of vacant boarded housing, size of lot (square feet), percent with a college education, and lot value per square foot have all been separated into quintiles. Some variables, particularly those reflecting race, foreign born residents in census block group, and number of rooms per unit, did not have a normal distribution and as such did not fit neatly into quintiles. I used the same process to bin the cases but had four rather than five groupings that reflected the actual distribution of the cases relative to the variable. A table entitled Recoded Variables (Appendix B) lists all of the variables as they have been recoded.

The variable rate of value change prior to affordable housing development is not recoded into quintiles; its distribution is greatly clustered around the mean evidencing high kurtosis and a small range. In this circumstance 70 cases were losing value prior to affordable housing development; 1351, almost 90 percent of the cases showed no change in value between 1996 and 1999, and 100 cases showed a gain in value during the same period. Variables related to rate of change were therefore divided into three groups based their pattern of change. Also the variable depicting when housing was built was not divided into quintiles. Complicating this variable the United States Census lumps

together all housing built prior to 1940; given that this number represented one half of the

cases in my dataset, I divided this variable into halves. All of the nominal independent

variables (zones and land use classifications) are listed in the Appendix with their

recoded labels.

Independent Variables

As indicated in Chapter 3, I separated the independent variables into the three categories,

variables which depicted characteristics of the community, variables which depicted

characteristics of the housing, and variables which depicted characteristics of the people

who lived in the housing. I then performed descriptives and crosstabs. Table 7 lists the

range, mean and variance for each of the independent variables.

TABLE 5: Descriptive Statistics						
variable	description	min	max	Mean	Median	Variance
SHAPE_AR_1	area of lot in square feet	158	85551	2854.38	1742.00	3.514E7
VAL96PERSQ	value of lot in 1996	0	345	20.32	18.00	494.091
VAL99PERSQ	value of the lot in 1999	0	461	20.01	18.00	471.323
VAL96_99	Change in lot value 96 to 99	-1	1	.02	.00	.111
VAL02PERSQ	Value of lot in 2002	0	281	22.40	20.00	372.734
TPOP90	1990 population of census block group	150	2319	805.40	731.00	139535.631
TWHT90	% white persons in census block group	0	51	6.77	1.00	119.498
TBLK90	% black person in census block group	44	100	88.45	94.00	153.653
THISP90	% Hispanic in census block group	0	55	8.44	6.00	99.492
HSHOLD90W1	% one person household in 1990	0	74	22.05	17.00	342.361
BORNINSTAT	% persons born in state in block group	46	75	59.59	57.00	46.857
FORGNBRN90	% foreign born persons in block group	0	10	3.60	4.00	9.894
EDHS90	% HS diploma highest education	29	74	48.94	52.00	120.990
EDBA90	% persons BA highest education	0	29	4.66	4.00	34.359

variable	description	min	max	Mean	Median	Variance
MEDINCM90	block group median income in 1990	7188	50811	19469.19	19632.00	6.163E7
OWNR90	% owner occupied units in 1990	0	73	36.32	41.00	398.094
YEARBUILT	year housing built in block group	0	1974	1926.98	1940	32112.687
THSGUNITS9	housing units in census block group	43	1167	296.88	298.00	25083.983
OCCPUNITS	Occupied units in census block group	41	1064	251.54	253.00	20581.454
BRD_VCNT90	Boarded vacant units in block group	0	71	44.81	44.00	303.198
1RMUNIT90	% 1 room units in census block group	0	22	2.85	2.00	24.011
5RMSUNIT90	% 5 room units in census block group	24	93	62.53	72.00	307.277
1PRSN_UNT9	% units w1 person in 1990	14	50	24.40	20.00	84.976
2PRSN_UNT9	% units w 2 occupants in 1990	13	29	21.89	22.00	11.792
7UPPRSN_UN	% units w 7 or more occupants in 1990	2	12	7.34	7.00	7.166
DET_UNIT	% detached units in census block group	0	26	8.06	8.00	17.060
ATCH_1UNT9	% attached units (twins)	9	86	51.16	54.00	343.632
ATCH_2UNT9	% 2 units in structure	2	27	14.74	16.00	56.799
ATCH_3_9UN	% 3 units in structure	0	53	16.73	14.00	99.248
ATCH_10UPU	% 10 or more units in structure	0	58	7.56	.00	173.279

Source: SPSS Software Package

The descriptives did not reveal anything remarkable. We find that the block group communities within this study are characterized by populations with 150 residents to 2319 with an average of 805 people per census block group. One quarter of the units were occupied by only one person while another 22% were occupied by two person households. Just over 7 percent of households reported having seven or more persons. Just over one third of the housing was owner occupied.

Most of the residents are Black with census tract ranging from 100 percent down to 44 percent Black with an average White population of almost seven percent and an Hispanic average population of around 8.5 percent of the census tract. Roughly 60 percent of the population was born in state, while there is a range from zero to ten percent foreign born

residents. About half of the residents have a high school as their highest earned level of education, with the block groups ranging from zero to 29 percent of their adults with a college education. Median household income ranges in 1990 from $7,188 to $50,811 with a mean of $19,469.

The average value of the parcels in the dataset experience a slight increase between 1995 and 2002 although we cannot determine at this juncture whether this was because the parcels with depressed value were taken off the tax rolls raising, the average or those parcels on the tax rolls experienced an intrinsic increase. Total housing units per tract ranged from 43 to 1167 with an average of 297 per census tract. About 15% of the housing was boarded or vacant, ranging from 0 to 71 units per census tract with a mean of 45 boarded or vacant units. One room units made up less than three percent of the housing units, while over 60 percent of the housing had at least 5 rooms. Less than 10 percent of the units were single family detached structures. Just over 51 percent were attached to one other unit; and less than ten percent were multi-dwelling housing with up to 10 or more attached units. About half of the housing was built before 1940.

Preliminary Bivariate Analysis – Independent Variables

The independent variables depict the characteristics of properties in the zones before the affordable housing development with respect to 1990 census tract data, land use and tax data. In an effort to assess relationship between and among the independent variables, I conducted a cross tab followed by a t-test. The crosstab included all the independent variables cross tabbed against the two zones: 1 representing properties within one-eighth

mile of the area where the Affordable Housing Development (AHD) was built, 2 representing the taxable property between one-eighth mile and one-quarter mile of the AHD. Because I am most interested in identifying differences between zones 1 and 2, I then conducted the t-test comparing the means of the various variables for zones 1 and 2. The tests do indicate some significant similarities and differences of cases across the zones.

TABLE 6: Crosstab

	Zone 1 = 680 cases Zone 2 = 841 cases	Mean	Std. Deviation
% white persons in census block group in 1990 *	1 2	4.48 8.62	8.416 12.301
% black persons in census block group in 1990 *	1 2	91.68 85.84	9.376 13.846
% Hispanic persons in census block group in 1990 *	1 2	6.61 9.91	7.925 11.153
%1 person households in census block group in 1990	1 2	22.01 22.09	15.796 20.441
% persons born in living census block group in 1990	1 2	59.56 59.62	5.680 7.662
% foreign born persons in census block group 90 *	1 2	4.49 2.88	2.925 3.136
% persons with high school as highest education in 1990 *	1 2	48.30 49.46	8.888 12.429
% persons with college degree as highest education in 1990	1 2	4.66 4.66	5.164 6.373
Median income of households in census block group 1990 *	1 2	18618.16 20157.31	6149.339 8938.394
Occupied units in census block group in 1990	1 2	259.03 245.49	132.309 151.691
boarded and vacant housing units in census block group in 1990 *	1 2	47.60 42.55	17.620 16.919
% One room housing units in census block group in 1990 *	1 2	1.60 3.87	1.880 6.187
% 5+ room units in census block group in 1990 *	1 2	66.45 59.35	15.677 18.297

	Zone 1 = 680 cases Zone 2 = 841 cases	Mean	Std. Deviation
% units with1 person in 1990 in census block group	1	24.30	9.318
	2	24.48	9.142
% units with 2 persons in 1990 in census block group *	1	22.66	3.302
	2	21.27	3.414
% units with 7 or more persons in 1990 in census block group *	1	7.53	2.779
	2	7.17	2.582
% detached housing units in 1990 in census block group *	1	8.68	4.128
	2	7.56	4.066
% attached housing units (twins) in census block group in 1990 *	1	55.74	17.178
	2	47.45	18.774
% housing with 2 units in structure in census block group in 1990 *	1	13.01	7.719
	2	16.14	7.089
% housing with 3 units in structure in census block group in 1990 *	1	13.62	6.891
	2	19.24	11.275
% housing with 10 or more housing units in structure in census block group in 1990	1	7.41	14.613
	2	7.68	11.870
Area in square feet of lot (case)	1	3016.50	6100.404
	2	2723.30	5784.385
Value of lot in 1996 ($/square foot) *	1	18.02	25.472
	2	22.17	19.024
Value of lot in 1999 ($/square foot) *	1	17.48	21.599
	2	22.06	21.597
Rate of lot value change from 1996 to 1999	1	.02	.351
	2	.02	.319
Population of census block group in 1990	1	804.55	370.952
	2	806.10	375.847
% housing units in census block group owner occupied in 1990 *	1	41.95	18.232
	2	31.77	20.132
Average year structures in census block group were built *4	1	1907.94	266.748
	2	1942.38	7.843
Total number of housing units in census block group in 1990	1	302.74	148.082
	2	292.15	166.176
% Taxable lots in 1996	1	96.18	.192
	2	96.55	.183
% Taxable lot in 1999 *	1	88.68	.317
	2	93.22	.252

* Zone 1 is significantly different from Zone 2 at α<.05   Source: SPSS Software Package

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[4] Although the census records all housing built pre 1940 in one category as '1939 or earlier,' because of the 2406 units, 1467 or 61% were built before 1940, the average year built is 1914 for the housing units making up the dataset and is as recorded above for the respective zone.

The variables depicting the people who live in the community were somewhat different across zones 1 and 2. Race, foreign birth, and median household income stood out, Zone 2 had a higher percentage of whites and Hispanics; fewer foreign born residents; and a higher median income. Variables depicting characteristics of the housing also revealed a significant difference. Zone 1 housing structures were older, had more owner occupied housing, higher percent of vacant/boarded structures, and more detached housing, differed in number of rooms per unit, and the attached unit configurations (number of units in an attached row of homes). Community characteristics differed primarily in terms of land use in 1996, with more taxable units in 1999 as well as a higher value per square foot of in Zone 2 in both 1996 and 1999.

The affordable housing development in the Homeownership Zone started where the community was most distressed as evidenced by older housing stock, more boarded housing and less owner occupied housing. Hence the differences noted above. Zone 1, the first ring outside of the first three AH developments, is somewhat more distressed than Zone 2. However, this is just preliminary analysis. The independent variables which revealed significant difference between zones 1 and 2 via crosstabs will be included in the multivariate analysis below.

Dependent Variables

I began with four (4) potential dependent variables for my research question. The variables I selected to depict the impact of affordable housing on taxable housing are:

- Land use change from 1996 to 2005

- Taxable status change from 1996 to 2005

- Value per square foot of lot in 2005

- Value change from 1996 to 2005

These variables each help assess the impact of affordable housing in the study neighborhood to varying extents. Land use change will capture movement such as vacant land that is developed to be residential, or commercial land that is taken for public purposes, or residential or other land that maintains its use in a stable fashion over time. The limitation of land use change as a variable is that it does not directly measure impact on taxable value. Changes in land use and even lack of change in land use can conceivably have either a positive or negative impact on taxable value. Change in tax status on the other hand does more directly allow quantifying of changes that add taxable lots to the municipality's tax rolls and those that subtract taxable lots. Value of the lot at the end of the study period, 2005, is another dependent variable, but it is of little value for assessing impact on value without taking into consideration the value of each lot prior to the affordable housing development.

The variable that looks at value change from 1996 to 2005 is a key dependent variable. One such variable is 'TtlValChng' looks only at whether value went up, stayed the same or went down on the study period; another variable actually bands these values into quintiles to compare the distribution of low and high value cases across the zones. Unfortunately both of these variables include a number of exempt cases that had value changes during the course of the ten year study. Hence, an additional dependent variable

has been created, 'TxValChng' to reflect the direction cases changed in value for cases which were taxable at the beginning of the study and/or at the end of the study period.

I then tested the following dependent variables for colinearity to determine the extent to which they described the same attributes. Using the Pearson's test of correlation between 'TxValChngBnd and 'TxValChngDir' and then between 'clsschng' (land use change) and 'TxStsChng' resulted in a correlation of .805 for the first pair of dependent variables describing value change, and .584 for the two dependent variables describing land use and tax status. These correlations make sense.

The dependent variable 'TxValChng' is a summary of the dependent variable 'TxValChngBnd,' the latter, TxValChng, describes both amount and by inference direction of value change, the former, TxValChngBnd, only depicts direction of change. In part because the distribution for 'TxValChngBnd, was not normal, I opted for the **'TxValChng'** as one of the dependent variables for the more involved multivariate analysis which follows. TxValChng most simply explains the change in value, as decreasing, staying the same or increasing.

Land use classification change, 'ClsChng,' is highly correlated with taxable status change, 'TxStsChng,' because tax status is based upon land use. Some land use classifications are taxable (commercial land uses, residential land uses), and some are not (public land uses, religious and charitable land uses). As a result 'ClsChng' infers tax status change. That is, a parcel the changes from a taxable land use e.g. commercial to

public, changes not only land use but also taxable status. Because the focus of this study is concerned with impact on taxable value of land rather than impact on general land use, taxable status change, **'TxStsChng,'** was selected as a dependent variable for further analysis.

Preliminary Bivariate Analysis – Dependant Variables

Preliminary analysis of the dependent variables in this dataset found that only 18% of the cases changed from a taxable status to non-taxable or vice versa overall. Of these cases 15.4 percent changed from a taxable status to an exempt status during the study period, compared to merely 38 cases or 2.5 percent that changed from an exempt status to a taxable status.

TABLE 7: TAXABLE STAUS CHANGE

	Value	Frequency	Percent
-1	Case went from taxable value to exempt	234	15.4
0	Case was exempt and remained exempt	17	1.1
1	Case was taxable and remained taxable	1232	81.0
2	Case was exempt and changed to taxable	38	2.5
Total		1521	100.0

Source: SPSS Software Package

TABLE 8: Crosstab TAXABLE STAUS CHANGE By Zone

TxStsChng		study zone		
		1	2	Total
Taxable status change	-1	123 (52.56%)	111 (47.43%)	234
	0	6 (35.29%)	11 (64.7%)	17
	1	531 (43.1%)	701 (56.89%)	1232
	2	20 (52.63%)	18 (47.37%)	38

Source: SPSS Software Package

A closer look at the distribution of these changes across zones is fascinating. While the zone closest to the affordable housing development has more of the cases that changed from taxable to exempt, it also has more of the cases that changed from exempt to taxable, and at close to the same rate of change, taxable to exempt and exempt to taxable[5]. The number and direction of these changes prove to be significant at the .027 level when cross tabbed by zone.

Additionally, almost 30% of cases changed in value after affordable housing was developed. Ten percent lost value and eighteen percent gained value.

TABLE 9: DIRECTION OF VALUE CHANGE FOR TAXABLE CASES ONLY			
	Value	Frequency	Percent
-1	Value per square foot decreased	160	10.5
0	Value per square foot remained the same	835	54.9
1	Value per square foot increased	275	18.1
missing	Case	251	16.5
Total		1521	100.0

Source: SPSS Software Package

TABLE 10: Crosstab DIRECTION OF VALUE CHANGE FOR TAXABLE CASES ONLY By Zone

TxValChng		study zone		
		1	2	Total
direction of value change for taxable cases only	-1	81 (50.6%)	79 (49.3)	160
	0	322 (38.6%)	513 (61.4%)	835
	1	148 (53.8%)	127 (46.2%)	275

Source: SPSS Software Package

While the two zones were similar in their lost value per square foot, the zone closest to the affordable housing accounted for almost 54 percent of the cases with appreciated

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[5] Unfortunately I was not able to discern the reason for each property to change to an exempt status from the data sources available to me; I was not able to discern whether the exempt properties yielded a payment in lieu of taxes.

taxable value; zone 1 again accounted for more of the change! Cross tabbed by zone,
these preliminary findings indicate that there may be a relationship at a significance level
of .094 between the direction of change in value per square foot and the distance from the
affordable housing development.

TABLE 11: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Taxable status change	Between Groups	2.750	1	2.750	4.876	.027
	Within Groups	856.883	1519	.564		
	Total	859.633	1520			
direction of value change for taxable cases only	Between Groups	.938	1	.938	2.808	.094
	Within Groups	423.649	1268	.334		
	Total	424.587	1269			
amount of value change	Between Groups	4783.195	1	4783.195	10.999	.001
	Within Groups	660591.071	1519	434.885		
	Total	665374.266	1520			

Source: SPSS Software Package

Bivariate analysis has shown that there are significant differences across the two zones
with respect to the changes in taxable status and value, with considerably more change
occurring in the zone closest to the new affordable housing development. Nevertheless
we cannot attribute that change to affordable housing development. In the following
section we will seek to determine the variables which influence the observed differences.

Multivariate Analysis

Discriminant analysis was used to classify the lots within the two zones to ascertain
which variables could reliably predict impact upon taxable property valuation of similarly

situated lots and whether proximity to affordable housing development in particular was among those predictor variables. Discriminant analysis was used because it is helpful in identifying which variables contribute most to making the differentiation between the two distinct populations. This method is used to compute all possible functions and thereby distinguish the predictor variables.

As described in the earlier section the variables which revealed significant difference between zone 1 and zone 2 were race, education level, foreign born, age of housing stock, owner occupied housing, vacant/boarded housing, detached housing, and attached structures with less than 10 units. Table 6 above compares the means and standard deviations of the two zones. The following series of tests will assess the extent to which these variables prove to be predictors of value change. I will summarize the key findings from the series of tests at the end of this chapter.

According to Afifi, Clark and May (2004) discriminant function analysis is used in the classification or discrimination of two or more groups. It is generally recommended when the variances and covariances for the groups are somewhat equal and the data follow a multivariate normal distribution. The principal concept involves determining the point at which a case is considered to belong to one group or another based upon its value respective to a variable (Afifi et al., 2004). In the case of multivariate analysis, the objective is to determine the point at which a case is considered to belong to either of two groups relative to its association with several variables.

In an idealized situation we can assume that the probability of error is equal in determining the placement of a case into one of two groups based upon the associated value of each case to one of the variables, or its placement on the X axis. In real life situations though, we expect overlap because the variances are rarely precisely equal. It is for this reason that the more variables that are used the more accurate the classification. We use several variables, identify the dividing point for each of them, draw a line connecting the dividing points separating group one from group two. We then have a configuration of variable values which allow us to predict whether a case belongs in group one or group two.

In this study we use discriminant analysis to describe the configuration of conditions in a neighborhood as depicted by the selected variables to yield a predicted impact on the neighborhood taxable property with a special focus on the change brought on by the development of affordable housing. We know from previously cited research that affordable housing development by itself does not impact existing taxable property value per se. Rather it is the combination of affordable housing within a larger configuration of characteristics which reflect the condition of the community, the housing stock in the community, and the people who live in the community that impact taxable property value.

Once we know this configuration of variables, we can use that configuration to predict the impact of affordable housing development on other communities. If we took only one of the selected variables, for example percent boarded/vacant housing, to determine

the degree and direction of impact affordable housing has on taxable property valuation we might experience some success but with a high propensity for error and for missing critical predictors. If we added percent foreign born residents as an additional variable to predict impact on taxable property value, our rate of success should improve. Using several variables increases the rate of success in classifying taxable properties which have values that can be positively impacted by affordable housing development.

Our bivariate analysis identified variables reflecting characteristics of the taxable properties which differed from zone 1 and zone 2 and in all likelihood these differences are not by chance. We generalized based upon the bivariate analysis that the taxable properties in Zone 1, which are closer to the affordable housing development than those in Zone 2, are more susceptible to impact on property value because they were in a neighborhood characterized a lower percentage of whites and Hispanics and a higher percentage of blacks and more foreign born residents; and with housing structures that were older, more owner occupied housing, more vacant/boarded structures, and more detached housing; with fewer taxable properties in 1999 and less value per square foot in both 1996 and 1999.

To reduce the degree of error inherent in these generalizations, we use discriminant analysis. The number of characteristics or variables selected is only twenty-three but could have been as many as one less than the number of cases. These twenty-three were selected based upon their significantly different occurrence in the two zones. For each variable those taxable properties or cases falling above the dividing line (on the x axis)

can be classified as having values which are positively impacted by their proximity to affordable housing development; those falling below the dividing line are classified as having values that are not positively affected.

The discriminant function coefficient is useful in signaling the degree and direction a particular variable influences the classification process.(Afifi et al., 2004) Viewing the coefficients in aggregate provides us with scenarios or configurations under which the independent variables influence the dependent variables.   In the case of our first dependent variable, tax status change, we want to see the extent to which the independent variables including proximity to affordable housing influence changes in taxable land value in terms of that property's tax status. A value of -1 indicates a property's land use moved from taxable to exempt over the 10 year period; a value of 2 indicates that a property's land use moved from tax exempt to taxable.

Below we have three configurations characterized by the discriminant function coefficients. Based upon the three functions' respective eigenvalues, we determine that Function 1 is the best predictor of change due to land use; the third Function is the weakest. Eigenvalue for Function 1 is 1.472, for Function 2 it is .299 and for Function 3 is .018. The eigenvalue essentially quantifies the degree of variance determined by each function. In this instance, Function 1 is clearly the strongest predictor of case change.

TABLE 12A: TAX STATUS CHANGE

Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Eigenvalue	1.472	.299	.018
VAL96PERSQ (Banded)	.159	-.077	-.830
VAL99PERSQ (Banded)	.070	-.006	.912
TWHT90 (Banded)	.545	-.108	.642
TBLK90 (Banded)	.945	-.019	.232
THISP90 (Banded)	.178	-.118	.545
FORGNBRN90 (Banded)	-.001	.045	-.417
EDHS90 (Banded)	.357	.194	.153
MEDINCM90 (Banded)	-.247	.064	-.468
OCCPUNITS (Banded)	.061	.155	1.466
BRD_VCNT90 (Banded)	-.283	-.059	-.237
1RMUNIT90 (Banded)	.336	.511	1.569
OWNR90 (Banded)	.103	.001	-.184
YEARBUILT (Banded)	.156	-.177	-.607
LANDUSE96	-1.064	-.265	.034
TAXABLE99	.193	-.894	.070
DET_UNIT (Banded)	.353	.218	-1.180
ATCH_1UNT9 (Banded)	.791	.154	-2.402
ATCH_2UNT9 (Banded)	1.104	.145	.585
ATCH_3_9UN (Banded)	-.482	.030	-.522
2PRSN_UNT9 (Banded)	.620	.062	.301
7UPPRSN_UN (Banded)	-.182	.003	-2.309
5RMSUNIT90 (Banded)	-1.230	.241	5.750
study zone	.006	-.002	-.247

Source: SPSS Software Package

We see most notably in Functions 1 and 2 that proximity to affordable housing development (study zone) has negligible influence on the taxable status changes that occurred across the two zones. Influencing variables in Function 1 are ones that describe

first the type of housing present before affordable housing development and then the race of the people living in the housing. There is a strong positive relationship with the presence of attached two unit housing (ATCH_2UNT9), attached one unit housing (ATCH_1UNT9), units with two person households (2PRSN_UNT9) and a strong inverse relationship to housing with 5 or more rooms (5RMSUNIT90); additionally there is a strong positive correlation with the presence of persons of both black and white races (TBLK90, TWHT90). This configuration of coefficients describes a community that is probably made up of small families, primarily black but also considerable white households, living in relatively larger homes.

Function 2 in contrast shows positive taxable land use change to be strongly related to a configuration of variables reflecting the condition of the properties; in particular where there are more one room units (1RMUNIT90) and fewer taxable properties (TAXABLE99. This configuration follows as it depicts areas having more land that is not taxable; these areas have more land to bring back onto the tax rolls.

Although Function 3 is the one which explains the least in terms of the taxable outcome in number of cases, it is the function with the depicting the strongest influence of proximity to new affordable housing development (study zone), -.247 as compared to .006 for Function 1 and -.002 for Function 2. This inverse relationship to tax status change by proximity to affordable housing (study zone) is accompanied by other variables with stronger inverse relationships to tax status change, value per square foot in before the affordable housing was built (VAL96PERSQ), age of housing (YEARBUILT),

detached housing (DET_UNIT) and single unit attached housing (ATCH_1UNT9) and large households (7UPPRSN_UN) with higher incomes (MEDINCM90). One the other hand this third function is positively related to variables depicting a community with largely occupied units (OCCPUNITS) both small (1RMUNIT90) and large (5RMSUNIT90), many two unit attached houses (ATCH_2UNT9), as well as a significant presence of white (TWHT90) and Hispanic residents (THISP90), and properties of relatively higher value at the time the new affordable housing was being developed (VAL99PERSQ). A stable, diverse community of modest means is what Function 3 represents where proximity to new affordable housing development is inversely related to exempt property moving to a taxable status.

TABLE 12B: TAX STATUS CHANGE
FUNCTIONS AT GROUP CENTROIDS

Taxable status change	Function		
	1	2	3
-1	-.049	1.264	-.049
0	-5.941	-.971	-1.038
1	.287	-.227	.010
2	-6.347	.014	.451

Unstandardized canonical discriminant functions
evaluated at group means
Source: SPSS Software Package

The functions take on more meaning when we look at the dependent variable outcome most associated with each function by examining the 'functions at group centroids.' Taxable status outcomes are represented by -1 to indicate a property which loses taxable status and becomes tax exempt, 0 represents a property that begins and ends exempt across the time of this study, 1 represents a property which is taxable at the beginning and

end of this study, and 2 represents those properties which move from tax exempt to taxable.

Function 1, the configuration of coefficients which describes a community that is probably made up of small families, primarily black but also with considerable numbers of white households, living in relatively larger homes is most strongly inversely related to exempt properties, both those which remained exempt and most especially those which became taxable. This is not the function that depicts change for the better in terms of taxable status. Function 2, a configuration of variables reflecting the condition of the properties is more closely associated with properties that became tax exempt, thereby losing taxable value. Function 3, the stable, diverse community of modest means, is strongly associated with the exempt cases but in this function there is an inverse relationship with the exempt properties that remained exempt and a positive one with the properties that moved from a tax exempt status to a taxable status!

The second analysis considers the impact of the variable groupings on Taxable Value Change. Again, Function 1 is the stronger with an eigenvalue of .357 it explains 75 per cent of the variance and Function 2 with an eigenvalue of .118 is responsible for 25 percent of the variance. In this analysis value change has been differentiated by -1 to indicate taxable property value that has gone decreased, 0 for value that has stayed the same throughout the study period, and 1 to reflect taxable properties which gained in value. It was determined from the bivariate analysis that 18 percent of the cases had increased in value and that 54 percent of the increase was in the zone closest to the new

affordable housing development. This analysis is to help us understand which of the variables and in what combination most influenced that value change.

TABLE 13A: TAXABLE VALUE CHANGE
Standardized Canonical Discriminant Function Coefficients

	Function	
	1	2
Eigenvalue	.357	.118
VAL96PERSQ (Banded)	-1.587	.153
VAL99PERSQ (Banded)	1.127	-.316
TWHT90 (Banded)	-.126	-.412
TBLK90 (Banded)	.685	.989
THISP90 (Banded)	.626	-.359
FORGNBRN90 (Banded)	.149	-.063
EDHS90 (Banded)	-.071	.312
MEDINCM90 (Banded)	.096	.246
OCCPUNITS (Banded)	-.093	-.392
BRD_VCNT90 (Banded)	.026	-.201
1RMUNIT90 (Banded)	.291	.016
OWNR90 (Banded)	-.237	.727
YEARBUILT (Banded)	.080	.684
LANDUSE96	-.227	.421
TAXABLE99	.200	-.233
DET_UNIT (Banded)	-.154	1.421
ATCH_1UNT9 (Banded)	-.611	1.978
ATCH_2UNT9 (Banded)	.119	.294
ATCH_3_9UN (Banded)	-.182	.693
2PRSN_UNT9 (Banded)	-.134	-.507
7UPPRSN_UN (Banded)	-.358	1.289
5RMSUNIT90 (Banded)	.701	-4.036
study zone	-.044	-.138

Source: SPSS Software Package

We find in Function 1 that there is a very strong relationship between taxable value change and the value per square foot prior to the affordable housing development, an inverse relationship prior to development (VAL96PERSQ) and a positive relationship at the point of development (VAL99PERSQ). This is followed by a strong positive relationship with the racial composition of the community (TBLK90 and THISP90). Single unit attached housing (ATCH_1UNT9) and large households (7UPPRSN_UN) have an inverse relationship to taxable property value change in this function although large houses (5RMSUNIT90) have a positive relationship.

This function may be describing a community which was rebounding during the period just prior to the development of affordable housing given the strong relationship between prior values in 1996 and 1999 to the change in value in 2005 after affordable housing development. Based upon the Group Centroid, Function 1 is highly correlated with the cases that increased in taxable value and is negatively correlated to the cased that remained the same value or decreased in taxable value.

TABLE 13B: TAXABLE VALUE CHANGE FUNCTIONS AT GROUP CENTROIDS

direction of value change for taxable cases only	Function	
	1	2
-1	-.898	.742
0	-.171	-.227
1	1.043	.258

Unstandardized canonical discriminant functions evaluated at group means
Source: SPSS Software Package

Function 2 provides another perspective. It is most closely associated with the properties which lost taxable value over the study period. It is inversely related to the part of the community with large houses (5RMSUNIT90) but positively correlated to large

households (7UPPRSN_UN), and high numbers of black residents (TBLK90). Positively related to newer (YEARBUILT), owner occupied (OCCPUNITS), detached (DET_UNIT), and single unit attached (ATCH_1UNT9) housing. This function has a positive relationship to high school educated residents and household income, but an inverse relationship to proximity to affordable housing development. Larger households in newer detached housing before the affordable housing was built, is not representative of the neighborhood which was described by the descriptive analysis above. This segment of the neighborhood is somehow associated with property value loss and not associated with proximity to affordable housing.

Wherein Function 1 indicates that the taxable value goes up largely due to influences of the preexisting property value as well as racial composition of this community, Function 2 relates how taxable property goes down more influenced by the housing characteristics in the community. It should be noted that Function 2 is inversely related to proximity to new affordable housing development (study zone) which is to say that proximity to affordable housing is inversely associated with those cases which decreased in taxable value!

In summary, whereas the bivariate analysis indicated that the lots closest to affordable housing development, the discriminate analysis helped reveal that there are other factors that were more influential in prediction change in tax status or tax value. In the case of tax status, proximity to affordable housing was not a strong predictor in either Function 1

or Function 2. In the case of Function 3, it was a better predictor with an eigenvalue of -

.247 as compared to less than .01 in both Functions 1 and 2.

Affordable housing development (AHD) has an inverse relationship to lots that were non-

taxable and remained non-taxable after AHD and a positive relationship to lots that were

exempt before AHD and became taxable after the AHD was built. Other variables that

tended to be more influential were owner occupancy, ethnic diversity and older housing.

Where these factors are present, affordable housing development played the greatest role

in predicting change in tax status.

Where the dependent variable was a change in taxable value, again the discriminate

analysis found that affordable housing was not a strong predictor. Value of property

prior to affordable housing development and ethnic make-up of the community were

much stronger predictors than proximity to affordable housing, particularly for properties

that went up in value. Properties that went down in value were had a inverse relationship

to proximity to affordable housing, but this relationship is a modest -.138 as compared to

the inverse relationship with houses with 5 or more rooms with an eigenvalue of -.4.036,

or the positive relationships with attached units (eigenvalue 1.978), detached units

(eigenvalue 1.421), percent Black residents (eigenvalue .989) or owner occupied

(eigenvalue .727).

Overall we have found in this study that there are a number of variables that are better at

predicting whether and how taxable status or taxable value will change more than

proximity to affordable housing by itself or grouped with other variables does. In those cases where proximity to affordable housing does make a difference it has been shown in this study to associated with a stable, diverse neighborhood of modest means as a predictor of an increase in taxable cases within the neighborhood; and inversely correlated to property value loss, particularly in parts of the neighborhood that do not portray the neighborhood norms. The chapter that follows explores these findings further through a qualitative analysis. I discuss these quantitative findings with persons closely associated with the affordable housing development as well as those factors that lead them to believe that affordable housing would be a benefit to the community.

CHAPTER FOUR

QUALITATIVE ANALYSIS

The quantitative analysis reviewed in the preceding chapter found through bivariate analysis that, prior to the development of affordable housing, the zone closest to it was more distressed and that variables that depicted the residents and housing in the zone were key in differentiating zone 1 and zone 2, specifically race, and place of birth as well as structure and age of housing. After affordable housing development, there appeared to be a relationship between change in taxable status, and change in the value per square foot, with the distance from the affordable housing development. Discriminant analysis allowed a closer view of the impact of these variables on change in taxable value/status of the properties closest to the affordable housing development. It found that affordable housing little impact on the changes. Rather, a configuration of variables reflecting a community with a high proportion of black residents, but with a significant representation of white residents, living in attached town homes and/or a community with large numbers of lower value properties were shown to influence the changes in taxable property value.

To broaden my understanding of the quantitative findings I conducted individual interviews with five key informants, discussing the impact of affordable housing development in Trenton, New Jersey. In the interest of full disclosure, I must make known that in past (1990 to 2001) I held appointed positions within the City of Trenton as a department director, business administrator and chief of staff. As such I was acquainted will all of the interviewees prior to the interviews. The key informants were:

- Dennis Gonzalez, Acting Business Administrator; prior to this position he was the Acting Director for the Department of Housing and Economic Development

- Bill Valocchi, Supervisor of Planning, prior to this position he was Project Manager for Canal Banks, Department of Housing and Economic Development

- Henrietta Owusu, Program Coordinator for Housing Production, Department of Housing and Economic Development

- Douglas Palmer, Mayor, City of Trenton

- Marty Johnson, Founder and CEO of Isles. Inc.

I first asked each of the interviewees to state their objective in developing affordable housing in Trenton, New Jersey and then asked how they measured the success of the objectives. The responses ranged.

The Project Manager, instrumental in planning the affordable housing strategy with the neighborhood described the neighborhood prior to affordable housing development as characterized by 'lots of rentals' and therefore set as its objectives:

- to create home ownership opportunities by developing 300 units across the Canal Banks neighborhood;

- to bring about economic diversity in that neighborhood; and

- to cause private investment in a community where there was disinvestment.

He stressed that it was never an objective to have a neighborhood that was all low income but that their effort started recognizing that affordable was the real market rate for the people who lived in this community. When they started they concentrated on building

more affordable housing units, now over 10 years later they are focusing on more mixed income developments. He reported that there are homes on Broad Street that sold for $200,000, so from his perspective they are well toward achieving their objectives. There is a continued interest in providing homes for all income levels and to continue opportunities for asset building through home ownership.

The Business Administrator and former Director of Housing and Economic Development for the City saw affordable housing a key component of a larger strategy. He considers providing good and safe affordable housing to Trenton's families is a first foundational step to improving neighborhoods and making them safe. Not only improving the lives of families, it removes unsavory vacant properties which harbor criminal activity and are prone to catastrophic events like fires.

Trenton's affordable housing strategy was integral to its Weed and Seed Program. Trenton was the nation's first Weed and Seed site and as such the focus of a comprehensive approach of 'weeding' out negative influence's in the community and 'seeding' in positives. As Mr. Gonzalez described the affordable housing component, "The more investment you have emotionally and economically from the people who live in the community, especially through home ownership it moves the City…every project moves the City closer to the good (for) all neighborhoods…it brings about tangible evidence of incremental change to the character of the communities. It alters perceptions of the City." He judged the success of the strategy viz. police and fire activity which he monitors closely. The fire service is generally not called to Monument Crossing I and II

or Willow Green. Police gather statistics by city block and their data shows that we are strengthening neighborhoods.

Additionally he reported that the approach to selecting and working with home owners to prepare them for purchasing the housing was also a key element. Making sure the financing fit the families and they knew what to expect before, during and after the purchase; this has sustained the affordable housing and minimized foreclosures. Writing down the cost of construction has been vital to the success of the project.

The Housing Production Coordinator recited the Homeownership Zone objectives, to reduce blight, to increase home ownership by 65%, and to develop a mixed income community. As indicators of success she referred to pictures of the community before the affordable housing development, which depicted old abandoned properties including an abandoned factory site (a TOAD). Presently there now stand 112 new homeownership properties; the city will continue to monitor the properties to ensure that they do not become rentals. Moreover she looks at sale price of affordable housing, the first affordable housing development, Monument Crossing I units were deeply subsidized and sold at $50,000 per unit. Two years later similar units sold at $90,000 per unit. Willow Green has been able to sell units for $99,000. A subsequent affordable housing development, New Willow Green a few years later sold units for $100,000 plus. The city's most recent affordable housing development South West Village is selling units for $118,000.

Similarly in sharing the developer's perspective, Marty Johnson stated that the objective

was to take vacant land and convert it to productive use. The plan was to build new town

homes that fit into the historic streetscape with one half of the housing subsidized to meet

income guidelines for affordable housing for the purchasers. The Mayor echoed this

goal citing the 2000 boarded up structures and the high proportion of renters that

characterized the City when he was elected in 1990 and indicated that he embarked upon

a plan to build strong neighborhoods and reduce blight. He opted to provide home

ownership opportunities for working people who were paying exorbitant rent in poor

housing structures.

The Mayor realizes the impact of his policy decision, pointing out that you can observe

the difference in the neighborhoods esthetically, the affordable housing that has been

built is still looks good and because of it other homeownership has come about. (He also

cited new Broad Street housing that sold for $200,000.) Just that morning he had

participated in the groundbreaking for a new housing development on the old Magic

Marker site. The brownfield had been remediated and was slated for 42 units of mixed

affordable/market rate housing. The Mayor also cited the Pennington Avenue shopping

center as evidence of the success of the affordable housing development. It had been

built to serve the newly created market of homeowners in the neighborhood and was

thriving.

As it was, only the Mayor specifically mentioned increasing the value of surrounding

taxable property as an objective and so I asked the others if such fit within the

development objectives. The CEO of Isles indicated that they want every project Isles

does to 'strengthen land valuation.' The Housing Production Coordinator deferred on the

question of impact on tax base but said instead that 'quality of life' was the more

important outcome, "the change in how people feel" about owning their own home. She

referred to a recent Christian Science Monitor article…

In Canal Banks, incomes were $10,000 less than in the city as a whole. Manufacturing jobs were disappearing. The area had lost almost a quarter of its population from 1990 to 2000. "The area became predominantly rental and there's a tipping point at which the neighborhood becomes degraded, becomes transient," says Henrietta Owusu, the project coordinator for the city of Trenton. "We needed a paradigm shift in the way people looked at the neighborhood."

"It's incremental change," says Algernon Ward, a member of the Canal Banks Advisory Board, a committee of citizens who keep tabs on government efforts in the area. "It's clearly getting better, but we've still got a ways to go, and we still suffer from the same problems many working-class neighborhoods suffer from, though some of the eyesores have disappeared. ... And the property in some areas has stabilized. My [wish] is to have this finished."

Efforts to finally complete the project, though, are now mired in a struggling economy. Where 1 in 5 applicants used to qualify to buy homes in the area, that number is now down to 1 in 15. The original plan called for everything to be done by the end of 2008, but planners have tacked on another year to the estimate.

For those currently living in the Canal Banks area, which is just minutes from New Jersey's golden-domed capitol, incomes are up and crime is down, but sustained growth has been elusive.
"If we [had chosen] a neighborhood that wasn't mostly bombed out and had started from there instead, we'd be ahead of the game," says Bill Valocchi, supervising planner for the city. "Our approach was to connect the dots to create projects throughout the area and we hoped the dots would connect over time.... We chose a neighborhood in pretty dire need." (Kutner, March 24, 2009)

The intent in building the affordable housing, according to Ms. Owusu was to change

unproductive land use to productive land use, for "a planner (taxable property value is not

the primary issue) it's quality of life."

The Business Administrator also saw the objective of increasing taxable property value as

only in part the objective. In considering revenue to the city the affordable housing

which is tax abated, provides a Payment in Lieu of Taxes and in many cases the PILOT is at or above what the city was receiving in taxes for the dilapidated and city owned properties before the affordable housing development. The Mayor saw the issue of impact on taxable property valuation as important, he contended that there was a need to get these properties on the tax rolls as well as to reduce the City's cost of boarding vacant buildings and the cost of police services responding to criminal activity in abandoned properties, in addition to raising the value of properties nearby.

And finally I reviewed with each on the findings of this research, that there was a discernable difference in taxable property value increase in the properties closer to the affordable housing development but that affordable housing was not the influencing variable – it was not a drag but it was also not the panacea. It was in discussing the influencing factors that the discussion was richest. The influencing factors for the increase in taxable property valuation were a high correlation with presence of Black residents (.945 and .685), attached two unit housing (1.104), 2 persons per unit (620), and high value per square foot just prior to the affordable housing development (1.127).

Both the City Housing Production Coordinator and the City Planning Supervisor found the findings intriguing, especially given the contradiction to the old redlining standards which found high proportions of Blacks in a neighborhood a reason to devalue property in it. In this case Blacks were the stabilizing factor. The Planning Supervisor went on to review the neighborhood's history, from about the 1960's through the 1990's there was no investment, there was 'white flight' but those who remained in the neighborhood were

people who remembered it as a great neighborhood; they provided "institutional memory" for the community. He then gave the example of the son of one of these families, who had moved away upon becoming an adult, now moving back to the neighborhood to become a new homeowner, (also cited in the Christian Science Monitor article) (Kutner, March 24, 2009).

The Housing Production Coordinator indicated that the Canal Banks community was selected because of its institutional fabric anchored by Shiloh Baptist Church (the oldest African American church in Trenton), the Carver Center (during segregation it was the Black Y), and King David's Lodge. These organizations and others were a part of the rich history of the community and were represented on the Canal Banks Advisory Board. They formed the social fabric of this community and indeed represented its social capital. These were the people who attended Isles' meetings to plan Monument Crossing I and II; these were the people who shaped the Canal Banks Homeownership Zone strategy and who provided input to the design of the affordable housing developments in their neighborhood.

They are progeny of the community of black residents who had migrated from the segregated South after World War II, many with at least a high school education, worked in Trenton's many factories, and established Trenton's black middle class communities in segregated Trenton before suburban home ownership was a option for people of color.

It is almost poetic that on the day of these interviews the Northwest Community Improvement Association which has as members many of the same community residents who once belonged to the Canal Banks Advisory Board, celebrated the groundbreaking for an affordable housing development on the old Magic Marker site. They had advocated for the clean-up of the old Magic Marker brownfield site just west of the affordable housing developments in this study. The groundbreaking was for 42 units, six of which would be affordable housing and the rest selling from $99,000 to $169,000 depending upon amenities and subsidies.

Other research has found that affordable housing by itself is not a reliable redevelopment strategy but that it should be a part of a larger strategy that includes other physical amenities like streetscape and parks and schools and the like. This research indicates that social fabric and human capital are at least as important.

CONCLUSION

This research sought to assess the impact of affordable housing development on taxable property value in an effort to consider the efficacy of affordable housing development as part of a revitalization strategy for a poor city. There are voices who contend that publicly subsidized housing by its very existence us a detriment to surrounding property value. On the other hand in the absence of a market for unsubsidized housing, affordable housing may be a key strategy toward removing blight and creating an environment for private investment that could in turn improve the tax base. Differentiating between these two views was largely at the center of my question.

My hypothesis was that affordable housing development in a poor city would increase the assessed value of taxable properties in adjacent neighborhoods. The area surrounding three affordable housing developments in Trenton, New Jersey was selected to study this question. Trenton is a small city the America's Northeastern Corridor and can be considered representative of the many old manufacturing cities from this country's industrial era. Economic restructuring and population shifts caused major distress for these cities as they lost their role as centers of commerce and industry. Trenton in its strategy to stabilize its tax base sought to stabilize its home ownership base even though a significant portion of its population required financial subsidy to afford to buy a house. Hence, Trenton is suitable for this research.

The dataset was comprised of properties surrounding three new affordable housing developments and organized into two concentric zones. The research question sought to

determine if proximity to the affordable housing had a differential impact upon the taxable property in the two zones. The bivariate analysis suggested that it did have such an impact but the multivariate analysis suggested that there were other issues at work influencing the difference. Recent value of property and demographics of the community were greater influencers.   While recent value of the property was a fairly obvious influencing variable, the people who live in the surrounding communities proved to be a more surprising significant influence. The qualitative analysis provided an even stronger suggestion that the people who live in the community and make up the social fabric can influence property value more than affordable housing ever will.

One of the key discriminating demographic variables in predicting tax value change as well as tax status change was the presence of was the percentage of Black residents living in the zone. As one of the interviewees commented, elevated occurrence of Black residents is generally associated with 'redlined' properties with declining value. Given that both zones had high proportions of Black residents, there was something different about some of these Black residents. It required differentiating the Black populations across the zones.   Referring back to the bivariate analysis, we found significant differences between Zones 1 and 2; Zone 1 had higher percentages of Black residents, Zone 1 had fewer persons with high school as the highest level of education; Zone 1 had a higher rate of owner occupied homes and Zone 1 had lower median income. Zone 1 was the zone that evidenced more change in tax status and in tax value. Zone 1 had more increase and decrease in both tax value and taxable status.

Upon further examination through interviews with key informants associated with planning the affordable housing development, this community (Zone 1) is in transition as evidenced by the high incidence of boarded, vacant housing structures, and had undergone another transition after World War II with the in migration of Black residents from the South. Many had education beyond high school when they came to Trenton. They got jobs, bought homes and raised their children. They established and supported community organizations and institutions like the segregated Carver Y and the segregated Nixon School, Shiloh Baptist Church and King David's Lodge. These institutions framed the social fabric of the community that later began to disassemble when integration came to pass. The children of these Black families moved away but have left older parents who participated in the planning of the affordable housing based upon the community standards and value they had maintained over the years. This social fabric is what differentiates Zone 1 from Zone 2 Black residents.

These findings are consistent with the findings of Freeman and Botein, wherein they suggest that the issue of affordable housing impact is largely perception and that other factors may have a greater influence (L. Freeman & Botein, 2002). It is also consistent with later research by Freeman and others that found that the economic stability of a host community has a greater impact upon viability of a community in which affordable housing is cited (L. Freeman, 2004; Galster et al., 1999; Katz et al., 2003).

Nevertheless there are limitations to this research. The affordable housing included is only home ownership. The transferability of the findings to rental housing is doubtful

due to differences in both structure of rental housing as compared to homeownership (size, number of rooms, number of attached units) as well as demographics (density, income, household size). Additionally, this research studies one city which although the case has been made for its representative qualities, the case can also be made that similar research in more cities would be of more value. Future research should consider testing this hypothesis across a larger number of representative communities.

Another limitation is timing; the affordable housing development in this research took place during the late 1990's and early 2000's, the veritable turn of the century. In the short time since then there have been major economic upheavals that have shifted values in housing and impacted whole communities. Including affordable housing as part of a revitalization strategy requires attention to impact of current shifts in the economy upon the larger housing market.

As the affordable housing in this study came on line during the economic boom of 1999 through 2001, the economic downturn of the latter half of this decade, characterized by housing foreclosures seriously begs the question about the viability of affordable housing as a part of a revitalization strategy. Like many poor cities Trenton was reported by the United State Department of Housing and Urban Development to have an overall foreclosure rate of 9.8% for 2007 through the first half of 2008.

Trenton foreclosures peaked in December 2009 with over 350 foreclosures and then dropping to under 250 in January of 2010. What is fascinating is that while the

neighborhood with the three affordable housing developments in this study reported a 10.8% rate of foreclosure at this same time, one of the developments, Willow Green reported no (0) foreclosures and Monument Crossing I and II had 3 foreclosures among their 84 units of housing![6]   This finding gives credence to affordable housing as part of an effective redevelopment strategy.

Taking a look at affordable housing development in Trenton's Homeownership Zone since the first Homeownership Zone developments studied in this research were completed, provides another view of the relative success of the redevelopment strategy. The initial homes in Monument Crossing and Willow Green were deeply subsidized and sold for roughly between $50,000 and $70,000 around the year 2000.   Subsequent affordable housing has been able to be sold at higher prices with less subsidy:

- North Willow Green included 35 homes; three low income sold at $67,900, twelve moderate income sold at about $84,000, and twenty at market rate sold at between 87,000 and 106,000 in 2004.

- Bellevue Court comprised of 22 units; eleven homes were sold for $55,000 and eleven sold at $72,000 in 2005.

- Belvidere Square included 18 new and 19 rehabilitated homes which sold for between $72,000 and $120,000 in 2006.

- North Ward Development Project consisted of 15 rehabilitated structures, five of which sold for $80,000 and 10 which sold for $97,000 in 2007.

- Pennington-Titus completed in 2008 had four low income units sold at $85,000, 3 moderate units sold at $110,000 and eight market rate which sold at $127,500.

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[6] Personal email communication from Henrietta Owusu, Housing Production Coordinator, City of Trenton, March 5, 2010

- Southwest Village I consists of 13 rehabilitated structures and six newly constructed, of which five are low-income sold at $80,000, four are moderate income sold at $100,000 and the remaining market rate, priced at $120,000 in 2009.

Three other projects are currently (2010) selling in the Homeownership Zone, Southwest Village II, Broad Street Commons-Canal Plaza, and Catherine S. Graham. Homes in these three developments are selling for between $99,000 and $220,000.[7] As they continue to sell, the community continues to be revitalized.

Consequently, this research has implications for policy makers planning revitalization strategies for poor cities or planning for affordable housing development. In assessing a strategy's impact upon the tax base, planners and policy makers need to consider the social fabric of the community, its norms and values. This human capital is an asset and can be as important as the current property values and land use patterns in determining effective revitalization strategies that incorporate affordable housing development to increase the tax base within an economically distressed community.

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[7] Personal email communication with Henrietta Owusu, Housing Production Coordinator, City of Trenton, March 5, 2010

APPENDIX A: TABLE OF VARIABLES

VARIABLE	SOURCE	LEVEL OF MEASUREMENT	HYPOTHESIZED RELATIONSHIP TO THE RESEARCH QUESTION	THEORETICAL REFERENCE	GENERAL COMMENTS
classification (land use)	Tax records	nominal	different land uses may react to affordable housing development differently: vacant land may have increased value due to AHD creating new demand for use of the vacant land; residential property may increase in value as the existing residents see AHD as an improvement, or it may generate a decrease in value if existing neighbors see the AHD as a detriment to the neighborhood; retail commercial property may see the AHD as an increased market opportunity and industrial commercial property may not react to AHD at all.	Guhathakurta and Mushkatel	
value of lot	tax records	interval ratio	a critical mass of higher value lots can absorb the lower value of less expensive houses better than a neighborhood with a greater mass of lower valued properties	Katz, et. al.; Galster, Tatian and Smith; Ellen, Schill, Susin, and Schwartz	exempt properties were not assessed for taxable value by the city after 2000
shape area	GIS	interval ratio	smaller lots will be more affected by development;	Galster, Tatian and Smith	lot size was taken at only one point in time and does not account for changes in lot size over time

VARIABLE	SOURCE	LEVEL OF MEASUREMENT	HYPOTHESIZED RELATIONSHIP TO THE RESEARCH QUESTION	THEORETICAL REFERENCE	GENERAL COMMENTS
zones		ordinal	those lots furthest away from AHD would be less affected by AHD, those closest would have an appreciated value, especially in neighborhoods with high proportions of vacant and boarded up properties.	Lee, Culhane and Wachter; Ellen, Schill, Susin, and Schwartz;	zones were established by including all lots within 1/8 mile of AHD in Zone 1, lots within 1/8 and1/4 of a mile in Zone 2
% owner occupied housing	census	interval ratio	the higher the %owner occupied the more stable the community and the less the impact of AHD; lower % of owner occupied will more likely be positively impacted by AHD	Green, Malpezzi and Seah	I am only using the 1990 census as the 2000 census will reflect community after AHD was announced
year built	census	ordinal	I am not sure, it really depends upon the condition of the older housing; older housing with low rates of boarded up vacant properties will be more stable communities less impacted by AHD; older housing in neighborhoods with higher rates of boarded up vacant properties will be more likely to be positively impacted by AHD	Ellen, Schill, Susin, and Schwartz	
total housing in neighborhood	census	ordinal	neighborhoods which are more residential in nature will be impacted by AHD more than those that are commercial but less than those that are vacant land	Guhathakurta and Mushkatel; Ellen, Schill, Susin, and Schwartz	
% occupied housing	census	interval ratio	neighborhoods with higher occupancy will be more stable and will be less impacted by AHD; lower levels of occupancy will have greater positive impact of AHD	Freeman and Botein	

VARIABLE	SOURCE	LEVEL OF MEASUREMENT	HYPOTHESIZED RELATIONSHIP TO THE RESEARCH QUESTION	THEORETICAL REFERENCE	GENERAL COMMENTS
% boarded up vacant housing	census	interval ratio	neighborhoods which have more boarded up vacant housing will be most positively impacted by AHD	Ellen, Schill, Susin, and Schwartz	
% one room units	census	interval ratio	neighborhoods with more one room units will be poorer neighborhoods and will therefore be more positively impacted by AHD	Freeman and Botein; Ellen, Schill, Susin, and Schwartz	
% units with 5 or more rooms	census	interval ratio	not sure; houses with more rooms but fewer people will be found in stable neighborhoods which will not feel the impact of AHD one way or another; houses with lots of rooms and lots of people will be positively impacted by AHD	Freeman and Botein	
% detached one family units	census	interval ratio	these homes will tend to be in more stable neighborhoods which will not feel the impact of AHD unless there are lots of vacant boarded up single family homes	Lee, Culhane and Wachter; Ellen, Schill, Susin, and Schwartz	
% attached one family units	census	interval ratio	this is the typical housing unit in the neighborhood that I am studying; these neighborhoods will be positively impacted by AHD	Lee, Culhane and Wachter	
% 3 to 9 family units	census	interval ratio	neighborhoods with smaller apartment dwellings will be positively impacted by AHD	Lee, Culhane and Wachter	
% 10 plus unit structures	census	interval ratio	neighborhoods with large apartment structures will probably not be impacted by AHD	Lee, Culhane and Wachter; Ellen, Schill, Susin, and Schwartz	
Total Population	census	interval ratio	census block groups with higher populations will react more to AHD		
Total White Population	census	interval ratio	higher white populated census block groups will react more negatively to AHD	Freeman, 2004; Galster, Tatian and Smith	

VARIABLE	SOURCE	LEVEL OF MEASUREMENT	HYPOTHESIZED RELATIONSHIP TO THE RESEARCH QUESTION	THEORETICAL REFERENCE	GENERAL COMMENTS
Total Black Population	census	interval ratio	higher black populated census block groups will react not react more negatively or positively to AHD	Freeman, 2004; Galster, Tatian and Smith	
Total Hispanic Population	census	interval ratio	higher Hispanic populated census block groups will react positively to AHD, as these will tend to be transitional areas and AHD will be considered to bring stability		
one person households	census	interval ratio	one person household areas will react positively to AHD		
persons born in state	census	interval ratio	areas with high percentages of persons born in state will react negativley, if associated with higher income		
foreign born	census	interval ratio	foreign born will react positively to AHD, as these will tend to be transitional areas and AHD will be considered to bring stability		
highest education HS	census	interval ratio	areas with high percentages of persons with only a high school diploma will react positively if at all		
highest education BA	census	interval ratio	areas with high percentages of persons with a BA degree will react negatively	Green, Malpezzi and Seah	
Median Household income	census	interval ratio	the higher the income the less impact on property value	Ladd and Yinger	

APPENDIX B: RECODED VARIABLES

VARIABLE	RECODED	FREQUENCY	
SHAPE_AR_1	sqftarea	1521	QUINTILES
	1	305	< 1246 sq ft
	2	304	1250 to 1599
	3	304	1560 to 1973.6
	4	304	1976 to 2713
	5	304	2720 to 85551
VAL96PERSQ	valpersqrft96	1521	QUINTILES
	1	306	< $6.00 /sq ft
	2	339	7 to 14
	3	313	15 to 20
	4	286	21 to 27
	5	277	28 to 345
VAL99PERSQ	valpersqft99	1521	QUINTILES
	1	321	< $7 /sq ft
	2	312	7 to 14
	3	321	15 to 20
	4	270	21 to 26
	5	297	27 to 461
VAL96_99			
	-1	70	
	0	1351	
	1	100	
VAL02PERSQ	valpersqft02	1521	QUINTILES
	1	310	< $8 /sq ft
	2	300	8 to 16
	3	304	17 to 22
	4	311	23 to 30
	5	296	31 to 281
TPOP90	TIPop90	1521	QUINTILES
	1	376	$\leq$450
	2	264	519 to 660
	3	332	670 to 937
	4	256	942 to 2319
	5	293	
TWHT90	TIWht90	1521	
	1	682	0% White Pop
	2	455	1 to 6
	3	84	13
	4	300	14 to 51

VARIABLE	RECODED	FREQUENCY	
TBLK90	TlBlk90	1521	
	1	533	<85% Black Pop
	2	171	85
	3	418	86 to 95
	4	399	96 to 100
THISP90	TlHisp90	1521	
	1	487	≤1% Hispanic
	2	287	2 to 4
	3	231	6
	4	445	9 to 14
	5	151	25 to 55
HSHOLD90W1	hshld1prsn	1521	QUINTILES
	1	432	<14%
	2	289	14
	3	355	17 to 19
	4	174	25 to 30
	5	271	35 to 74
BORNINSTAT	BrnInStat	1521	QUINTILES
	1	305	≤53 %
	2	568	55 to 57
	3	99	58 to 60
	4	294	61 to 66
	5	255	70 to 75
FORGNBRN90	FrnBrn	1521	
	1	554	0 %
	2	87	1
	3	636	4 to 6
	4	244	7 to 10
EDHS90	EdHS	1521	QUINTILES
	1	495	29 to 39%
	2	122	43 to 45
	3	404	47 to 54
	4	213	56
	5	287	57 to 74
EDBA90	EdBA	1521	QUINTILES
	1	547	0 %
	2	174	2
	3	343	4
	4	174	5 to 8
	5	283	14 to 29

VARIABLE	RECODED	FREQUENCY	
MEDINCM90	MedIncom	1521	QUINTILES
	1	328	$7188 to $14792
	2	408	16042 to 19213
	3	183	19632
	4	300	20598 to 22174
	5	302	22716 to 50811
OWNR90	OwnOcpd	1521	QUINTILES
	1	318	$\leq$14 %
	2	345	26 to 33
	3	392	34 to 44
	4	259	47 to 49
	5	207	51 to 73
YEARBUILT	YrBlt	1521	
	1	755	Built before 1940
	2	766	Built after 1939
THSGUNITS9	TlHsgUnts	1521	QUINTILES
	1	365	43 to 166 units
	2	299	208 to 285
	3	294	298 to 317
	4	267	335 to 354
	5	296	427 to 1167
OCCPUNITS	OcpdUnts	1521	QUINTILES
	1	377	41 to 148 units
	2	287	154 to 217
	3	406	253 to 274
	4	155	301 to 318
	5	296	384 to 1064
BRD_VCNT90	BrdVcntUnts	1521	QUINTILES
	1	349	$\leq$ 37 units
	2	297	40 to 42
	3	463	43 to 48
	4	113	58
	5	299	67 to 71
1RMUNIT90	RmUnts1	1521	
	1	459	0 one room units
	2	207	1 %
	3	627	2
	4	228	8 to 22

VARIABLE	RECODED	FREQUENCY	
5RMSUNIT90	Rms5	1521	
	1	318	24 to 40% 5-room units
	2	388	43 to 65
	3	556	72
	4	259	79 to 93
1PRSN_UNT9	UntW1Prsn	1521	QUINTILES
	1	375	14 to 19% of units
	2	418	20
	3	390	21 to 24
	4	77	25
	5	261	33 to 50
2PRSN_UNT9	UntW2Prsn	1521	QUINTILES
	1	562	13 to 19 % of units
	2	91	21
	3	338	22 to 24
	4	324	25
	5	164	26 to 29
7UPPRSN_UN	UntW7Prsn	1521	QUINTILES
	1	485	2 to 6 % of units
	2	438	7
	3	550	9 to 10
	4	48	12
DET_UNIT	DtchUnt	1521	QUINTILES
	1	478	$\leq\underline{5}$ % of units detached
	2	334	8
	3	297	9
	4	319	10
	5	93	12 to 26%
ATCH_1UNT9	AtchUnt1	1521	QUINTILES
	1	386	9 to 29% of units
	2	247	48 to 50
	3	455	54 to 61
	4	161	67 to 68
	5	272	69 to 86
ATCH_2UNT9	AtchUnt2	1521	QUINTILES
	1	413	2 to 6 % of units
	2	276	9 to 14
	3	282	16 to 17
	4	200	21 to 22
	5	250	24 to 27

VARIABLE	RECODED	FREQUENCY	
ATCH_3_9UN	AtchUnt3_9	1521	QUINTILES
	1	470	≤12 % of units
	2	199	13
	3	261	14 to 15
	4	364	17 to 21
	5	227	28 to 53
ATCH_10UPU	AtchUnts10Pls	1521	QUINTILES
	1	866	0 units attached to 10 or more
	2	73	2 to 6 % units
	3	399	7 to 12
	4	183	37 to 58
STUDY ZONE		1521	
	1	680	
	2	841	
LAND USE CLASSIFICATION		Year 1996	Year 1999
Missing/NA	0	90	47
Vacant - 1	1	147	177
Residential - 2	2	975	930
Farm	3	1	
Misc Business	4	2	2
Commercial - 4A	5	237	220
Industrial – 4B	6	8	8
Apartment - 4C	7	6	5
Public School -15A	8	1	
Other School – 15B	8		
public property - 15C	9	2	2
church -15D	10	36	97
tax exempt -15F	11	17	33
TAXABLE		1996	1999
	0- Not taxed	55	134
	1- taxed	1466	1387

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Rutgers University, Camden, NJ
Position: Associate Director

Bloustein School of Planning and Policy (March, 2004 – February, 2006)
Rutgers University, New Brunswick, NJ
Position: Director, New Jersey Urban Development Project

New Jersey Department of Human Services (February, 2002 - February, 2004)
Trenton, New Jersey
Position: Commissioner

City of Trenton (1990 – 2002), Trenton, New Jersey
Positions: Chief of Staff, Business Administrator, Director of the Department of Health
and Human Services

New Community Corporation (1988 – 1990), Newark, New Jersey
Program Director

**NJ Department of Human Services, Division of Youth and Family Services,
Central Region** (1980 – 1988), Newark/Princeton, New Jersey
Positions: Assistant Regional Administrator (ARA), and District Office Manager

Newark Emergency Services for Families, Inc. (1979 – 1980), Newark, New Jersey
Executive Director

Independence High School (1977 – 1978), Newark, New Jersey
Director of Social Services

**College of Medicine and Dentistry of New Jersey, Community Mental Health
Center** (1974-1977), Newark New Jersey

Acting Social Work Supervisor, and Psychiatric Social Worker

Publications

Boland, M., Allen, T.J., Long, G.I., Tasker, M., "Children with HIV Infection: The Collaborative Responsibilities of the Child Welfare and Medical Communities;" <u>Social Work</u>, Vol. 33, No. 6, November – December, 1988

Long, G.I., "Developing New Strategies for Child Welfare in the Black Community;" <u>ACNJ Newsletter</u>, Association for Children of New Jersey, Vol. VI, No. 4, Summer, 1983