

**THE IMPACT OF A NEW RAIL TRANSIT STATION ON EXISTING BUSINESSES:  
CASE STUDY OF THE DAVIS SQUARE RED LINE STATION, SOMERVILLE MA**

A thesis submitted by

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## **Dedication**

I dedicate this work to my mother for her support and also to the people who have devoted their efforts to make Somerville a better place to live.

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## **Abstract**

Cities across North America are increasingly embracing mass rail transit systems with the expectation of long-term environmental, economic, and social benefits. Additionally, cities are using transit stations as neighborhood revitalization tool, hoping that infrastructure investment will boost local economies in surrounding neighborhoods. Often left out of the discussion on impacts of transit infrastructure are the subtle changes in existing local business mix and possible commercial displacement over time, due to changes in demography and land use that accompany these rail transit systems. Using the Red Line rail transit station in Davis Square in Somerville Massachusetts as a case study, this study examined the impact of rail transit stations on businesses development patterns and displacement of existing businesses in neighborhoods that host rail stations.

Combining longitudinal and natural experiment research methods and using businesses in Union Square as control group, a sample of the Davis Square and Union Square neighborhoods' businesses in 1984 were tracked over a twenty-five year period. The differences were compared to ascertain the impact of the Red Line rail transit station on Davis Square businesses.

The presence of the train station could not be linked to displacement of businesses from Davis Square. However, the train station provided the stimulus for neighborhood revitalization and also played a significant role in redefining the neighborhood's identity as that regional entertainment destination.

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# Chapter One

## Introduction

### Background

Cities across North America are increasingly embracing mass rail transit systems with the expectation of long-term environmental, economic, and social benefits. Many of these cities are investing in the infrastructure of the transit-station host neighborhoods with the hopes of boosting the local economy. According to the Public Transportation Fact Book (2010), total capital expenditure on public commuter, heavy and light rails increased by 117% from \$5.8 billion in 2000 to \$12.6 billion in 2008. Rail transit can offer an array of positive benefits to local communities. Rail transit eliminates a substantial amount of automobile traffic and congestion from roads, thus reducing air pollution and related health problems. A new transit system can significantly improve the mobility of city residents, providing them access to new residential, employment, and shopping opportunities (Martz 1988). Local businesses around transit stations benefit from exposure to riders. Municipal governments stand to benefit from commercial real estate developments and property tax revenues. Construction of rail transit stations allows local governments to leverage their investments with state and federal funds, with the aim of boosting the local economies of these neighborhoods. These benefits, among others, are propelling the popularity of mass rail transit systems.

Often left out of the discussion on impact of rail transit infrastructure are the subtle changes in existing local businesses over time, due to the changes in demography and land use that accompany these rail transit systems. Improved accessibility makes neighborhoods, especially working class neighborhoods, attractive to new residents. As demographics change,



businesses in these neighborhoods also change to reflect the needs of new residents (Freeman 2006). In other instances, local governments use these rail stations as revitalization strategies to promote additional investments in the neighborhoods. However, as Podagrosi (2008) noted, in their efforts to promote or attract new investments, local governments, through their land use and investment policies tend to favor new professional and specialty businesses over existing manufacturing businesses. Such local government policies have the unintended consequence of displacing existing businesses.

## **1.2 Research Questions**

The guiding question of this study was; how did the Red Line train station affect business development patterns in the Davis Square neighborhood during the past twenty-five years? These sub-questions were raised in this study:

1. What has been the business survival rate in Davis Square since 1984, and is it significantly different from that of Union Square?
2. How much difference exists between the changes in business mix in Davis Square and Union Square between 1984 and 2007?
3. What roles did city government and local land-use policies play in shaping business development patterns in the Davis Square area?

### **1.3 Methodology**

This thesis is a longitudinal study on the impact of rail transit stations on business development patterns and displacement of existing businesses in neighborhoods with new rail stations.. Given what is known about Davis Square, a neighborhood that has experienced gentrification after the construction of the Red Line Station in 1984 (Kahn 2007: FTA 1998), this thesis examines the effect of the presence of the train station on local businesses in Davis Square in terms of displacement. In this study, businesses in the commercial district of Union Square neighborhood were used as a control group to ascertain the impact of the train station on businesses in the Davis Square commercial district. Data sets of Somerville’s businesses obtained from various sources were used to track and compare the survival of different industries in these two neighborhoods to ascertain whether the presence of the train station boosted any particular business category over others. The business development patterns in the two neighborhoods were also examined to identify impact of the train station on any emerging industrial trends.

Using a snowball sampling method, six business owners in the two neighborhoods were interviewed to solicit their perspectives on how the commercial activities in the neighborhoods had evolved. Additionally, city planners, both past and current, were interviewed for their perspectives, as well as four knowledgeable residents of the two neighborhoods.

City government documents<sup>1</sup> concerning development plans and policies for these two neighborhoods were examined to understand the role of the local government on the business

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<sup>1</sup> See Appendix II for list of government documents reviewed for this study.

development within the two neighborhoods. Other historical documents on the development of the neighborhoods were examined. The difference in business development patterns in these two neighborhoods helped to explain how the transit station has influenced changes in business development in Davis Square.

#### **1.4 Chapter Summary**

Chapter two provides the theoretical understanding and the basis for the hypothesis for this study. This chapter consists of a review of the literature on the use of rail transit station as source of gentrification and displacement, as well as a tool for neighborhood revitalization. Chapter three is a detailed discussion of the methodology used in this study, which includes rationale for the study focus, the units of analysis, data collection and analysis methods, and dissemination of this study. Chapter four comprises data analysis and interpretation of findings. The role of local government and land use policy on the business development pattern in Davis Square is presented in chapter five. The final chapter consists of policy recommendations and suggestions for further research.

#### **1.5 Relevancy**

Whereas much research is being conducted in the area of population and residential displacements, less research has been done in the area of commercial displacement. This study seeks to contribute to a better understanding of commercial displacement of existing local

businesses as a result of improvement in rail transit. This study provides a 25 year analysis of the impact of the Red Line on commercial activities in Davis Square.

Finally, this study is intended to inform the Green Line Corridor Coalition and City officials on the impact of train stations on local businesses, especially as Somerville invests and plans for the coming of five rail transit stations in the near future.

# Chapter Two

## Literature Review

### 2.1. Introduction

This chapter presents a discussion of the various viewpoints on how local governments are using rail transit stations to shape land-use development patterns, and as a neighborhood revitalization tool. The discussion continues on how these revitalized train station host neighborhoods become desirable for gentrifiers, contributing to the displacement of poorer residents. Specifically, the literature review focuses on the discussion of commercial displacement.

### 2.2. Rail Transit Stations and Land Use Development

As an increasingly popular feature of New Urbanism, cities throughout North America are increasingly touting rail transit as a means to promote sustainable urban development and revitalize their communities. According to the Public Transportation Fact Book (2010), total capital expenditure on public commuter, heavy and light rails increased by 117% from \$5.8 billion in 2000 to \$12.6 billion in 2008. With these federal and state investments in rail transit, cities' hope of influencing land-use patterns to revitalize their neighborhoods. The intention of these cities to use rail transit to shape their land-use development patterns is based on a utility-maximization theory, an urban-economic theory that suggests a relationship between improvements to transport systems and value of property: "Residential property values rise with decreasing distance to transit stations" (Hess 2007). The construction of a rail station improves accessibility to areas near the station. All else being equal, such improved accessibility results in

increased activities in the areas around the rail station, which translates into appreciated land and property values in the long run (Giuliano 1986).

Although there are significant number of published studies about the effect of proximity to transit on property value (Anas 1982, 1983; Cervero et al. 2002; Diaz 1999; Huang 1994; Knaap 1998; Parsons Brinckerhoff 2001; Rice Centre for Urban Mobility Research 1987; Smith 2004; TCRP 1998; Vessali 1996; Ryan 1999), the findings from these publications show inconsistent evidence for a transport-property value connection. There are numerous compounders to the transport-property value connection. Some researchers have attributed the inconsistent transport-property connection to “the complexity of metropolitan development and unpredictable travel patterns” (Ryan 1999). Other researches attribute the inconsistency to the context-specific nature of these transport-property value studies, which fail to produce findings that can be generalized. To overcome the inconsistency of transport-property value connection, researchers have categorized land use premiums achieved for various modes of public transit, including bus, light, heavy, and commuter rails. Properties near commuter rail station in a commercial district have higher premium than properties near light rail or heavy rail stations. “Property values near bus routes have the least premium because bus routes lack permanent fixed structures” (Hess 2007). Moreover, where access to rail transit is not highly valued, property values do not rise (Diaz 1999). These studies point out that even though there are increasing public investments in transit rail to influence land use development patterns and economic growth, there are mixed results on the effectiveness of rail transit as a land-use tool to influence long term development patterns and to stimulate economic growth. Much of its success depends on the type of rail transit systems and the local environmental factors.

### **2.3. Rail Transit Stations and Neighborhood Revitalization**

Besides their usefulness in influencing development patterns, city governments have also aimed to use rail transit stations as a tool for neighborhood revitalization. Revitalization projects in the form of new train station construction in distressed neighborhoods improve accessibility in these areas, in turn producing economic benefits that ripple across the neighborhood. According to a report by The Great American Station Foundation (2009), there are three main economic benefits that a train station revitalization project brings to a neighborhood. The first benefit is an increase in jobs from the station construction and in annual operations of the train station. An increase in businesses at or near the station, attracted by the enhanced transportation accessibility generates indirect jobs. Secondly, solid investments by the local governments or public/private partnerships that accompany station construction can reassure neighborhood property owners that an upgrade to their own properties is a sound investment. Significant public investment in a neighborhood may also attract new investors who are looking for undervalued properties to renovate and/or redevelop. Such investments in properties result in appreciation of property values in the neighborhood. Property values also appreciate because train stations reduce travel time and consumers are willing to pay higher rents to live near such stations. Thirdly, train stations return value to local governments in the form of increased property tax and development tax revenue. Besides these three main benefits, local businesses around these stations also benefit from exposure to foot traffic from rail riders. In addition to the economic benefits, rail transits eliminate a substantial amount of automobile traffic and congestion from the roads, thus reducing air pollution and related health problems (Martz 1988). Neighborhoods perceived to be healthy and accessible attract residents and businesses. These benefits propel the popularity of mass rail transit systems as a neighborhood revitalization tool.

The role of a rail transit station in neighborhood revitalization is also based on its ability to alleviate traffic pressure on streets, and increase pedestrian traffic to neighboring communities, which helps enliven adjacent uses and support commercial activities (Landis 1995). The rail transit station also serves as a catalyst for coordination and cooperation among public and private sectors, city agencies, transit authorities, and the community toward revitalization efforts (Cervero 2002). Neighborhood revitalization efforts are an enormous undertaking and the needed resources to ensure their success are difficult to assemble. Using rail transit station construction as a tool to revitalize a neighborhood, local governments are able to galvanize local and external resources and support for revitalization efforts. Successful rail station neighborhood revitalization projects like Pioneer Square in Portland, Woodbridge Station in New Jersey, Downtown Crossing in Boston, Tohono Tadaí in Tucson and Staple Street Station in Corpus Christi have all contributed to the increased in popularity of the role of rail transit stations in neighborhood revitalization planning (TCRP 1997).

While there are numerous studies including a guidebook on land-use impact of transportation (Parsons 1999) that confirm the positive relationship between transit access and neighborhood revitalization, , such as Dallas (Weinstein and Clower 2002), Portland (Chen et al. 1998; Lewis-Workman and Brod 1997; Al-Mosaind et al. 1993), San Diego (Landis et al 1995; Cervero and Duncan 2002), and Atlanta (Nelson 1992). However, other factors need to be present in order to achieve this connection. Local land-use policies, availability of developable land and its ease of assembly, the attractiveness of the neighborhood real estate market, and generally positive economic conditions, according to Knight (1980), are crucial factors in determining the degree to which development will occur around rail transit stations. In neighborhoods where zoning near stations allow for more intense uses, significant land-use



changes occur, and, in contrast, down-zoning limits development (Cervero 1986). Citing the Yonge Street subway as example, Cervero (1986) argued that, the Metropolitan Toronto government encourages high-rise development along the Yonge Street subway line by allowing liberal floor/area ratios (up to 12:1), to permit higher intensity development. As a result, “more than 90 percent of all office construction in the city of Toronto between 1952 and 1962 occurred within a five-minute walk of Yonge Street.” On the other hand, in response to local opposition, down-zoning at several Bay Area Rapid Transit (BART) stations limited development at these stations (Knight and Trygg 1977). Beside land-use policies, local governments have frequently partnered with the private sector in joint developments around train stations. In neighborhoods where private investors are nervous about the local real estate market, local governments through public financing and/or lease of public lands have partnered with private investors to develop commercial real estate properties that provide space for desired economic activities around the train station (Altshuler 2003). These joint properties in many cases are built on the right of way of the train station or nearby public lands which are much less easy to assemble. These local government policies and approaches are required to achieve the desired neighborhood revitalization. Bethesda Metro Centre joint development in Maryland is currently the largest and highest revenue generating joint development project in U.S (FTA 2008).

#### **2.4. Rail Transit Station and Neighborhood Gentrification**

While some welcome the potential increase in transportation accessibility and investment into the neighborhoods, others decry the increased density, changes in community character, and displacement of existing residents and businesses as a result of gentrification. The improvement

in transportation infrastructure and increased investment in neighborhood real estate properties and other infrastructure, also attract new residents who are willing to pay higher rents to live or operate near transit stations. This situation results in a process by which “neighborhoods that have undergone disinvestments and economic decline start to experience a reversal, reinvestment, and the immigration of a relatively well-off middle and upper class population” (Smith 1998).

There is a substantial body of studies to establish the connection between rail transit and neighborhood gentrification. The most notable among these is a multi-city study conducted by Kahn (2007) on gentrification trends in cities that became host to rail transit system between 1970 and 2000. The study concluded that neighborhoods that became host to new “Walk and Ride” stations experienced greater gentrification (Kahn 2007). Atlanta, Baltimore, Boston, Chicago, Dallas, Sacramento and Washington, DC were cited as cities whose neighborhoods have experienced gentrification as a result of transit improvement. The presence of “Walk and Ride” train stations eliminates the need for driving and it allows local residents to walk to the station. “Walkability,” as part of a New Urbanist lifestyle, is an attractive feature for upper income households who are wealthier than many existing households in these neighborhoods. If communities have a desirable housing stock, “the marginal utility for living in these communities is higher, and the multiplier effect will translate into higher property values” (Bayer, Ferreira and McMillan 2005). Although gentrification is a desirable process for neighborhood revitalization, it has drawbacks. Real estate market forces -- rising rents, rising property tax assessments, and the conversion of rental housing into owner occupied and condominium units – “associated with gentrification threaten to displace existing residents unable to compete in the accelerated housing market” (Henig 1981).

In early gentrification literature, the term gentrification is used strictly to denote urban displacement in a city's poor and declining residential neighborhoods and does not apply to urban- revitalization project. Gentrification was viewed as the "rehabilitation of working-class neighborhoods and derelict housing" (Atkinson 2004) and "the consequent transformation of an area into a middle-class neighborhood" (Smith and Williams 1986). Gentrification was also viewed as a "process fundamentally rooted in class transformation" (Atkinson 2004). However, the term gentrification has evolved to imply more than simple class transformation; it also implies displacement, in this case - forced displacement. In a Brookings Institution discussion paper, gentrification was defined with the emphasis on forced displacement, as "the process by which higher income households displace lower income residents of a neighborhood, changing the essential character and flavor of that neighborhood" (Kennedy & Leonard 2001). For Smith (1992) the essence of gentrification is in "its violent displacement of the poor in the contest over city space, as so-called "better" classes seek to expropriate poorer and minority areas for their own use." Hamnett (1984) too identifies with this view of the term gentrification, as a replacement or displacement of many original residents as a result of invasion by higher-income groups. At the 2002 International Conference on Gentrification held in Glasgow, Scotland, panelists provided a broader meaning of the term gentrification. They used the term gentrification, to include "a wide range of inner-city renewal and renaissance activities, including the reclamation of once derelict warehouse areas and the opening of new suburban-style shopping plazas and entertainment centers in once-abandoned core downtowns." This definition expands the term gentrification to cover all urban renewal and renaissance, including commercial revitalization, going beyond many of the earlier literature definitions of the term (Levine 2004).

This broader use of the term provides an operational definition of gentrification for this study, as it seeks to examine commercial displacement as a result of neighborhood revitalization.

In current times, the term gentrification has gained another connotation. According to Lee (2000), Members of New York's financial community in the post-recession era of the 1990s, have used "their abundant wealth from the finance industry to buy into already-gentrified areas like Brooklyn Heights and Park Slope." Lees (2000) preferred to use the term "financifiers" as opposed to gentrifiers, to denote the quite different nature of this second wave of neighborhood transformation. According to Lee (2000), "the new financifiers have bought out the earlier gentrifiers who preceded them, constructing large fortified-dwelling units out of character with the neighborhood and of a scale that dwarfed previous gentrified conversions". Lees (2000) uses the term super-gentrification to distinguish the impact of the second wave of gentrifiers whom he refers to as financiers into the neighborhood from the impact of the earlier generation of gentrifiers, as the financiers displace middle- income earners instead of the original poor, working-class residents of the neighborhood.

## **2.5. Commercial Displacement**

Early studies on gentrification were focused on residential displacement and the shift of neighborhoods from working class to upper class (Atkinson 2000; Lyons 1996; Marcuse 1986; Meligrana and Skaburskis 2005; Smith 1996). However, in recent times the commercial displacement -- displacement of local businesses as an indicator of neighborhood change -- is receiving attention in the research world. The form of commercial displacement varies; it can

manifest in changes to the retail landscape from low-scale to upscale-commercial activities, or in the form of land-use changes from commercial to residential uses (Zukin 2009).

Retail landscape displacement is a wide spread shift in retailing activities from general merchants to stylish wine bars and designer clothing boutiques in a commercial district. Zukin (2009) has termed this phenomenon as “boutiquing,” and to him this phenomenon is a vivid image of commercial gentrification. On the basic level, the new retail spaces supply the material needed by the more affluent residents and newcomers (Bridge and Dowling 2001). Even more, these new retail spaces supply their less tangible need of social and cultural capital (Zukin 1991, Patch 2008). New store cafés, and bars become hangouts for both upper-income earners and gentrifiers or “places for social networking among stroller-pushing parents and unemployed artists and writers” (Zukin 1995; Lloyd 2006). According to Freeman (2006), in U.S. cities, low-income Black and Latino residents identify upscale consumption spaces with “white” interest, and although they may appreciate the better goods and services that new stores make available, they resent the implication that white newcomers are responsible for the improvements.

Tailoring commercial spaces to meet the needs of newcomers at the expense of original residents perpetuates displacement. Changes in retail landscape also have the potential to disrupt social bonds, as long-term residents may decide to shop at the new well-stocked stores instead of the older neighborhood shops, resulting in a strain in social relations. Some old store and bar managers may manage to shift gear, upgrading their merchandise and ambiance, and attracting new clientele, losing old friends (Lloyd, 2006). Some scholars also contend that the shift in commercial space to cater to the more affluent and highly educated men and women in place of stores that serve the poor is a challenge to the “right to the city” of the low-income residents (Lefebvre 1991, 1996). Some scholars also assert that “boutiquing” is part of “a broad dynamic

of postindustrial changes and urban revitalization that may benefit certain residents while deepening economic and social polarization and place low and middle income neighborhoods at risk” (Smith 2002; Booza 2006).

However, other scholars do not agree that retail landscape changes are detrimental to the low income dwellers. To them, commercial displacement is part of a broader dynamic of postindustrial change and urban revitalization that may enhance the quality of life of new urban middle class, including the low income earners (Taylor 2002; Hyra 2006; Pattillo 2007). According to Freeman (2005), the arrival of big chain stores in racial ghettos that have long been underserved with quality goods benefit all residents, including existing and low-income residents. Boutiques can also be a sign of a safer neighborhood for commercial investment that will upgrade services.

Commercial displacement can also occur as a result of competition from the residential sector to accommodate the housing needs of wealthy newcomers. In his study on the process of industrial/manufacturing displacement in Williamsburg, New York, Curran (2007) focused on displacement of manufacturing companies as a result of land-use competition from residential uses. As an urban neighborhood begins to be gentrified, “the urban manufacturing companies are faced with displacement as their lands become attractive to developers who convert lofts into residences” (Curran 2007). Through buyouts, lease refusals, zoning changes, and increased rents, small manufacturers and businesses were actively displaced either by residential use or new businesses, thus reducing the diversity of the local economy and diminishing the ability of workers to live in the urban community as their employment avenues decline. A similar situation can occur with commercial tenants (Curran 2000). According to Curran (2000), whole blocks of small businesses can be wiped out over time as landlords, in response to gentrification pressures,

refuse to renew leases or ask for high rents. Properties near major roads and transit stations can be purchased for redevelopment into office buildings and stores that serve wealthy customers (Curran 2000). As existing businesses that cater to the needs of lower income earners in a community are displaced, over time, the ability of low income earners to live in the neighborhood is undermined. In the lower 9th Avenue Chelsea, New York area, as a local newspaper reported, for higher rents, convenience stores are being evicted to make room for rich tenants<sup>2</sup>. Whatever be their form, commercial displacement, like residential displacement, involves complex issues of cultural capital and social cost. If left unchecked, displacement can threaten the ability of lower income earners, and less mobile clientele to live in revitalized neighborhoods.

## **2.6. Local Government Policies and Commercial Displacement**

Urban observers have recognized that gentrification is not solely the result of natural phenomena or market forces; it is also a result of local government policy shaped by strong pro-development interests (Smith & Williams 1986). In recent times, the connection between government policy and gentrification has become even more overt – under slogans like “back to the city,” “urban renaissance” or “reinventing government.” Local planners, in their bids to create prize winning projects, often adopt corporate-oriented growth strategies that give sparse

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<sup>2</sup> City Limit Weekly. 2000. “Maybe Beloved Shops Don’t Have to Disappear”. *City Limit Weekly* # 649, July 21, 2000. Accessed on November, 2008 from, <http://www.citylimits.org/news/articles/3593/maybe-beloved-shops>

attention to resident concerns and displacement (Podagrosi 2005). Such plans call for upgrading of housing and infrastructure of a declining, working-class neighborhood in order to attract a new white-collar professional workforce and professional services. Critics charge such planning efforts to produce a city that becomes increasingly polarized socially, economically and spatially (Strom & Mayer 1998). While new residences and other desired elements come to the neighborhoods, the accompanying rise in rent has the potential to displace the working class and the poor.

On the other hand, Levine (2004) using the gentrification of Prenzlauer Berg (Berlin) in Germany as a case study, illustrated how government policy can be a mitigating measure to the adverse effects of market-led gentrification, and can promote more balanced urban regeneration. The primary focus of the social-city renewal was on improving the standard of dwellings, increasing public open space, and providing supportive infrastructure. The municipal government policies emphasized infill, historic preservation, respect for traditional height limits, and rehabilitation of old buildings as opposed to new construction. During the unification of Germany, policy makers and other outsiders regarded the housing stock in this neighborhood as derelict. The municipal cabinet used public funds for social city renewal to finance the modernization of 4,862 residential units, and the construction of an additional 1,400 units. The social city renewal project also provided for cooperative housing, artisan, skill development, self-help projects, and technical financial assistance to the owners of small local stores. The German federal social city policy also mandated citizen participation, social inclusion (especially, language and skill development to integrate new immigrant groups into Germany society), cultural celebrations, and youth programs. Local government regulations and neighborhood management enacted rent limits to dampen displacement. While neighborhood



efforts at physical revitalization certainly helped to make the area more attractive to new residents, the same project also helped to upgrade housing and neighborhood conditions for the more socially marginal residents who continued to live in the city. The social city renewal project is an alternative model to the traditional urban renewal policies. Contrary to popular notions of local government gentrification policies inducing displacement; such policies can also promote a higher standard of living for its residents. At the core of this model is the focus of local government policies on residents' participation, and how the needs of residents are met.

In summary, there is evidence that U.S. cities are increasing their investment in rail transit with the intention of influencing land use development patterns and revitalizing their neighborhoods. The effectiveness of this tool depends on the type of transit system and type of station being constructed. Environmental factors like the local land-use and zoning policies, availability of developable land, and general economic conditions also determine the effectiveness of a train station as a neighborhood revitalization tool. In cases where this approach of directing land use development patterns and neighborhood revitalization is successful, research exists to show that such successes also have the tendency to attract new comers with higher incomes. The arrival of the gentrifiers can lead to residential, demographic, and commercial displacements. Commercial displacement has the potential to threaten the ability of low-income neighborhood residents to afford to live in the revitalized neighborhoods. Local government policies can either exacerbate or mitigate the effects of other gentrification factors.

# Chapter Three

## Methodology

### 3.1. Introduction

In order to study the impact of the train station on business development patterns in the Davis Square neighborhood, this study utilized data on 1984 businesses in both Davis Square and Union Square neighborhoods and tracked these businesses over the study's time period. Utilizing the trend study method, and using Union Square businesses as a control group, the study sought to examine the impact of the train station on the survival rates of 1984 Davis Square businesses. This chapter describes the research questions that were investigated, rationale for the study focus and design, the context of the study, the research plan, units of analysis, the data sources, data collection procedure, data analysis, and dissemination of findings.

### 3.2. Research Questions

The main questions of this study are: How did the Red Line Train station affect the survival rates of businesses in Davis Square neighborhood? How has the Red Line Train station affected business development patterns in the Davis Square neighborhood for the past 25 years? The following sub-questions were also raised in this study:

1. What are the business survival rates in Davis Square since 1984, and how is it different from that of Union Square?

2. How much difference exists between the changes in business mix over time in Davis Square and Union Square?
3. What role did the city government and local land-use policies play in shaping business development patterns in the Davis Square area?

### **3.3. Rationale for Study Focus and Design**

There are numerous studies on demographic and residential displacements as a result of neighborhood gentrification. However, few research studies have been conducted on commercial displacement. The focus of this study is on the displacement of original neighborhood businesses as the neighborhood gentrifies. In the case of the Davis Square neighborhood, the presence of the Red Line train station is widely believed to have gentrified the neighborhood (FTA 1998). This study is an attempt to provide empirical data to substantiate business displacement as the neighborhood gentrified. As the City of Somerville is anticipating the construction of new Green Line Train stations in the near future, understanding the impact of the Red Line station on business survival and development in the host neighborhood will inform the planning process on how to avoid the mistakes of the past. Such understanding of the impact of the train station on business development will also put to rest concerns of business displacement if there is evidence that the Red Line station did not negatively impact business survival in the neighborhood.

In order to study the impact of the train station on the Davis Square neighborhood business development patterns over time, a Trend Study method, which is longitudinal study, was employed in this research. Trend Study involves sampling a given population and studying the sample at different points in time (Babbie 2009). Gallup polls conducted over the course of political campaigns are a good example of a trend study. At several points during the campaign,

samples of voters are selected and asked for whom they will vote. By comparing the results of these polls, researchers might determine shifts in voting intentions. Another good example of a trend study is the study of prejudice in America. Surveys have frequently asked respondents whether they felt that black and white children should attend the same schools. Over the years, the percentages favoring integrated schools have consistently increased (Babbie 2004). These data permit researchers to note trends in attitudes toward integration. Comparison of US censuses over time to study changes in the national population is another example of trend studies. Whereas in a panel study, the researcher has to personally collect the data, a trend study can rely on secondary sources in the form of census information, business directories, and phone directories (Babbie 2004).

Somerville local government does not have official records of the businesses in the City for 1984; therefore, a business directory found at the public library became the main data source of 1984 Somerville businesses for this study. Although there was no official data to validate the thoroughness of the information of this business directory, it contained enough businesses in all the major industrial classification to reflect the diversity of businesses in Somerville in 1984. This study aggregated the various industrial classifications in the business directory into four main categories: manufacturing, retailing and wholesaling, services, and hospitality. Using the trend study method, the individual 1984 businesses and the business categories were tracked for the following years: 1990, 1995, and 2005. The 1984 businesses in Union Square were also aggregated into the same industrial classification and tracked over the same years. Pearson Chi-Square was used to test for statistical difference between percentage changes in the two neighborhoods' business survival rates and business mix over time. The difference in the business survival rates for the two neighborhoods were then compared to determine if Davis

Square had lower business survival rate than Union Square, and if this rate is a result of displacement due to the presence of the train station.

### **3.4. Context of the Study**

#### **Davis Square**

Davis Square is located in the west central area of Somerville, just one half mile from the heart of the Tufts University campus. The Square is situated at the intersection of Holland Street, Highland Avenue, Elm Street, and College Avenue -- all major secondary arteries, and it is only blocks from Massachusetts Avenue. Davis Square is a compact commercial center, surrounded by stable residential areas. The square grew rapidly as a residential and commercial area after the Civil War and became recognized as the commercial center of West Somerville (Zellie 1982). Named after Boston's grain dealer Person Davis, the development history of Davis Square has been associated with the railroad (Zellie 1982). The opening of the Porter Square of the Fitchburg Railroad in 1842 gave impetus to the early settlement of the residential area near Davis Square. Holland Street was built in 1867 to connect Davis Square with Broadway, and Highland Avenue was extended from Central Street in 1890 (Zellie 1982).

In the following decade, development in Davis Square was boosted by the improvement of the Lexington and Arlington branch railway (Zellie 1982). The Sprague and Hathaway Portrait Copying Company, and the M.W. Carr Jewelry Company were among several 1870s industries near Davis Square (Zellie 1982). By the turn of the 20th century, West Somerville began to take shape as a residential area, and Davis Square was its retail center (OCHD 1983). More one- and two- family houses were constructed, and new apartment buildings began to infill

remaining open land. According to a report generated by the City's Office of Planning and Community Development (1983) on the Davis Square renewal plan, the transition from streetcars marked the gradual decline of Davis Square's fortunes. Competition from new retailers on Massachusetts Avenue grew steadily as the large shopping center at nearby Porter Square overshadowed Davis Square as a commercial district. Key manufacturers such as Sprague and Hathaway left the Square, as did some retailers (OCHD 1983). A general population decline in West Somerville also made it more difficult for retailers to remain in Davis Square. A planning study completed in 1980 revealed that "Davis Square was experiencing an increasingly deteriorated physical environment, departure of manufacturing, wholesale and retail businesses, as well as traffic congestion, and inadequate parking" (Nikitin 1993). In 1970, the Cambridge City Council petitioned the MBTA to extend the Red Line beyond Harvard Square to Alewife instead of a proposed highway (Nikitin 1993). Somerville, realizing the potential benefits of a train station to Davis Square neighborhood revitalization, petitioned the MBTA to route the Red Line extension through the neighborhood. To facilitate the planning process of building a train station in Davis Square, the Somerville Office of Planning and Community Development (OPCD) and Metropolitan Area Planning Council conducted a study on urban design and business conditions in the Davis Square commercial area. A task force for the Davis Square neighborhood consisting of the residents, business owners and local officials was also commissioned to serve as a Citizens' Advisory Committee for the neighborhood's revitalization efforts (Nikitin 1993). The City adopted the Davis Square Action Plan in 1982-- a plan with the primary focus of using a new Red Line Station as a stimulus to revitalize commercial activities in Davis Square, while preserving the lower height development and residential character of the neighborhood (Nikitin 1993).

During the construction phase of the Red Line, the City initiated storefront and façade improvement from its Community Development Block Grant allotment (Nikitin 1993). The municipal government designated Davis Square as a Commercial Area Revitalization District (CARD) to take advantage of Industrial Revenue Financing through the Massachusetts Industrial Finance (MIFA) program and invest in major commercial developments in the neighborhood (Nikitin 1993). Joint private and public funds were deployed to renovate vacant commercial spaces and build new commercial buildings to attract businesses into the neighborhood. After these capital investments into the neighborhood, “a major regional community health care provider, a medium-sized architectural firm, headquarters for a local bank” among other small firms relocated to Davis Square (Nikitin 1993). Over the years, Davis Square has emerged as a regional entertainment and hospitality center with a mix of renowned restaurants, pubs, a movie theater, open space, office building and a walk-and-ride train station. Cited by a report on rail transit on property values (Brinckerhoff 2001), Davis Square revitalization efforts have been seen as a success as the neighborhood is currently thriving with business activities.

### **Union Square<sup>3</sup>**

Union Square is the oldest commercial district in Somerville with a historical crossroad where several major city arterials – Bow Street, Somerville Avenue and Washington Street converge. It is surrounded by densely populated, moderate-income residential neighborhoods that support the Square’s commercial activity. Over the years, Union Square has served multiple

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<sup>3</sup> The history of Union Square was from the following sources; Somerville Office of Planning and Community Development (OPCD) documents and “Beyond the Neck: The Architecture and Development of Somerville by Carole Zellie. 1982.

roles – Somerville’s oldest commercial core, a traditional neighborhood commercial center, an employment center for manufacturing businesses clustered around the Fitchburg rail to the south of the Square, and “an entry portal to waves of international immigrants” (Zellie 1982). At its peak in the early to mid twentieth century, Union Square was filled with commercial activities, served by electric streetcars and trolleys, home to many retailers, and host to many commercial and apartment buildings three and four stories in height (Zellie 1982).

The most authoritative historical account of Union Square was published in the book *Beyond the Neck: The Architecture and Development of Somerville, Massachusetts* (Zellie 1982). The development of Mystic Avenue in 1803, ushered in the high volume of traffic in and around Union Square, and businesses began to flourish. Businesses such as blacksmiths and wheelwrights serviced travelers passing through the area. Bricklaying, slaughterhouses, and Union Glass Company were among the largest mid-19th century industries near the Square (Zellie 1982). Franklin Hall, constructed in 1852, was the first multi-purpose building in the Square. This building contained a post office, grain and grocery store, and a meeting hall. By the end of the 19th century, Union Square became home to several woodworking shops, ice businesses, and carriage factories (Zellie 1982). The first passenger railway opened in 1835 on the south side of Washington Street, enhancing Union Square’s development opportunities (OPCH 2003). The first horse drawn streetcar system in the Boston area was established between Union Square and Harvard Square in 1852 (OPCH 2003). By 1900, electric streetcars made 88 stops a day in Union Square to send commuters to Boston (Zellie 1982).

Union Square also became a victim of white flight to the suburbs in the mid 20th century. The movement of the middle class to the suburbs drained Union Square of its most valuable resources, its residents. As residents left, jobs and retail stores followed them. The changes in



the Square's transportation infrastructure are also responsible for the reversal of the Square's fortune. The construction of Inter-state 93, the reconfiguration of Route 16, and the removal of the stops on the Fitchburg commuter line transformed Union Square into a pass-through neighborhood. The Square's streets became congested with pass through regional traffic; and it was not served by any rapid transit, which put the Square at a competitive disadvantage compared to other nearby commercial districts. Many of its businesses left the neighborhood, and much of its physical infrastructure diminished over time as well; "the four to five story buildings on the main street were replaced by one and two story buildings – reflecting its diminished commercial vitality" (OPCD 2002). In 1980, the area was designated as an "Urban Renewal Area" where issues such as storefront improvements, traffic flow, public parking and streetscape improvement were addressed. As a result of these efforts, the Washington Street parking lot was developed, the public safety building constructed, new tenants filled the old fire and police facilities, roads were reconfigured, streets tree planted, and the public plaza was constructed (OPCD 2003).

Currently, the Union Square neighborhood is not thriving as it once was. It is congested with traffic passing through the Square rather than destined for it. Although Union Square has a strong restaurant and food market base, it has a high percentage of automotive repair shops, and lacks a strong traditional retail mix component of clothing shops, drug stores, banks, record stores, or sporting goods, which promote a vibrant commercial center. The Square has a low daytime population due to the occupational patterns of its residents, who work outside the neighborhood. Also, a lack of significant office space in the neighborhood has prohibited many businesses from locating in Union Square, and in turn a lack of office workers is a contributing factor to the low daytime population (OPCD 2003). In anticipation of the extension of the Green

Line to Union Square, the City has rezoned Union Square to accommodate greater density and to promote the development of office buildings. It is expected that the investment in the Green Line extension to Union Square will provide the two missing critical ingredients, rapid transit service, and a larger daytime population, boosting the City's planned revitalization efforts of this neighborhood.

### **3.5 Variable and Control Group Discussion**

The unit of analysis for commercial displacement for this study is businesses located in Davis Square and Union Square. The businesses in these two neighborhoods in 1984/5, when the Red Line Station are constructed, were used as the baseline data. These businesses were then tracked over the years of 1990, 1995, and 2005 to identify the businesses that survived 6, 11 and 21 years after the coming of the train station. Since Union Square has no train station, its businesses were used as a control group in this study. Holding Union Square's businesses as a control group, the business survival rates in the two neighborhoods were then analyzed to identify similarities and differences between them. The difference between the survival rates in the two neighborhoods helped to explain the impact of the train station on Davis Square business survival and development pattern.

This study recognizes that attributing the difference in the business survival in the two neighborhoods after 1984 only to the presence of the train station is simplistic. In the sense that there are differences in the character of the two neighborhoods, and there are other factors that may have affected the business survival rates in these neighborhoods. Besides the presence of the train station, Davis Square has a location advantage. Davis Square is closer to Tufts University

than Union Square, and the students, faculty and staff of this university serve as potential customers to the neighborhood businesses, while Union Square is not close to any similarly large institution. Secondly, Davis Square experienced commercial spillover from Cambridge, especially Porter Square, after the removal of rent control in the 1980s. Davis Square is accessible from Porter Square, because of the presence of Massachusetts Avenue, which facilitated the spillover from Cambridge. Union Square has also experienced some degree of population spillover from Boston and Cambridge. Changes in a neighborhood's demographics affect the long-term business development pattern as businesses adapt to serve the new surrounding population (Freeman 2006). Moreover, the income level of the Davis Square residents, many of them college degree holder and professionals, is higher than that of Union Square residents' (U.S Census 1990, 2000). Income levels are used by the business community to determine the ability of the neighborhood to support new businesses; thus, differences in income levels may have also influenced the kind of business present in these two neighborhoods over time. Although these factors can contribute to business survival and development patterns, studying the business mix of these neighborhoods over a specific time interval after the construction of the train station in 1984 is necessary to identify any business development trends that may have developed after that year. Identification of such a trend could be a rationale for further investigation to understand how other factors discussed above may have confounded the train station's influence on business development in these neighborhoods.

### **3.6. Hypotheses**

From the literature reviewed, commercial displacement tends to adversely affect businesses that require large parcels of land and serve the needs of original neighborhood

residents. Invariably, old mom and pop stores and heavy industrial/manufacturing companies are typically displaced as a neighborhood gentrifies. Based on the literature review, the following hypotheses will be tested;

1. Changes in the business mix in Davis Square will be in favor of service and hospitality industries to the detriment of the manufacturing/construction and retailing/wholesaling industries.
2. The original 1984/5 businesses in Davis Square will have a lower survival rate than that of Union Square.

### **3.7. Data Sources and Data Collection**

The main source of data for this study was a 1984 Somerville Business Directory published by the PhoneBook Corp, a Cambridge based publishing company. Two versions of this directory were obtained from Somerville Public Library; 1984 and 1990 versions. These business directories included the name, location, and service type of each of the listed businesses. The information in the directory was grouped according to the services being provided by the businesses, based on the North American Industry Classification System (NAICS). Later editions of the business directory were not available, so this study used business information from DirectoryUSA 1995 and 2005 to track the existence of the original business after 1990. DirectoryUSA business directory contains more information than PhoneBook Corp's business directory, and since new businesses are not introduced into this study, using a different business directory for subsequent years did not distort the track process. 2007 US Economic Census data was used for the analysis of the difference between 1984/5 business mix and 2007

business mix. The US Economic Census is already presented in business mix format for neighborhoods, making it possible to compare the Davis Square business mix in 1984 with that of 2007.

Information about the role of the municipal government in the development of the commercial activities in Davis Square was obtained from both primary and secondary sources. The primary sources were interviews with the city planner who was responsible for the revitalization efforts in both Davis Square and Union Square, the current director of the Economic Development Division, four Davis Square business owners, two Union Square business owners, and three long-time residents of Davis Square. Purposeful and snowball samples led to interviews of three business owners from each neighborhood. These semi-structured interviews allowed the interviewees to inform this study on how the presence of the train station impacted their businesses and shaped the business environment over time. The Chairman of the Somerville Chamber of Commerce was also interviewed on his perception of the role the Red Line train station and city government have played in shaping the business development patterns in Davis Square. Present and past city planners of Somerville were also interviewed. Secondary sources included reports and plans on the development of the Davis Square train station. The municipal government's annual reports from 1978 – 1985 were also examined. Beyond 1985, the City's five-year consolidation plans were reviewed to understand the continuous role the City has played in the development of Davis and Union Squares.

### **3.8. Data Collection Procedure**

One thousand six hundred and eighty-seven (1,687) individual Somerville businesses' data were obtained from the 1984 Somerville business directory. To check against data loss during the data digitization process, each electronic record was checked against the record in the business directory. The total for the hard copy and the soft copy versions were equal. Since the commercial districts of the two neighborhoods are not identical with the neighborhood geographical boundaries, Geographic Information System (GIS) modeling was used instead of zip code to select the businesses located in the commercial districts. Using GIS, a 0.3 mile buffer was created with the train station as the midpoint for Davis Square, and the address 1 Union Square as the midpoint for Union Square. Sets of address data containing the starting and ending street numbers of the streets within the 0.3 buffer zones were generated from the GIS report and used as the parameter for selecting the businesses within the commercial districts of the two neighborhoods. A physical walk through the two neighborhoods was conducted to adjust the parameters. Businesses whose addresses were within the parameters were then selected for this study. In all, there were 574 businesses located in the two neighborhoods, with 384 located in Union Square and 190 located in Davis Square. Using the North American Industrial Classification System (NACIS) criteria, the list of businesses was classified into four categories; Manufacturing/Construction, Trading (retailing and wholesaling), Services and Hospitalities/Entertainment. Table 1 identifies the number of businesses in each category for both neighborhoods.

**Table 1: Distribution of businesses in Davis and Union Squares, 1984-2005**

Year	Mfg/Construction		Retail		Services		Hospitality	
	Davis Sq	Union Sq	Davis Sq	Union Sq	Davis Sq	Union Sq	Davis Sq	Union Sq
1984*	9	36	64	137	106	188	11	23
1990*	4	18	17	43	44	85	4	8
1995 <sup>+</sup>	4	17	12	43	32	70	4	8
2005 <sup>+</sup>	2	6	7	20	21	42	2	5

Sq = Square

Source: \* 1984 and 1990 Phonebook Corporation's Business Directory

<sup>+</sup> 2000 and 2005 DirectoryUSA Business Directory

### 3.9. Data Analysis

To determine the survival rate of businesses in these two neighborhoods, each of the 574 businesses were tracked over the years of 1990, 1995, and 2005. In a table format, under the location column, value 1 was assigned to the businesses located in Davis Square and value 2 for those in Union Square. Under the category column, values were assigned to each category: manufacturing 1, trading 2, services 3, and hospitalities 4. Then under the columns of 1990, 1995, and 2005, the businesses existing in those years were tracked. Value 1 was assigned to existing businesses and value 0 was assigned to non-existing businesses. Table 2 illustrates the tracking process. Pearson chi-square analyses were conducted to determine the significance of the difference between the frequencies.

**Table 2: Example of selected records to illustrate the tracking process used in study**

Name	St_#	St_Name	Service	Service Codes	Location	1990*	1995 <sup>+</sup>	2005 <sup>+</sup>
				Mfg =1 Trading = 2 Service = 3 Hospitality = 4	Davis Sq = 1 Union Sq = 2	Exist = 1 Non-Existing = 0		
Boston - S & N Storage Trailer Rental	123	Prospect St	Trailer Rental	3	2	0	0	0
Bowl-Haven Somerville	44	Day St	Bowling	4	1	1	1	0
Bradley Harold	51	Union Sq	Optometrists	3	2	0	0	0
Brigham's Inc	270	Elm St	Candy	2	1	0	0	0
Buddy's Dina	113	Washington St	Restaurants	4	2	1	1	1
Burton F Faulder Towers	25	Highland Ave	Real Estate	3	2	1	1	1
C&W Industries	296	Somerville Ave	Auto Glass	3	2	0	0	0
Caley & Whitmore corp	8	Highland Ave	Hospital Equipment and Suppliers	2	2	1	1	1
Cambridge Economic Opportunity Committee	73	Union Sq	Social Service Org	3	2	1	1	1
Cambridge women's Health	248	Elm St	Clinics	3	1	1	1	1

Source: \* 1984 and 1990 Phonebook Corporation's Business Directory  
<sup>+</sup> 2000 and 2005 DirectoryUSA Business Directory

### 3.10. Dissemination of Findings

It is hoped that data collected for this study will be shared with the Green Line Extension Planning Corridor group and the Somerville municipal government, as the City continues to plan for extension of the Green Line train system into Somerville. Findings of this study will help inform the City of the extent to which the train station can impact business survival and development patterns over the long term.



# Chapter Four

## **Presentation of Results**

### **4.1. Introduction**

This study is a 25-year analysis of the impact of the Red Line Station on business survival rates and business development patterns in the Davis Square neighborhood. The study is an attempt to find empirical data on displacement of the original Davis Square's businesses that existed prior to the construction of the train station. From the literature review, as neighborhoods gentrify original businesses tend to be displaced and replaced by high-end and specialty businesses to reflect the demographics of new residents. Therefore, this study hypothesized that ;

1. Changes in the business mix in Davis Square will favor the service and hospitality industries to the detriment of the manufacturing/construction and retailing/wholesaling industries.
2. The survival rate of 1984/5 businesses in Davis Square will be lower than that of Union Square.

### **4.2. Changes in the Davis Square Business Mix over the Years**

Businesses in a neighborhood adjust to serve the changing needs of the residents. As Freeman (2006) noted, when a neighborhood gentrifies, new businesses emerge to cater to the needs of the new residents. In his article "Boutiquication," Smith (2002) outlined the direction of changes in business mix in a gentrified neighborhood from manufacturing and "mom and pop shops" toward specialty and high-end shops that service the needs of the new and affluent

residents of the neighborhood. With Davis Square having experienced gentrification in the early 1990s, it is expected that the business development pattern over the years should show a pattern of fewer manufacturing/construction and retailing businesses, and an increase in service and hospitality businesses. The first hypothesis is based on this expectation; changes in the business mix in Davis Square will be in favor of service and hospitality industries to the detriment of the manufacturing/construction and retailing/wholesaling industries. In Tables 3 and 4, the business mix of Davis Square and Union Square in 1984 and 2007 are in compared to ascertain the changes in the business mix.

**Table 3: Business mix of Davis Square and Union Square in 1984 and 2007**

Business Category	Davis Square				Union Square			
	1984 *		2007 <sup>+</sup>		1984*		2007 <sup>+</sup>	
	No.	%	No.	%	No.	%	No.	%
Mfg/Construction	9	5%	74	21%	36	9%	72	13%
Retail	64	34%	67	20%	137	36%	104	18%
Service	106	56%	158	46%	188	49%	296	52%
Hospitality	11	5%	41	12%	23	6%	9	2%
Unclassified	-	-	3	1%	-	-	9	2%
Total	190	100%	343	100%	384	100%	490	87%

Source: \* 1984 and 1990 Phonebook Corporation's Business Directory

<sup>+</sup> 2007 U.S. Census Economic data

**Table 4: Analysis of changes in business mix between 1984 and 2007 at Davis Square and Union Square**

Category	Davis Square			Union Square		
	1984*	2007 <sup>+</sup>	P value	1984*	2007 <sup>+</sup>	P value
Mfg/Const	5%	22%	0.001**	9%	13%	0.39
Retail	34%	20%	0.057	36%	18%	0.004**
Service	56%	46%	0.322	49%	52%	0.765
Hospitality	5%	12%	0.157	6%	12%	0.157
Others	0%	1%		0%	5%	
Total	100%	100%		100%	100%	

Source: \* 1984 and 1990 Phonebook Corporation's Business Directory

<sup>+</sup>2007 U.S. Census Economic data

\*\* P is significant ( $p > 0.05$ )

In Table 4, the percentage of manufacturing/construction businesses operating from Davis Square increased from 5% in 1984 to 22% in 2007. With a P value of 0.001, the increase in the manufacturing/construction businesses is statistically significant. This outcome contradicts the expectation of decline in manufacturing and construction businesses as an area gentrifies. A possible explanation for this phenomenon lies in the NACIS classification of manufacturing and construction industries. The NACIS classifies both large manufacturing and construction industries. The NACIS classifies both large manufacturing/construction businesses and small sized manufacturing/construction businesses that provide services to the large manufacturing businesses under the same manufacturing category. The manufacturing/construction industry in Davis Square was not large and heavy businesses, but these businesses were small manufacturing/construction companies that serviced the manufacturing/construction industry. These businesses were general construction contractors who maintained their offices in Davis Square but performed the actual construction work elsewhere. These businesses, therefore, did not need large tracts of lands for their operations; thus, they were able to withstand displacement pressures that accompanied the neighborhood gentrification processes. Moreover, the businesses in this category did not face competition from

other regional shopping centers which was a major factor responsible for the decline of commercial activities in Davis Square during the 1970s and early 1980s.

From table 4, in 2007, percentage of the trading (retailing and wholesaling) businesses of the Davis Square business mix was reduced by 14% from 34% in 1984 to 20% in 2007, with P value of 0.057 the decrease is not statistically significant. The decline in trading businesses in Davis Square confirms the expectations of the study that as a neighborhood gentrifies the wholesale and retailing businesses tend to fall out. However, from the statistical evidence in the tables 3 & 4 above, the change in percentages of trading businesses in Davis Square businesses in 1984 and 2007 was not significant enough to be attributed to the presence of the train station. According to a business owner interviewed for the study, the trading industry was losing businesses before the Davis Square station was constructed. The trading businesses continued to leave the neighborhood even after the train station was constructed. The local business owners and knowledgeable residents attributed the loss of retailing businesses to the local land-use policies and competition from regional shopping centers. During the construction of the train station, Davis Square residents wanted to maintain the neighborhood's character and were therefore adamantly against the idea of zonal changes to increase height restrictions. Maintaining the old zonal regulations hindered further development that could have provided suitable commercial spaces in the Davis Square area to accommodate expansion or attract the attention of the national chain retail shops that would have withstood the competition from the regional shopping centers. For instance, the initial plan of the owners of the Market Basket was to site this family-oriented retail shop at Davis Square, but due to the lack of suitable commercial space in Davis Square's commercial district, they sited it in Union Square. Although the local residents demanded family-orientated retail shops, there was not enough space in the

neighborhood to accommodate the spacing and parking requirement for large retail shops. And many of the local efforts to maintain existing and open additional retailing shops in Davis Square were not successful according to a former City of Somerville planner who worked on the Davis Square revitalization project.

The service industry in Davis Square also decreased by 10% from 56% in 1984 to 46% in 2007, and with the P value of 0.157, the observed decrease is not statistically significant. The decrease in the percentage of service industry in Davis Square's business mix in 1984 and 2007 contradicted the expectation of this study; that is, as the neighborhood gentrifies the number of service businesses tend to increase. In spite of the percentage decrease in service businesses in Davis Square over the period of this study, the financial institutions located in Davis Square have maintained their presence over time. Out the five original banks in Davis Square, four continue to operate in the neighborhood. Some new service businesses operating in the neighborhood occupy spaces once occupied by previous service businesses.

The hospitality industry also did not experience statistically significant changes. Even though the number of hospitality businesses increased from 6 percent in 1984 to 12 percent in 2007, the associated P value of 0.157 is not significant. However, the increase in the percentage of hospitality businesses in Davis Square over time confirmed the expectation of this study; as a neighborhood gentrifies the number of hospitality business increases. From the interviews conducted for this study, it became obvious that Davis Square has become a regional entertainment and hospitality center. Some of the 1984 hospitality businesses have upgraded their services and their physical properties over time to meet the needs of the new residents and have attracted other customers beyond the neighborhood. Some of the 1984 hospitality businesses have also been succeeded by similar businesses, which cater to the needs of the new

residents as the neighborhood gentrified and also have the ability to attract customers beyond the neighborhood. And some of these new hospitality businesses operate in spaces once occupied by other hospitality businesses that left the neighborhood. For instance, the Burren Pub succeeded McDonalds, and other drinking bars were succeeded by up-scale restaurants. Residents and business owners interviewed for this study acknowledged much change in the hospitality businesses in Davis Square over time, and attributed the change to the emerging image of the neighborhood as an entertainment and hospitality center.

The changes in the business mix in Davis Square did not occur as expected; instead of losing businesses, the manufacturing industry gained businesses. The retailing/wholesaling industry, however, lost businesses. The hospitality industry gained businesses while the service industry lost business, although, with the exception of the manufacturing/construction businesses, the changes were not statistically significant. The analysis of the sample of Davis Square's businesses failed to clearly support the first hypothesis; changes in the business mix in Davis Square will be in favor of service and hospitality industries and to the detriment of the manufacturing/construction and retailing/wholesaling industries.

The 1984/5 Union Square business mix also experienced changes, but none were significant except the retail industry. The percentage of manufacturing/construction businesses increased from 9% in 1984 to 13%. In 2007, the percentage of retailing businesses decreased from 36% to 18%, the percentage of service businesses increased from 49% to 52%, the percentage of hospitality businesses increased from 6% to 12%. Besides the retailing industry, the differences in changes in the other industries in 1984 and that of 2007 were not statistically significant. The decline in the number of retailing businesses in Union Square (18%) is similar to that of Davis Square (14%), implying the cause of decline in retail businesses in Davis Square in

the 1970's and 1980's was not confined to that neighborhood but extended over a much larger area. Interviews done for this study revealed that the decline of retail businesses in Somerville was due to competition from regional shopping malls, and the decline in retailing businesses in both neighborhoods supports this local perception. The decline of retail businesses in the two neighborhoods points to the fact that the decline in the retail business in Davis Square cannot be attributed to the presence of the train station.

#### **4.3. The Business Survival Rates in the Two Neighborhoods**

With the advent of the Red Line Station in Davis Square, there was an increase in investment in the public infrastructure and real estate properties in the neighborhood. The local government invested in the transportation infrastructure, while the local property owners upgraded in their real properties to keep with the general expectation of neighborhood revitalization. With the improved transportation access and real estate stock, Davis Square began to attract new residents and commercial interest. As the neighborhood gentrifies, according Curran (2007), land use competition resulting from the need for more residential use and commercial space to accommodate the needs of wealthy newcomers rises. Through buyouts, lease refusals, zoning changes and increased rents, small manufacturers and original businesses are displaced by residential uses or new businesses (Curran 2007). As Davis Square has experienced gentrification, I expected many of the businesses which were operating in neighborhood before the construction of the train station to be displaced as result of land use competition and demographic changes. However, since there was no major and coordinated public transportation infrastructure investment and private investment in real estate in Union

Square during the time period of this study, Union Square should experience less displacement pressures.

The second hypothesis is, therefore, the original 1984/5 businesses in Davis Square will have a lower survival rate than that of Union Square. From the data used for this study, 190 businesses were located in Davis Square and 384 businesses were located in Union Square in 1984 when the Davis Square train station was constructed, as shown in Table 5.

**Table 5: Original businesses in 1984 still operating in 2005**

Year	Davis Square		Union Square		P value
	No.	% of 1984 Business	No.	% of 1984 Business	
1984*	190	100%	384	100%	-
1990*	69	36%	156	41%	0.17
2000 <sup>+</sup>	54	28%	138	36%	0.76
2005 <sup>+</sup>	32	17%	73	19%	0.09

Source: \* 1984 and 1990 Phonebook Corporation's Business Directory  
<sup>+</sup> 2000 and 2005 DirectoryUSA Business Directory

Table 5 above shows that, out of the 190 businesses located in Davis Square in 1984, only 69 of them, representing 36% of the total original neighborhood businesses, existed in the neighborhood in 1990, five years after the construction of the train station. In Union Square 156 out of the 384 businesses in 1984 representing 41% of the original businesses, existed in 1990. With the P value of 0.17, the difference between percentage reduction in the number of 1984 businesses that existed in Davis Square and Union Square from 1984 to 1990 is not significant. In 1995, eleven years after the construction of the train station at Davis Square, 54 (28%) out of 190 original businesses in 1984 continued to operate in the neighborhood, while 138 (36%) out of the 384 original businesses were in Union Square. The difference between these locations in



terms of the reduction in the number of businesses from 1984 to 1995, with P value of 0.76, was also not significant. This means that any differences in survival rates are not statistically significant. In 2005, 21 years after construction of the Davis Square train station, only 32 (17%) of the original 190 businesses in Davis Square continued to operate from the neighborhood, while 73 (19%) of the original 384 businesses in Union Square operated in the neighborhood. With P value of 0.09, the business survival rates in the two neighborhoods also turned out not to be statistically significant at the 95% confidence level.

The data fails to support the second hypothesis that there would be lower business survival rate in Davis Square than in Union Square, thus the second hypothesis was rejected. The lack of significant differences between the survival rates of original 1984 businesses in the two neighborhoods means the presence of the train station did not seem to have a statistically significant impact on business survival. The other factors such as competition from regional shopping centers and a slowdown of the national economy from 1987 – 1991 instead of the presence of the train station, according to a former city planner, worked against Davis Square businesses in the late 1980's, is responsible for the business hemorrhaging trend.

It is worth noting that by 1990, six years after the construction of the train station in the Davis Square area, many of the businesses in both neighborhoods did not exist. Davis Square has lost 64% of its original businesses, and Union Square has lost 59% of its original businesses. Beyond 1990 the rate of business turnovers slowed down in both neighborhoods. This trend suggests that other factors were significantly responsible for the loss of businesses in the two neighborhoods, and the effect of these factors was reduced after 1990. According to a former Somerville city planner interviewed, regional retailing center competition and a slow economy were more responsible for the loss of businesses in Davis Square at the time the Red Line station

was constructed. And any impact of the train station on business survival in the neighborhood did not manifest immediately after construction of the train station.

The role of the municipal government, its local land use regulations and other factors also played a role in the Davis Square neighborhood revitalization. A detailed discussion of the role of the municipal government, its local land use and other factors are discussed in chapter 5.

# Chapter Five

## The Role of Local Government

### 5.1. Introduction

Besides demographic and market forces, local government land-use policies and public investments, play a major role in shaping long-term business development patterns (Storm & Mayer 1998). The focus of revitalization adopted by local government planners can either exacerbate displacement of residents and businesses, or mitigate ill effects of market-led gentrification; bringing about a balanced urban regeneration (Storm & Mayer 1998). When local government planners adopt market-led pro-development policies, they risk losing the engagement of residents and businesses. Neglecting residents' concerns in neighborhood revitalization efforts, often lead to long term displacement of current residents and businesses, and create socially, economically and spatially polarized neighborhoods (Storm & Mayer 1998). In West End neighborhood in Boston, Vaughan Street Area in Portland, and West Village in New York City, where planners emphasized market-led pro-growth development efforts other than the needs of residents and businesses, massive displacement of poor residents and businesses occurred in the 1950's and early 1960's despite being the intended beneficiaries of these urban renewal programs. Podagrosi (2005) also noted that planners in pursuit of their trophy projects, place emphasis on promoting and attracting certain types of businesses and commercial activities to the detriment of existing businesses, especially when local businesses do not conform to their expectation of good commercial districts. On the other hand, when local government planners adopt socially equitable revitalization agenda, much focus is placed on improving the quality of life for residents and providing assistance to neighborhood businesses.

Socially equitable development agenda are characterized by emphasizing infill development, community character preservation, rehabilitation of old buildings, skill development, self-help project assistance, cultural and social programming and commercial area improvement. A significant feature of social equity development agenda is the high level of participation and control exercised by the residents and local business owners in planning and implementing revitalization efforts. Early involvement of residents and local business owners in the planning and implementation stages ensures that revitalization efforts serve the needs of the residents and preserve existing businesses.

To examine the role of Somerville's government, policies and investments in preserving existing businesses in the Davis Square neighborhood revitalization, I reviewed local government reports, plans and documents,<sup>4</sup> to understand the local government's role in the planning and implementation process. The City government's investment efforts to preserve local businesses were also discussed. Interviews with local business owners, residents and former city planners were conducted to solicit their views on the role of City government in Davis Square neighborhood revitalization.

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<sup>4</sup> See Appendix II for list of government documents reviewed for this study

## **5.2. The Role of City Government and the Neighborhood Residents in Davis Square Red Line Extension Planning**

The City facilitated formation of Davis Square Task Force, to become a Citizen's Advisory Committee for Davis Square revitalization efforts (Nikitin 1993). And it consisted of both neighborhood residents and business owners. This task force enjoyed support of the City's Mayor, the Ward Aldermen, and the State Legislators. The City also contracted consulting services to provide technical assistance to the task force. The task force submitted its recommendations, later known as Davis Square Development Agenda, to the City after two years of deliberations. The plan stressed on preserving of the residential community around the human scale commercial district in the Davis Square neighborhood. The plan also emphasized the need to preserve businesses in the neighborhood. To achieve these goals, the task force proposed retention of existing height limitation of 50 feet for new commercial developments. The task force also recommended an increase of parking spaces for merchants, storefronts and street improvements, and development of a supermarket in the Davis Square neighborhood (OPCD 2001). According to a report on Davis Square revitalization (OPCD 2001) the City adopted most of the Davis Square Task Force recommendations; and in 1985, the City embarked on a street reconfiguration project in Davis Square. The street reconfiguration project was executed to minimize pedestrian/vehicle conflicts, minimize through-traffic circulation in the residential neighborhood, increase the total number of parking spaces in new developments, and improve visibility and access to existing parking lots. The Buena Vista office building development in 1984/85 was also a recommendation of the task force plan. Additionally, the OPCD administered various financial assistance programs to help property owners rehabilitate their properties as part of the recommendations. The City provided funding for a wide range of public improvements,

including street and sidewalk repairs, façade improvements, landscaping and renovation of Kennedy Park, designed to foster revitalization and preserve local businesses.

### **5.3. Local Government and Business Preservation in Davis Square**

A 1977 survey of Davis Square shoppers conducted by the Office of Planning and Community Development found that, physical attractiveness of the commercial district draws shoppers to the neighborhood. In response, the City adopted a design ordinance, which mandated storefront improvement in the commercial area of Davis Square. This ordinance required that all properties located in Davis Square commercial area comply with design standards prescribed in the ordinance within a five year period (OPCD 2001). OPCD embarked on a \$75,000 storefront improvement program to provide design services and financial assistance to leaseholders and property owners seeking to undertake storefront renovation. The design service was provided to ensure that façade improvements were consistent with the character of the commercial area. Program participants were reimbursed up to \$5,000 per storefront. In addition, the City constructed new sidewalks, resurfaced streets, improved existing public lots and planted trees on the major thoroughfares in Davis Square, with assistance from Massachusetts Department of Public Works' Urban System Program (OPCD 2001). These improvements were designed to complement public improvements included in the MBTA subway station project. Other amenities like new benches and trash receptacles in pedestrian waiting areas were also provided. The City also adopted parking recommendation of the task force to alleviate parking problems in Davis Square. With a State Grant of \$2 million, the City constructed the Buena Vista parking garage, a "parking loop" road and additional off-street parking facilities next to the commercial

core (OPCD 2001). The parking project included enforcing the municipal parking regulations to discourage long-term parking and keep parking space free for commercial activities (OPCD 2001).

The impact of the local government's policies and investments on the business development in Davis Square manifests itself in the preservation of original businesses, and revitalization of commercial activities in the neighborhood over time. Analysis of business data collected for this study failed to support the second hypothesis; that the business survival rates in Davis Square would be lower than that of Union Square. Local government support for businesses in Davis Square helped to keep the local businesses in the neighborhood. The financial assistance provided by the City through various programs and projects aimed at preserving local businesses helped the local businesses to withstand the slow economic recovery after the construction of the train station and the competition for commercial space afterward. Some of the local government programs also provided the needed financial assistance for these businesses to reposition for opportunities presented by the presence of the train station. The huge public investment by the city government in the neighborhood further encouraged private investment. Property owners invested in their properties and increased the value of these properties. The investment resulted in improvement in the physical attractiveness of the neighborhood and drew more people to the commercial district. Consequently, business owners became encouraged to invest in their businesses; some expanded their operations instead of leaving the neighborhood. This combination of public and private investments in both the commercial and residential properties is partially responsible for revitalization of the neighborhood. Before construction of the train station, Davis Square experienced high vacancy rates of commercial spaces (OPCD 2001). Twenty-five years later, there is little to no vacant

commercial space in the neighborhood. Such public-private investments in Davis Square may have contributed to the survival of some of the existing businesses and also attracted new businesses to Davis Square. Many of the people interviewed for this study share the view that this factor influenced business development patterns of Davis Square neighborhood.

The local government's adoption of the 50-foot height restriction for new developments has however, drawn criticism from some City's residents and planners. Critics say the 50-foot height restriction placed a limitation on the potential of the Davis Square revitalization efforts. The height restriction limited development of family-oriented retail shopping centers in the neighborhood. The Market Basket, a retail store in Union Square, abandoned its initial plan of locating in Davis Square due to lack of suitable land and parking space. This limitation has diminished the neighborhood's capacity to meet the increased demand for residential and commercial space, as Davis Square became more desirable in the 1990s. The result was skyrocketing rental rates, which exacerbated the residential displacement in gentrifying Davis Square neighborhood during the 1990s. The height limit discouraged development of office space and hotels in the neighborhood.

Besides criticism of the height restriction, all interviewees for this study acknowledged the City government's efforts to address concerns of the local residents and businesses. Literature reviewed for this study also revealed the critical role the local government played in preserving the local businesses in Davis Square neighborhood. Without such local government efforts, the presence of the train station could have worsened the problem of losing Davis Square businesses.



#### **5.4. Local Government and Business Preservation in Union Square**

Unlike Davis Square, Union Square did not receive significant transit infrastructure investments during the study period. However, Union Square received its share of city-wide business preservation and neighborhood revitalization programs. A section of Union Square was declared “Urban Renewal Area” and streetscape parking and storefront improvement were addressed. The Washington Street parking lot was built and roads re-configured (OHCD 2002). The City established a Storefront Improvement Program (SIP) to set a design standard for retailers in the City, and offered architectural and financial assistance to property and business owners toward façade innovation, with a cap of \$40,000 per project. In 2001-2002, the City invested additional \$128,600 in the Storefront Improvement Program, leveraging over \$500,000 in private capital (OHCD 2002). Participating businesses in Union Square received financial assistance under this program. In 1994, the Massachusetts Economic Assistance Coordinating Council (EACC) designated Somerville as an Economic Target Area and the City received \$ 485,000 in state funds. Again, participating Union Square businesses and developers received financial assistance under this program. Under the EPA’s Brownfield Development Programs, Brownfields Economic Development Program in 1996 and Brownfields Cleanup Revolving Loan Fund in 1999, the City of Somerville received a total of \$640,000 to facilitate re-development of Brownfield sites. 220 Washington Street and 29, 30 & 33 Allen Street located in Union Square were cleaned for redevelopment under these programs.

**Table 6: Summary of Public Economic Development Investments mentioned in the study**

<b>Program/Investment Name</b>	<b>Source of Funding</b>	<b>Neighborhood</b>	<b>Amount</b>	<b>Program Date</b>
Street Reconfiguration Project (including street and sidewalk repairs & landscaping)  Part of the Davis Square Urban Renewal program	Massachusetts Department of Public Works' Urban System Program	Davis Square	Unknown Amount	1983.
Construction of Buena Vista office building including a parking garage, a "parking loop" road, and additional off-street parking facilities next to the commercial core.	State Grant.	Davis Square	\$ 2 million Grant	1983
Store Façade Improvements Program  Part of the City's Urban Renewal program	Unknown Source	Davis Square & Union Square	Unknown Amount	Started in 1980.
Kennedy Park Renovation	Unknown Source	Davis Square	Unknown Amount	Unknown Date
Street Reconfiguration Project (including street and sidewalk repairs & landscaping)  Part of the Union Square Urban Renewal program	Unknown Source	Union Square	Unknown Amount	1983
Tax Increment Financing.	Massachusetts Economic Assistance Coordinating Council (EACC)	City-wide	\$ 485,000	Started in 1995
Brownfields Economic Development Programs.	EPA's Brownfield Development Programs Brownfields Cleanup Revolving Loan Fund in 1999	City-wide	\$640,00	Started in 1999
	Brownfields Economic Development Program in 1996 Groundwork/USA Pilot Community program	City-wide Program In Union Square - 220 Washington Street and 29, 30 & 33 Allen Street located in Union Square.	\$100,000	Started in 1996

From the research conducted for this study (as summarized in the above table), the local government's role in business preservation was mainly through city-wide business and neighborhood revitalization programs. There are meeting minutes on the approvals of urban revitalization plans for both Davis and Union Squares adopted by the Somerville Board of Alderman in 1983. It can be concluded that there was no separate significant public investment in Davis Square than in Union Square besides investments associated with the construction of the Red Line Station in Davis Square.

### **5.5. Other Factors partially responsible for the Business Survival rate in the Davis Square Neighborhood**

From the data analysis and interviews, it became obvious that the presence of the train station alone is not responsible for the business survival rates in Davis Square. It is a case where the right combination of various factors that helped to preserved the local businesses in the neighborhood. Information gathered through a review of local government documents and interviews revealed that these factors contributed significantly to business survival rates in Davis Square. First among these factors is the location advantage Davis Square enjoys. Its proximity to Tufts University provided a good source of consumers for the neighborhood hospitality and retail businesses. Davis square has also experienced commercial spillover of business relocation, customers and local residents with disposable income from Porter Square in Cambridge. It is important to note that, even though residential and commercial spillover from Porter Square may have helped hospitality and entertainment businesses to flourish, these factors may have

contributed to the displacement of manufacturing firms that needed large tracks of land to continue in Davis Square.

The second factor responsible for business survival is early engagement of the residents in the planning process. Some residents served on the Davis Square Task Force, a Citizens' Advisory Committee for revitalization efforts in the neighborhood. These residents helped to shape the vision of the new neighborhood and provided a stable consumer base for the businesses. Third, the role of Davis Square's business owners cannot be over emphasized. The vision and resources of the local business owners have shaped the new identity of Davis Square. From the onset of the planning of the Red Line from Cambridge to Alewife, local businesses recognized the potential impact of a train station and advocated for it. Some local businesses became anchor-businesses which made the commercial district attractive to consumers and other businesses. The role of the owners of these businesses is worth mentioning, and owners include; the Somerville Theater, Red Bones, and Johnny D's among others<sup>5</sup>. These business owners invested in their business appearance and incorporated new business concepts from other businesses outside the neighborhood to attract more people to the commercial district. It is noteworthy that inadequate records exists for owners of large manufacturing firms in Davis Square with investments in businesses. Even though data collected for this study did not support displacement of manufacturing businesses in Davis Square, it does not necessary mean the large-sized manufacturing businesses remained in Davis Square, as there are no records on both public and private investments to reposition these businesses to take advantage of the presence of the

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<sup>5</sup> Reference: Interview with a former City of Somerville planner who managed Davis Square revitalization project. Interview conducted on August, 2009.

train station. It is possible the large-sized manufacturing businesses may have been pushed out because of land-use competition from residential use and retail space.

# Chapter Six

## Conclusion and Policy Recommendations

### 6.1. Conclusion

As a 25-year analysis of the impact of the presence of the Davis Square train station on business development, this study aimed to find empirical evidence to substantiate the impact of the Red Line train station impact on businesses survival in the Davis Square neighborhood. The findings of this study will enable the Green Line Corridor Coalition and the City's officials to understand the potential impact of a Green Line train station on businesses in the Union square neighborhood. The main question of this study is how the Red Line train station has affected business development patterns in the Davis Square neighborhood for the past 25 years. The following sub-questions were raised in this study in an attempt to answer the main question.

1. What is the business survival rate in Davis Square since 1984, and how it is different from that of Union Square?
2. How much difference exists between the changes in business mix over time in Davis Square and Union Square?
3. What role did the city government and local land-use policies play in shaping business development patterns in the Davis Square area?

Two hypotheses were formulated based on the literature review;

1. Changes in the business mix in Davis Square will be in favor of service and hospitality industries to the detriment of the manufacturing/construction and retailing/wholesaling industries.

2. The original 1984/5 businesses in Davis Square will have a lower survival rate than that of Union Square.

A total of 574 businesses existing in both neighborhoods (Davis Square - 190 and Union Square – 384) in 1984 were examined. These businesses were tracked through business records for 1990, 1995, 2005 and 2007 to identify which business continued to operate in these neighborhoods and which businesses have ceased to operate in these neighborhoods. The following conclusions were reached.

- I. Changes in the business mix in Davis Square did not occur as expected, instead of the manufacturing category losing businesses, it significantly gained businesses. The retailing/wholesaling category lost businesses. The hospitality category gained businesses while the service category lost business, although these changes were not statistically significant. Analysis of Davis Square's business data failed to support the first hypothesis; that is changes in the business mix in Davis Square were not in favor of service and hospitality industries to the detriment of the manufacturing/construction and retailing/wholesaling industries.
  
- II. In Union Square, with the exception of the retail industry, the other industries did not experience significant decline. The retail industry lost 18 percent of its share of the business mix, from 36 percent in 1984 to 18 percent in 2007. Decline in the number of retailing businesses in Union Square is similar to that of Davis Square. This finding implies that the cause of decline in retail businesses in Davis Square in the 1970s and 1980s was not confined to that neighborhood, but extended over a much larger area. The

decline of retail businesses in Somerville was due to competition from regional shopping malls, and the presence of the train station did not significantly influence the business-hemorrhaging trend.

- III. The outcome of the analysis of data collected also failed to support the second hypothesis; that there would be a significant difference in the business survival rates of the two neighborhoods. There was no significant difference between the turnover rates of original businesses in the two neighborhoods. This means the departure of the original businesses in Davis Square cannot be solely attributed to the presence of the train station. Rather, competition from regional shopping centers and downturn in the national economy from 1987 – 1991 worked against Davis Square businesses in the late 1980's.
- IV. Although, the presence of the train station in Davis Square was not strong enough to mitigate the adverse effects from competition from regional retail centers, the Davis Square Red Line station played an important role in reviving commercial activities in the neighborhood.

Foremost, the presence of the train station increased the neighborhoods' accessibility. The increased accessibility also expanded the consumer base of the local businesses. With the train station, patrons of the Davis Square businesses did not have to drive to the neighborhood. The train provided an alternative transportation mode to both old and new patrons who lived beyond the immediate market area. This dynamic seems to be a critical factor for the business survival rate in the neighborhood. Most of the original businesses that are still operating in Davis Square have other customers than



those in the immediate neighborhood. All original business owners who are still operating in Davis Square and were interviewed for this study have customers based beyond the neighborhood.

Secondly, the train station became the catalyst for both public and private investment in the neighborhood. The municipal government invested in the neighborhood before, and immediately after, the construction of the train station to realize its vision for the neighborhood. The increased accessibility and expectations brought in to the neighborhood by the train station encouraged business owners to invest in their businesses and real estate. Property owners were also encouraged to invest in the upgrading of their properties with the expectation of attracting higher rents. Old and new residential property owners were encouraged to invest in the upgrading of their property to keep up with the new neighborhood image.

The last area where the impact of the train station can be felt is the change in the neighborhood character. Davis Square is now considered a successful neighborhood revitalization story. The neighborhood's commercial district is now a vibrant, regional entertainment and hospitality destination with a public plaza.

- V. There were other factors that residents and business owners interviewed for this study acknowledge as partially responsible for the business survival rates in the Davis Square neighborhood.
  - a. The first factor is the location advantage Davis Square enjoys. Its proximity to Tufts University provided a good source of consumers for the businesses. Tufts University students, faculty and staff frequently patronized the services of the

Davis Square businesses as it is located within walking distance of the university campus.

- b. It is important to note that, even though the residential and commercial spillover from Porter Square may have helped hospitality and entertainment businesses flourish, these factors may have contributed to the displacement of manufacturing and retailing firms that needed large tracks of land to continue to operate in Davis Square.
- c. The second factor is early engagement of residents in the planning process. Residents' participation in the planning process ensured that concerns of local businesses were addressed in the revitalization efforts. The role of Davis Square's business owners cannot be over emphasized. The vision and resources of local business owners contributed toward shaping a new identity for Davis Square. Some of the businesses owners in the Square showed strong interest in their neighborhood, and they invested in the businesses and upgrade properties. These investments in neighborhood properties and business operations resulted in improvement of the neighborhood's attractiveness, a critical element for attracting customers to a commercial district.
- d. Even though the data collected for this study did not support displacement of manufacturing businesses in Davis Square, it does not necessarily mean that the large-sized manufacturing businesses remained there. There are no records on investments by these businesses demonstrating how they may have repositioned themselves to take advantage of the presence of the train station. It is possible the

large-sized manufacturing businesses may have been pushed out because of competition from residential and retail uses.

- e. Finally, the leadership and investment of Somerville's city government brought in the political and capital support needed to make the Davis Square neighborhood revitalization efforts successful.

## **6.2. Study Limitation**

The main limitation of this study was that official government records of Somerville businesses are not available for study purposes. Various efforts to obtain such official business records from the City were unsuccessful. The study, therefore, relied on business directories for records on businesses that existed in Davis Square and Union Square when the train station was constructed in 1984. Information published by business directories is often not thorough, and therefore the records of businesses used in this study are considered as a sample representation of the size of the businesses population in Davis and Union Squares.

Lack of official records of Somerville businesses not only in the base of 1984, but also in 1990, 1995, and 2005, limited the study's ability to analyze which businesses had replaced the original 1984/85 businesses. Data on the businesses that replaced 1984/85 businesses in Davis Square would have been compared to that of Union Square. The difference between the replacing businesses in the two neighborhoods would have provided information on the type of businesses the train station attracted into the neighborhood.

The context-specific nature of transport-property value connection makes it difficult to apply the lessons of one study to another area. Care should be exercised when applying the lessons of this study to other areas.

The industrial classification of business systems was changed in 1997. The North American Industry Classification System (NAICS), a more comprehensive and detailed system, replaced the Standard Industrial Classification (SIC) system that was in place since 1930. The NAICS included an additional nine service sector aggregations that were not in the SIC. Secondly, the NAICS changed the treatment of auxiliaries. Under the SIC system, satellite worksites for companies that were treated under the same categories as the companies, but the under NAICS, auxiliary units were categorized by their primary activity. For instance, under the SIC system, warehouses for a manufacturing firm would be classified as manufacturing industry. Under the NAICS, warehouses were considered as the primary activity independent of the affiliated businesses, and then classified as service industry. The difference in treatment of certain types of businesses could have impacted the comparison of business mixes in the two neighborhoods. And since the company that published the 1984/5 Somerville Business directory was out of business, this study could not verify how the change in the industrial classification systems was handled by the business directory publishing company.

This study focused on identifying which businesses left Davis Square after the construction to the Red Line train station in 1984, and how the presence of the train station impacted the business survival rates in the neighborhood. It did not attempt to examine how other factors like demographics, and competition from regional shopping malls may have contributed to the of business displacement or shaped the business development after the Red Line train station came to the neighborhood.

### **6.3. Policy Recommendations**

- I. The findings of study establish that the presence of the transit station in Davis Square alone neither displaced businesses or boost commercial activities in the square.

Therefore, the Green Line Extension stations should be viewed as one of the many factors that can impact commercial activities in these neighborhoods. Area revitalization planning around the train stations should aim at understanding and managing all the factors to bring about the desired impacts.

- II. Learning from Davis Square's revitalization efforts, local business owners should be encouraged and assisted to take an active role in the Union Square revitalization effort, especially at risk business owners. The Somerville Chamber of Commerce can take a leading role to organize the neighborhood business community to formulate their vision for the commercial district. Such vision will increase a sense of ownership among the business community in the neighborhood revitalization effort and to ensure revitalization efforts preserve existing businesses.

- III. This study recommends a citizen advisory committee to oversee the planning and implementation phase of the Green Line Extension. Without a formal structure to solicit residents' inputs and ensure accountability, on-going individual groups' efforts to hold the project accountable to their individual causes can become obstructive in the long term.

IV. The role of local government in assembling land parcels in Union Square for developments is crucial to economic revitalization in Union Square. Currently, much of the developable land in the neighborhood is fragmented, underdeveloped or contaminated.

#### **6.4. Suggestions for future research**

A study of long term business survival rates in several train station host neighborhoods would present a broader view on the impact of the train stations on business survival in a metropolitan area. Such a study could analyze which businesses tend to survive when train stations are constructed in a neighborhood. The study could also compare the impact of various rail transit (light rail, high speed rail and commuter rail) stations on business survival rates. A spatial analysis study using Geographical Information System to map out the above analyses will give a better visual presentation of the impact of the train station on long term business development.

# Appendix I

## List of Somerville Local Government Documents Examined for the Study

Axelord, R., and Associates. 1977. *Davis Square: Urban Design and Business Studies*. Boston, MA: MAPC.

Campbell, B. and Associates, Inc. 1995. *Davis Square Traffic Analysis*. Cambridge, MA. Bruce Campbell and Associates.

City of Somerville. 1985. *Annual Report, (1983 – 1985)*. Somerville, MA: City of Somerville

Davis Square Task Force. 1976. *Davis Square Task Force Plan*. Somerville, MA: City of Somerville.

Edward Brook (HUD) letter to Thomas Pelham (Secretary of Ward Six Civil Association), October 30, 1987.

Jesef Brozek letter to Robert Vey (Architects and Planners), June 16, 1978.

Mark Cremin (Alderman – Ward Six) letter to Donald Graham (Planning Director, MBTA), September 8, 1978.

Planning Services Group, Inc. 1969. *Community Renewal Program*. Cambridge MA: Planning Services Group, Inc.

OPCD. 2001. *Davis Square Revitalization*. Somerville, MA: OPCD.

Somerville Engineering, Inc, 1979 - 1982. *Red Line Extension Project Progress Report # 1,13 and 14*. Somerville, MA: Somerville Engineering, Inc.

Thomas F. August (Mayor) letter to Davis Square Task Force, March 27, 1978.

US Department of Housing and Urban Development (HUD) letter to Senator Edward M. Kennedy,  
November 1, 1978.

U.S. Department of Housing and Urban Development, "City of Somerville charged with violation; 21  
Federal regulation disregarded in consulting work," Press Release, October 2, 1978.

Ward-Six Civil Association letter to Mayor Thomas A. August, June 28, 1979.



# Appendix II

## Questionnaires

### Background and Consent for Interview:

Thank you for agreeing to be interviewed for this study. My name is **Emmanuel Owusu**, and I am a graduate student at Tufts University pursuing a Master's degree in Urban and Environmental Policy and Planning. This interview is part of my thesis, entitled "The Impact of New Rail Transit on Existing Businesses" with the Davis Square Red Line Station as case study.

The goal of this thesis is to compare the changes in business development patterns in Davis Square and Union Square since the construction of the Davis Square train station in 1984. The difference in business development patterns in these two neighborhoods will help explain the impact of the train station on the Davis Square businesses.

Information gathered from this interview will help to explain the impact of the Davis Square train station and the role of city government in shaping the business environment since 1984. This interview is treated as confidential and for the sole purpose of this thesis. The findings of this thesis will inform Green Line Corridor Collation and the Somerville city government on potential impact of the Green Line station in Union Square on existing businesses.

The interview will be about 20 to 30 minutes.

Would you be willing to participate?

\_\_\_\_\_ **Yes – That's great. Are you ready to begin?**

\_\_\_\_\_ **No – Thank you for listening.**

**Date of Interview:**

**Time interview started:**

**Time interview Ended:**

## **BUSINESS OWNERS**

### **ASCERTAINING POSSESSION OF RELEVANCE KNOWLEDGE TO THIS RESEARCH**

- a. For the purpose of this thesis, kindly state the name of your business.
- b. Were you operating in Davis Square when the Red Line train station was constructed?
- c. How long have you been operating from Davis Square?

### **EXISTING CONDITION BEFORE THE TRAIN STATION WAS CONSTRUCTED**

- a. What was the general business environment in Davis Square before the train station was constructed?
- b. What were the expectation(s) of the existing business owners on the construction of the train station?
- c. How did the construction phase affect business activities?
- d. Did some businesses fail or relocate during the construction phase?

### **THE IMPACT OF TRAIN STATION ON INDIVIDUAL BUSINESS**

- a. Five years after the construction, did you realized changes in customer base, in terms of age, income level, frequency to your services/shop and residence?
- b. Have you had to change services/merchandise in response to changes in the type of customers you used to serve before the construction of the train station?
- c. Have you experienced changes in the volume of your business sales?
- d. How has the number of your employees changed over the past 25 years?
- e. Would you consider the rent increases in Davis Square as sharper, compared to rents increases in other parts of the city?

### **THE INFLUENCE OF THE TRAIN STATION ON BUSINESS DEVELOPMENT PATTERN OVER TIME**

- a. What has been the impact of the train station on the entire business environment in Davis Square?
- b. How would you compare the current business mix to what existed before the train station was constructed?

- c. How has the train station influenced business' decision to relocate from the Davis Square commercial district area?
- d. How has the train station influenced businesses' decision to locate to the Davis Square commercial district area?
- e. What is your reaction to the change in business mix shown in the attached maps?

#### THE ROLE OF GOVERNMENT

- a. How would you describe the local government's support of the existing businesses in Davis Square over the past 25 years?
- b. In general, have local government policies and regulations promoted or hindered business activities in the Davis Square area?
- c. Which specific local government policies and regulations can you cite to support your opinion?

END OF INTERVIEW

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## **CITY PLANNERS**

### **ASCERTAINING STATUS AND POSSESSION OF KNOWLEDGE RELEVANT TO THIS RESEARCH**

- a. For the purpose of this research, kindly state your current position within Somerville city government
- b. What was your role within the city government when the Davis Square station was constructed in 1984?

### **KNOWLEDGE ON THE BUSINESS CONDITIONS BEFORE AND DURING THE CONSTRUCTION OF THE TRAIN STATION**

- a. What was the general business environment in Davis Square before the train station was constructed?
- b. What were the expectations of local businesses and city government on the impact of the train station on business activities in Davis Square?
- c. How did the construction phase impact business activities?
- d. Did some businesses fail or relocate during the construction phase?

### **THE INFLUENCE OF THE TRAIN STATION ON BUSINESS DEVELOPMENT PATTERN OVER TIME**

- a. What has been the impact of the train station on the entire business environment?
- b. How would you compare the current business mix to what existed before the train station was constructed?
- c. How has the train station influenced businesses' decision to locate to the Davis Square commercial district area?
- d. How has the train station influenced business' decision to relocate from the Davis Square commercial district area?
- e. What is your reaction to the change in business categories shown in the attached maps?
- f. In what ways would you attribute the differences in business development patterns in Davis Square and Union Square to the presence of the Red Line train station in Davis Square?

### **THE ROLE OF GOVERNMENT**

- d. How would you describe local government's support toward the existing businesses in Davis Square and Union Square over the past 25 years?

- e. In general, have local government policies and regulations promoted or hindered business activities in the Davis Square area?
- f. Which specific local government policies and regulations can you cite to support your opinion?

END OF INTERVIEW

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## **CHAIRMAN OF CHAMBER OF COMMERCE**

### **ASCERTAINING POSSESSION OF RELEVANCE KNOWLEDGE TO THIS RESEARCH**

- a. Were you the chairman of the Somerville Chamber of Commerce when the Davis Square station was constructed in 1984? (Y/N)
- b. If no, what was your involvement in community activities in Somerville in 1984?

### **EXISTING CONDITION BEFORE THE TRAIN STATION WAS CONSTRUCTED**

- a. What was the general business environment in Davis Square before the train station was constructed?
- b. What were the expectation(s) of the existing business owners about the construction of the train station?

### **THE INFLUENCE OF THE TRAIN STATION ON BUSINESS DEVELOPMENT PATTERN OVER TIME**

- a. What have been the impacts of the train station on the whole business environment in Davis Square?
- b. How would you compare the current business mix to what existed before the train station was constructed?
- c. How has the train station influenced business' decision to relocate from the Davis Square commercial district area?
- d. How has the train station influenced businesses' decision to locate to the Davis Square commercial district area?
- e. In what ways would you attribute the difference in business development patterns in Davis Square and Union Square to the Red Line train station in Davis Square?
- f. What is your reaction to the change in business mix shown in the attached map?

### **THE ROLE OF GOVERNMENT**

- a. How would you describe local government's support toward the existing businesses in Davis Square in the past 25 years?
- b. In general, have local government policies and regulations promoted or hindered business activities in the Davis Square area?
  - a. Which specific local government policies and regulations can you cite to support your opinion?

**END OF INTERVIEW**

## **RESIDENTS**

### **ASCERTAINING POSSESSION OF RELEVANCE KNOWLEDGE TO THIS RESEARCH**

- a. What was your involvement in community activities in Somerville in 1984?

### **EXISTING CONDITION BEFORE THE TRAIN STATION WAS CONSTRUCTED**

- a. What was the general business environment in Davis Square before the train station was constructed?
- b. What were the expectation(s) of the existing business owners on the construction of the train station?

### **THE INFLUENCE OF THE TRAIN STATION ON BUSINESS DEVELOPMENT PATTERN OVER TIME**

- a. What have been the impacts of the train station on the whole business environment in Davis Square?
- b. How would you compare the current business mix to what existed before the train station was constructed
- c. How has the train station influence business' decision to relocate from the Davis Square commercial district area?
- d. How has the train station influenced businesses' decision to locate to the Davis Square commercial district area?
- e. In which ways would you attribute the difference in business development patterns in Davis Square and Union Square to the Red Line Station in Davis Square?
- f. What is your reaction to the change in business mix shown in these maps?

### **THE ROLE OF GOVERNMENT**

- g. How would you describe the local government support toward the existing businesses in Davis Square in the past 25 years?
- h. In general, have local government policies and regulations promoted or hindered business activities in the Davis Square area?
- i. Which specific local government policies and regulations can you cite to support your opinion?

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