How Will the Urban Ring Impact Airport Related Economic Activities and Low Income Communities in Chelsea?

by

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B.E., Civil Engineering
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Submitted to the Department of Urban Studies and Planning
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School of Architecture and Planning
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ABSTRACT

There are two actions that are currently most relevant to the future economic development of Chelsea. One is the Compact signed by Six Cities – Chelsea, Everett, Somerville, Cambridge, Brookline and Boston in support of the Urban Ring. This led Massachusetts Bay Transportation Authority (MBTA) to conduct the Major Investment Study of the Urban Ring Proposal. Second is the agreement signed in August 1998 between the City of Chelsea and the Massachusetts Port Authority (Massport) to attract airport-related businesses to locate in Chelsea. In the context of these two agreements, my thesis sought to answer two questions. 1) How will the Urban Ring impact the low-income communities in Chelsea? and 2) How will the Urban Ring Impact the Airport Related Business?

This thesis evaluates the impact of the Urban Ring Proposal mainly in terms of employment for the low-income residents of Chelsea. I used maps produced by combining the census data with the spatial and network analysis tools in Arcview (Geographic Information System) to draw a picture of Chelsea. Additionally, I applied information obtained from interviews with local community organizations, and the information from the city office and the Massport. I looked at how the Urban Ring addresses Chelsea’s oldest problem of poor public transportation connection to the rest of Boston. The lack of reliable public transportation has serious implications for the low-income communities in Chelsea. One-third of the population do not own automobiles and more than two-thirds work outside Chelsea. Based on my finding, this thesis concludes that the Urban Ring would increase the opportunities for employment for Chelsea residents, by improving the connection to other cities and major employment centers along the Urban Ring Corridor.

My thesis suggests that the Urban Ring will not impact the location of Airport related business. It also establishes that the location of airport related businesses will not necessarily provide a high number of new jobs for Chelsea residents. Most Chelsea residents will continue to work outside Chelsea and a large proportion of them will depend on public transportation. For these reasons, I argue that the Urban Ring would benefit Chelsea. Finally, I establish a set of recommendations that the City of Chelsea and community organizations can take to increase employment opportunities for Chelsea’s low-income residents until the Urban Ring becomes a reality.

Thesis Supervisor: Tunney Lee
Title: Professor of Urban Studies and Planning
Acknowledgement

Professor Tunney Lee, my thesis advisor guided me throughout the semester with an emphasis on the learning process. He taught me to stick to the point, pursue the relevant by reminding me of “the questions” everytime I strayed. He controlled my anxieties with his soothing yet the matter of fact words; “you’re getting there.” This thesis is about getting there.

The moments I shared working with Tunney and the Chelsea Urban Ring Studio are the ones that I would not trade for anything so far. It is a pleasure to hear Tunney talk and I will always appreciate his sense of humor. I am also fortunate to have worked with a dedicated group of classmates, and Randall Imai, Visiting Instructor and Jean Riesman our Teaching Assistant.

My Reader, Professor Karl Seidman provided me with insightful feedback to my drafts. I only wish I had spent more time with him than I did. But I benefited greatly from his inputs. I shall never forget Meenu Tewari who pushed me to think harder during the Thesis Preparation. I am also grateful to her for helping me out during my times of difficulty.

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I am grateful to Professor Joe Ferreira for creating a GIS project for Chelsea in his class, which became a significant component of my thesis. I thank Tom Grayson, Mizuki Kawabata, and Phil Thompson for being the “Gods of Small Things”. I am eternally grateful to Karen for rescuing our GIS database files twice at very critical moments.

I am grateful to my Uncle Ashok Shrestha and his family for providing me with a home away from home. I admire him and draw inspiration from him for his strength and ability to struggle through life.

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“To my family”
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1. **Introduction and Research Objectives**
1. Introduction and Research Objectives

1.1 Introduction

There are two actions that are currently most relevant to the future of economic development of Chelsea. One is the Compact signed by Six Cities – Chelsea, Everett, Somerville, Cambridge, Brookline and Boston to support the Urban Ring and resolve transportation issues which cross municipal boundaries. This led to the Major Investment Study of the Urban Ring Proposal now being carried out in phases by Massachusetts Bay Transportation Authority (MBTA). Second is the agreement signed in August 1998 between the City of Chelsea and the Massachusetts Port Authority (Massport) to attract airport-related businesses to locate in Chelsea.

The Urban Ring

The Urban Ring is a concept of circumferential transportation that connects the areas surrounding the core of Boston, such as East Boston, Logan Airport, Chelsea, Everett, Somerville, Brookline, and Cambridge (Figure 1.1 and 1.2). It is ultimately envisioned as a single-modal-light-rail system of transportation similar to the Green Line in Boston. To begin with, it will be bus and rubber tire systems mostly at grade. Already, cross-town buses such as CT1, CT2 and CT3 have been introduced on an experimental basis. In the later phases it will gradually be converted to multi-modal system where parts of the Urban Ring will run on Light Rail.

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1 The Urban Ring Compact (October 1995)
Rail and parts of it will be buses and articulated buses. Later as demand rises and funds become available, the system will take the shape of a single-modal-light-rail system.

The Urban Ring is expected to serve two purposes. First, it will make traveling between cities convenient by taking riders directly from one city to another without going in to the central city, for example from Chelsea to Somerville without going to Park Street. It will thus prevent the need of transferring from one mode to another as it is done now. In doing this, it will fulfill the second purpose of reducing the congestion in the Central City by capturing the riders who don’t have to go to the core of Boston to work.

1.1 Concept Map of Urban Ring

1.2 Urban Ring Segments

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The Chelsea-Massport Compact (August 1998)
The Chelsea-Massport Compact

It has been five years since the City of Chelsea emerged from the receivership that lasted from 1991 to 1994. In this stage of recuperation, the city is aggressively trying to market itself to private and corporate investors. To date, most of the money entering the city’s coffers have come from State and Federal Grants. Private investors have been wary. Lack of proper access to and from other parts of Boston is a major problem.

In this context, in addition to reaching out to new businesses, the city is trying hard to facilitate investors and businesses (private and state organizations) that have already demonstrated strong interest in Chelsea. One such organization that has constant influence and strong interest in Chelsea is the Massachusetts Port Authority.

In August 1998, the city and the Massport signed an agreement to conduct research and work together to attract airport-related development in Chelsea. Massport pledged $2.5 million dollar over a five-year period for the city to work towards attracting airport related business in Chelsea. Location of airport related businesses in Chelsea is expected to provide employment opportunities for the people of Chelsea.

These two agreements are the trigger points in Chelsea’s history that will have direct and indirect impacts on residents of Chelsea and economic future of the city. Both the Urban Ring and the location of airport related businesses in Chelsea are expected to improve access to jobs for people of Chelsea, attract new businesses and help increase the tax base of Chelsea.
1.2 Research Objective

In the context of the two different agreements mentioned above, the main questions of my thesis are: 1) How will the Urban Ring impact the low-income communities in Chelsea? and 2) How will the Urban Ring impact the expansion of Logan Airport and the location of airport related businesses in Chelsea.

This thesis will approach the above questions from the employment aspect. Specifically, how does the ease of transportation access to jobs impact employees at the lower levels of income? How will the location of airport related businesses in Chelsea impact the employment opportunity of Chelsea residents? One of the reasons to focus on the employees at lower levels is that they are most likely to not own private automobiles, and therefore most likely to be affected by the quality of public transport. The other reason to focus on the lower level staffs is that the City of Chelsea has many unskilled and semi-skilled workers who fit this category. I will discuss the household and employment characteristics of Chelsea in more detail in Chapter 2.

Low-income and immigrant communities face many barriers to employment besides lack of reliable transportation. They suffer from mismatch of language skills, lack of basic education, single parent family, lack of childcare, health, alcohol and drugs to name a few. This thesis will mainly focus on identifying and evaluating the impact of improved accessibility to existing and potential jobs at the airport, and other major employment centers in Boston on the low-income communities of Chelsea. In doing so, it assumes that for all different problems and issues, the problem of public transportation is common.

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4 Shen, Qing. “Location Characteristics of Inner-City Neighborhoods and Employment Accessibility of Low-wage Workers”. 1998
1.3  **Methodology and Approach**

To answer the research questions, the thesis reviewed the Census data related to employment. It applied Arcview, the Geographic Information System (GIS) software to understand better the spatial distribution and proportions of high skilled and low skilled workers. It examined the relationship between the demographics, the jobs and the transportation.

It looked at where most of the Chelsea residents worked and lived, how they traveled to work and how the public transportation was serving the employees. It studied in detail the automobile ownership in Chelsea and what the public transportation meant for them. It looked at the employment related to Logan Airport and other potential sources of employment along the Urban Ring Corridor. It looked at how the Urban Ring would connect Chelsea to major employment centers and how it compares to the existing modes of transportation.

It looked at the Chelsea part of the Urban Ring to understand how, and to what extent the Urban Ring impacts the access to jobs. Much of the analysis is based on the 1990 US Census Data and uses Geographic Information System (GIS) to do Spatial Analysis and the interviews conducted with city officials, MBTA officials, Massport officials, community organizations and individuals of Chelsea.

1.4  **Organization**

Chapter 1 introduces the two actions that will affect Chelsea significantly in the near and distant future. It explains the Urban Ring concept and the Massport Compact, and what they intend to achieve. Chapter 2 studies the socio-economic and employment characteristics of Chelsea and the state of public transportation in Chelsea. Chapter 2.1 looks at the household characteristics of Chelsea, the distribution of people of different income level within Chelsea and
the distribution of automobile ownership. It shows a high concentration of low-income people around the center of the city. It also shows that this is the area with low car ownership. Chapter 2.2 looks at the employment characteristics of Chelsea residents and the distribution of low-skilled and high-skilled labor in Chelsea. Chapter 2.3 looks at the history and the current state of public transportation in Chelsea. It looks at how the lack of reliable public transportation has affected Chelsea.

Chapter 3 analyses the Airport related jobs and businesses. It looks at what the potential employment opportunities at the airport for Chelsea Residents, and the actual number Chelsea residents working at the airport. It looks at how the connection between airport and Chelsea can still be improved.

Chapter 4 explores City of Chelsea’s public transportation connection with major employment centers besides Downtown Boston. It looks at the existing connections and the difference the Urban Ring would make. Chapter 5 summarizes the major finding of the thesis and proposes conclusions and recommendations based on the Major Findings.
2. The State of Chelsea
2. **State of Chelsea**

2.1 **Socio-economic Characteristics of Chelsea**

Chelsea, the Gateway City for immigrants, is a community constantly in flux. New immigrants come and the older generation of immigrants move away. Ethnicity and origin of immigrants coming to Chelsea keep changing with time. Immigrants are drawn to Chelsea because of its proximity to Boston and relatively low housing costs compared to other cities within the Boston Metropolitan area. They also come here because they have friends and relatives from their home countries. This historical trend continues today. Thus Chelsea has gone from being a predominantly Italian, Jewish and Irish community (European and East-European origin) in the late 19th century to a predominantly Latino community (Figure 2.1) from Central America today.

Today, Latinos comprise about 50% of Chelsea’s total population. Most are from Puerto Rico and Central America, but one can find people from as far as Bosnia, Somalia and South-east Asia. There are more than six languages spoken, including Spanish, Cambodian, Vietnamese, Italian, and French to name a few.

According to the 1990 US Census Chelsea’s population was 28,710 and is expected to grow. While Chelsea’s population declined steadily from 1940 to until 1990, the recent estimates show that it may have started increasing steadily from 1990 onward. It went from 41,259 in 1940 to 23,432 in 1985. Then it increased to 28,710 in 1990 and 29,726 in 1995 (See Population of Massachusetts and Town, 1940-1995, State Data Center, Massachusetts Institute for Social and Economic Research. (See appendix, Table 1.1)
appendix: Table 1.1). Twenty four percent of Chelsea residents live below the poverty level, the highest in Massachusetts

24%

Race & Hispanic Origin in 1990: Massachusetts and City of Chelsea
Source: 1990 Census of Population & Housing, Summary Tape File 1A

<table>
<thead>
<tr>
<th></th>
<th>Massachusetts</th>
<th>Chelsea city</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>100%</td>
<td>90%</td>
</tr>
<tr>
<td>Black</td>
<td>90%</td>
<td>80%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>80%</td>
<td>70%</td>
</tr>
<tr>
<td>Asian</td>
<td>70%</td>
<td>60%</td>
</tr>
<tr>
<td>Other</td>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>Total</td>
<td>50%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Community workers in Chelsea claim that the U.S. Census grossly undercounts the real population. They argue that the Census is prone to undercounting for a number of reasons. The immigrant community in Chelsea consists of large number of “illegal” immigrants who do not get counted under the census for two main reasons. One, because they are not eligible to vote. Two, because they do not come out and report themselves out of fear of prosecution. While it is

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beyond the scope of this thesis to put a number to the population of undercounted people, it is important to keep the “undercounting” factor in mind. For instance, the household size according to an official of Commission of Hispanic Affairs, is estimated at anywhere from four to eight people in a 2 - 3 bedroom apartment; this is contrary to the Census figure of 2.65 persons per household.

Figure 2.2 seeks to better understand the household characteristics through spatial analysis based on the 1990 US Census data. For instance, what does it is meant when the average household size is 2.65 persons per household, or the average automobile ownership is 0.9 per household? Do the average figures properly reflect the real characteristics of low-income communities of Chelsea? This map looks at the four household characteristics side by side. Comparing the population density, median household income and persons per household shows that the population is denser in the poorer part of the city, and the households are also larger in size. One can extrapolate from the map that households in the poorer area are double or more than the average household size. Furthermore, the fourth map in the Figure 2.2 shows that automobiles per household in the poorer areas are way below the average of 0.9 automobiles per household. Most of the low-income communities have between 0.40 to 0.7 cars per household. Figure 2.3 shows that an average of 37% of the occupied housing units had no cars in 1990.

Low automobile ownership presents a problem for accessing jobs. However, even the availability of automobiles does not necessarily translate into ease of access. In many places, including Logan Airport and Longwood Medical Area, parking is expensive and not readily available. Additionally, the traffic congestion on the roads is another deterrent for driving. Where public transportation is efficient, people prefer to take public transportation to work and use their
cars for traveling on weekends. The lack of efficient connection to places of work does not necessarily prevent people from getting to jobs but it does make the journeys difficult.

[Note: The proportions calculated here correspond to the maps and could be different from the ones calculated directly from the census table. While producing the maps, the block groups with population density lower than 8 persons/acre had to be eliminated because including these block groups, because of their large size and relatively small population produced misleading maps. Out of 34 block groups, 7 were eliminated. But checking the calculations with the data for overall Chelsea showed that 27 block groups used for the analysis are representative of the Whole. For instance, the average proportion of housing units with no cars is 37% for overall Chelsea and for the 27 blockgroups in the Figure 2.3.]
Figure 2.2 Household Characteristics

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Massachusetts Institute of Technology

Chelsea
Massachusetts

General Legend
- Towns
- Bus 111
- Bus 112
- Bus 116 & 117
- Commuter rail line
- Urban ring
- Street
- Water

Mean Values:
Population Density: 31.52 persons/acre
Median Household Income: US $24,451.00
Persons per Household: 2.75
Autos per Household: 0.93

Note:
Census blocks with population density less than or equal to 8 persons/acre were eliminated from the analysis.

Classification Type: Standard Deviation

Sources:
US Census 1990
MassGIS
Chelsea TIGER Files
Figure 2.3 Housing units with no cars
2.2 Labor Force and Employment Characteristics

According to data from the Department of Employment and Training, in 1998, the unemployment rate in Chelsea was 5.2%. Chelsea’s unemployment rate did decrease over the years with the rest of Massachusetts but it was still among the highest compared to the neighboring cities. For instance Everett’s unemployment rate was 3.1%, Revere – 3.3%, Boston - 3.0%, Brookline – 1.4%, Cambridge – 1.8%, and Somerville – 2.0% 12. Figure 2.4 (also see appendix, Table 1.2) compares the employment status of Chelsea Residents to that of Massachusetts. It shows that Chelsea fares poorly in comparison to Massachusetts.

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The size of the labor force in 1990 was 13,626 (62% of the people are 16 years and over) (Figure 2.4). From the total of 11,434 women 16 years and over, 6,092 (53.3%) were in the labor force. 3,368 (55.2% of women in labor force) were women with children and 718 (11.8%) were unemployed. The large number of women with children in the labor force raises an important question about the relationship between employment of women and public transportation. It suggests that improving public transportation, in addition to providing day-care-centers and other childcare facilities, is very important for the community.

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Chelsea also has a large proportion of low-skilled workers. Immigrants come with a variety of skills from high level to low level. But because their skills are incompatible with the existing labor market demand, they generally find low-skilled jobs and hence this increases the count of low-skilled workers in Chelsea. In 1990, 21% of Chelsea’s residents worked in administrative support staff positions, 16.6% did other services besides protective and household services, 7.8% worked as machine operators and assemblers, 4.2% worked for transportation and material moving and 5% worked as handlers and equipment cleaners14 (Figure 2.5). Figure 2.6 shows the distribution of high and low skilled labor force concentrated near the center of the city in a north-south hour glass shape.

2.6 Proportion of High and low-skilled workers
2.3 Public Transportation in Chelsea

The City of Chelsea has historically lacked a reliable public transportation system which connects the city to the rest of Boston Metropolitan Area. Ironically, though, Boston’s first mass transit started in 1631 with a private ferry service connecting Chelsea to Charlestown and to Boston. Thomas Williams owned and operated the ferry. Before this, with no bridges and only limited access to the mainland, transporting freight by ox cart from Chelsea to the mainland was a two-day journey\textsuperscript{15}.

Water had been a barrier between Chelsea and Boston. This began to change around 1830 with the improvement in transportation technology. Introduction of steam ferries transformed these waters into a selective aquatic thoroughfare. But it still remained difficult for ordinary people to reach the hub of the city.

The situation improved a little with the introduction of street railways over the old bridges to Charlestown and East Boston\textsuperscript{16}. Electrification of these lines thirty years later brought Chelsea still closer to Boston. With the improved transportation connection and abundant shoreline, Chelsea gradually turned into an industrial, marine construction storage and shipping town. But the ancient isolation of Chelsea did not entirely disappear. Edward Kopf wrote in 1974, “It remains more difficult today to reach Boston from Chelsea than from almost any surrounding town\textsuperscript{17}.” Edwards’s statement came full 24 years after the construction of the Tobin Bridge, which had improved the surface connection between Chelsea and Boston.

\textsuperscript{15} Sanborn, George M., “The Chronicle of Boston Transit System” http://www.mbta.com


\textsuperscript{17} Kopf, Edward J., “The Intimate City: A Study of Urban Social Order, Chelsea, Massachusetts, 1906-1915” (1974)
Even today, transportation difficulties are identified as one of the main reasons why Chelsea’s economy is behind other cities. Other cities have competitive advantage over Chelsea when it comes to getting to main employment centers in and around the Boston Metropolitan area. It still remains difficult to get to Chelsea from other parts of Boston and vice-versa. For instance, getting to Chelsea from MIT on public transportation during peak periods takes approximately 45 minutes to one hour. Additionally, one needs to change transportation modes (Red line to Green Line and then Bus 111 from Hay Market), go up and down the stairs, and get stuck in traffic jams. The same trip takes no more than 20 minutes by car.

Studies have found that for low-wage workers in the inner cities of the Boston Metropolitan Area, auto ownership is an important determinant for increasing accessibility to work. Low-wage workers living in the inner-city neighborhoods on average do not have high employment accessibility because a large percentage of them do not own automobiles and they are competing with those who do own cars and who have better public transportation access overall.

The City of Chelsea fits all the characteristics of an inner city, except for its poor connection to the Central City (Central City is a term used to describe Downtown Boston Area). While the typical inner-city residents have the advantage of being close to employment centers (irrespective of automobile ownership); residents of Chelsea are devoid of this advantage. For the 37% of the residents who do not own automobiles, their disadvantages double up because they also have poor public transit connection. Thus, the poor public transportation connection has serious implications for low-income residents of Chelsea, a significant proportion of whom rely on public transportation to get to their places of work.
The following chapter will look at what role the Urban Ring would play and what impacts would it have on the low-income communities in Chelsea.

3. *Logan Airport and Massport*
3. Impact of Logan Airport on Chelsea

3.1 Airport Related Jobs

The location of airport related businesses in Chelsea is expected to increase the city’s tax base and provide overall additional employment opportunities to the residents of Chelsea. The Mt. Auburn Economic Development Strategy Report identified Logan Airport as a major source of easily accessible jobs for Chelsea residents. Today, 16,000 people work on the airport grounds in a wide variety of occupations from entry-level to highly skilled.

The 1995 Logan Airport Employee Survey reported 294 people from Chelsea worked for the airport or related businesses. The major employers were Host International Food, Sky Chefs, Dobbs International Service and US Postal service. Only six people from Chelsea worked directly for the Massport out of 701 that worked there. East Boston and Revere had the highest number of people working at Logan airport and related businesses. The total of 294 employees in all airport related businesses out of a labor force of 13,000 (2.26%) is almost negligible for Chelsea.

3.2 Location of Airport Related Development in Chelsea

The Chelsea-Massport Compact seeks to explore the possibility of establishing large scale developments like hotels, motels, office buildings, parking garages, air-freight services, flight kitchens, rental car lots, etc. in areas with good vehicular access or proximity to the

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19 Mt. Auburn Associates, “The Chelsea Initiative: An Economic Development Strategy for the City of Chelsea” (1993). This study did not provide or quote any figures as to what the approximate number of Chelsea residents worked at the airport.

20 Massachusetts Port Authority, Logan Airport Employee Survey – Summary Results (1995)
Airport, the Port and the City’s waterfront. Much of the land to the east of Chelsea has been zoned Airport Related Overlay District\textsuperscript{21}.

Already airport related uses such as rental car, park and fly, freight-forwarding services are locating in this area. These uses are clearly not the most desirable uses as far as the communities are concerned. They are more land intensive and less labor intensive. For instance, a park-and-fly lot that occupies some 10–20 acres of land can easily run its business with as few as 10 - 20 people. The 1995 Logan Airport Employee Survey documented the number of employees in the car rental services as follows. Avis employed only 13, Thrifty - 29, Alamo - 42, Hertz - 126 and National - 269. Among them, Alamo, Budget and Hertz all employed four people each from Chelsea\textsuperscript{22}. Hence the parking and rental car businesses are among the least desirable of the alternative land uses. They are also undesirable from the aesthetic point of view.

But on the other hand, they generate high tax revenues at low investment costs. Most of the sites in the waterfront are contaminated. They require remediation measures and time to become habitable for housing or high people related use. But for uses such as parking lots or rental car lots, the contaminated parcels can be covered up with asphalt and used while the land underneath is remediating. According to Jay Ash, Director of Planning Department in Chelsea, the Massport Employee Garage generates half a million dollars in annual tax revenue for the City of Chelsea.

Many observers of Chelsea who see great potential in Chelsea’s waterfront argue that this is not the right approach to take. They argue that once the land is converted to parking lots, it will be difficult to acquire and convert into other uses in future. They argue that although this

\textsuperscript{21} The Chelsea-Massport Compact, August 1998.
\textsuperscript{22} Massachusetts Port Authority, Logan Airport Employee Survey – Summary Results (1995)
seems like a reasonable short-term plan, in the long run it will not benefit the city and hence the
city should not take the easy way out.

The Mt. Auburn Study also emphasized that the Massport’s Logan Airport
Modernization Program (LAMP) as a major source of employment for construction workers. The
report stated that LAMP would create thousands of construction jobs over a period of 10 to 15
years. The 1998 Logan Modernization Construction Worker Study documented 2,273 active
badge construction workers at Logan Airport23. Twenty-five were from Chelsea.

In a recent development, a National Hotel Chain recently announced that it plans to
construct a 180 Room Hotel in the Everett Avenue Urban Renewal District24. While these
businesses will continue to locate in Chelsea, it is hard to say what jobs they will bring and if
they will match the skills of Chelsea residents. In spite of the goal of the city and expectations of
the communities, this chapter showed that only a certain percentage of jobs created in Chelsea
match the needs and the skill of the residents. This chapter also showed that 37% of Chelsea
residents do not own cars, 24% of them live below poverty level, 69% of the workers work
outside Chelsea and 22% of the use public transportation. Thus, it is important to increase the
employment opportunities by increasing and improving access to different areas in and around
Boston. This is where the Urban Ring becomes an important mode of transportation for a
majority of low-income people.

23 Massachusetts Port Authority, Logan Modernization Construction Workers Survey – Summary Results, 1995.

4. Analysis: Chelsea and The Urban Ring
4. Impact of Urban Ring on Chelsea

What impacts will the building of the Urban Ring have on the low-income residents? The Urban Ring proposes to address one of the major complaints of people of Chelsea, that it is difficult for them to get to their jobs anywhere in the Boston Metropolitan area including the airport. The long commute times and numbers of transfers required are cited as major problems. Other complaints are the over-crowding during peak periods and the need to go to the Core of Boston even when the destination is somewhere in the periphery.

The Major Investment Study done by MBTA shows that there is enough trips originating and terminating in the areas proposed to be covered by the Urban Ring (See appendix, Table 1.8). In the community workshops that I attended in Cambridge and the Northeastern University, participants expressed strong support for the ring. The main concerns of the participants are the alignment of the Urban Ring, how it would affect them and how to maximize the benefit for their communities.

Among different segments of the ring, the part of the Urban Ring that links Chelsea and the airport is the one that can be realized in the nearest future (as soon as 2004 when the Central Artery Project is expected to complete) and before other parts because of its simplicity. The right-of-way (ROW) already exists. The proposed route traverses on the existing abandoned rail right-of-way previously owned by Consolidated Rail Corporation (Conrail), a private sector rail freight carrier based in Philadelphia. The Right of way is now MBTA property. There is no need to acquire or disturb private properties and displace the neighborhoods in Chelsea. Existing

---

25 Mr. Peter Calcaterra confirmed the MBTA ownership of the “abandoned” Conrail right-of-way in a presentation to the Chelsea Urban Ring Studio Class.
buildings and houses do not have to be demolished, as was the case with many highway projects of the past.

To understand how effective the Urban Ring will be for Chelsea, we need to understand where most of the Chelsea Residents work, how they commute to work and how they are distributed in Chelsea. The following sections explore these questions.

4.1 Where do Chelsea Residents Work?

Figure 3.1 shows that most residents of Chelsea work outside Chelsea. It shows that more people work outside place of residence than within. It also shows the distribution of people working in Central City and outside Central City are similar. This, combined with the Massport data showing only 294 Chelsea residents working at the airport suggests that a significant number of those who work outside their place of residence travel beyond the Central City to get to their jobs.

The Mt. Auburn Report for Economic Development Strategy (1993) for the City of Chelsea also stated that large proportions of Chelsea residents are semi-skilled or unskilled workers and that most of them work outside the city. Most of the employees in businesses located in Chelsea are not Chelsea residents. Only about 35% of the workers employed by the companies responding to the Mt. Auburn Survey were from Chelsea.

Figure 3.1 Where People Work

Proportion of workers who work in their place of residence

Proportion of workers who work outside place of their residence

Proportion of workers who work in Central City

Proportion of workers who work outside Central City

Urban Studies and Planning
Massachusetts Institute of Technology

General Legend
- Towns
- Bus 111
- Bus 112
- Bus 116 & 117
- Streets
- Commuter rail line
- Urban ring
- Water

Note:
Census blocks with population density less than or equal to 6 persons/acre were eliminated from the analysis.

Unit of Measure: Workers/Labor Force Classification Type: Quantile

Sources:
US Census 1990
MassGIS
Chelsea TIGER Files
Figure 3.2 Modes of Transportation to Work

Urban Studies and Planning
Massachusetts Institute of Technology

Chelsea
Massachusetts

General Legend
- Towns
- Bus 111
- Bus 112
- Bus 116 & 117
- Streets
- Commuter rail line
- Urban ring
- Water

Note:
Census blocks with population density less than or equal to 8 persons/acre were eliminated from the analysis.

Unit of Measure: Workers/Total Workers
Classification Type: Quartile
Sources:
US Census 1990
MassGIS
Chelsea TIGER Files
4.2 How do Chelsea Residents commute to work?

The data used to create the maps in Figure 3.2 shows that some 5300 workers drive to work. This is almost 50% of the total labor force and includes workers from low-income neighborhood. 2380 workers take public transportation which includes bus, light rail (Green Line) and subway (Red line). Very few take the commuter rail. About 1400 workers carpool to work. The rest, an estimated 3000 workers walk to work. While it is hard to draw any conclusion from this with respect to public transportation, it does show that a significant number do use public transportation.

4.3 How Does the Urban Ring Connect Chelsea to Major Employment Centers?

The Urban Ring passes through many large employment centers. These centers provide a total of 199,400 jobs. It connects areas like Logan Airport, Kendall Square, MIT, Massachusetts Avenue, Boston University, Longwood Medical Area, Ruggles, and Boston Medical Center as shown in 3.3. These are the areas with highest number of jobs along the Urban Ring Corridor.

Figure 3.3 also compares the population in these areas with the jobs available there. For instance, we can see that Logan Airport has 16,000 jobs and hardly any people. Similarly Longwood Medical Area has 30,450, the highest number of jobs and only half the population.

The CTPS Employment survey estimated that 30% of total employment in the study corridor are blue-collar jobs and 48% are white-collar jobs, and the rest are education and retail. There are at least 60,143 blue-collar jobs in the Urban Ring Corridor. Chelsea alone employed 5645 blue collar workers. Figure 3.4 shows the relationship between the Urban Ring and density of low-skilled jobs. It shows that the Urban Ring has the potential to connect Chelsea and other
areas to these employment centers besides Downtown Boston.

Urban Ring Corridor Subarea Population & Employment 1991
Source: CTPS, Urban Ring major Investment Study, Technical memorandum: Baseline Conditions, April 1997

In the next two sections, I will analyze Chelsea’s connection to Logan Airport and Longwood Medical Area (LMA). Logan Airport is the nearest and largest source of employment for Chelsea Residents and LMA is the furthest and largest source of employment within the Urban Ring Corridor. LMA is diametrically opposite to Chelsea and the Airport. By analyzing the two, the thesis can draw conclusions about the other employment centers that lie within these two employment centers along the Urban Ring Corridor.
Figure 3.4 Urban Ring and Low-skill Employment Density
4.4 Connection to Logan Airport

Logan Airport is the largest and the nearest source of employment for people of Chelsea with over 16,000 jobs from high skilled to entry-level. The connection between Logan Airport and Chelsea has improved significantly since 1995. Before 1995, it used to take about 30 minutes to just travel two miles to the airport in peak hours.

When Massport built the Employee Parking Garage at the intersection of Eastern Avenue and Central Avenue in Chelsea in 1995, it started a shuttle service to transfer employees parking at this garage to the airport terminals. There was an agreement to allow Chelsea residents and employees to use this shuttle whether they park in the garage or not. The shuttle takes employees to all the terminals at the Logan airport within ten minutes. This is a significant improvement from the half an hour spent on the alternative routes to get to the airport terminals. The Urban Ring as a public transportation can improve upon this by bringing the service closer to the center of the city, provide additional stops where the population is more dense and where most of the low skilled workers live.

However, both the existing Employee Shuttle Service and the proposed Urban Ring do not overcome the problem of the Chelsea Street Draw Bridge. One of the issues that the Urban Ring will have to address is the occasional but a significant problem caused by the opening of the Chelsea Street drawbridge. The opening of the bridge causes major delays at time. It creates problems for employees and others alike because most of the trips to Logan airport are directly related to the flight schedule of the planes. The delays range from 15 to 30 minutes depending on how long the Tankers take to pass through. Because this bridge is narrow, the tankers have to move slowly to avoid hitting the sides of the bridge. Tugboats are needed to guide the oil tankers through the narrow bridge. The Employee Shuttle cannot avoid this problem.
at present. As long as the oil tankers continue to come in to the Creek, this problem will persist independent of Urban Ring.

For this reason, alternatives need to be explored. In the long term, there are at least three possibilities. One is to construct another bridge between the Chelsea Street Bridge and the Broadway Bridge at the North end of the Creek. Use this bridge as an alternative to the Chelsea Street Bridge, time it properly so that one bridge is operating while the other is up and closed. Two, construct a Tunnel under the creek to connect East Boston and Chelsea. Three, wait for the Oil Storage Tanks to be decommissioned as the technology changes and storing facilities become obsolete, in which case, the oil tankers will not come into the creek and the bridge will not need to open.

4.5 Connection to Longwood Medical Area

Longwood Medical Area (LMA) is one of those areas with a large number of jobs and relatively low number of residents (Figure 3.3). It is a major source of employment for many low-skilled workers. It may or may not be the best source of employment for people of Chelsea because of its distance from Chelsea. But given the large labor force in Chelsea and the large number of jobs in LMA, it would be interesting see what the connection between Chelsea and LMA is and how does it compare to other sources of employment for Chelsea.

LMA had a total of 30,450 jobs in 1991 and is projected to go up to 35,435 in 2020\(^27\). Traveling to LMA requires at least one transfer. The normal route is to take Bus # 111 across the Tobin Bridge to Haymarket. This bus runs on a 7 minute headway during rush hours and a 15 minute headway during the rest of the day (Source: MBTA Bus Schedule @www.mbta.com).

\(^{27}\) Urban Ring Major Investment Study, Technical Memorandum: Baseline Conditions (April 1997)
From Hay Market, one gets on a Green Line (D-line) to Longwood Medical Area or an Orange Line to Ruggles Station. In addition, passengers also have to pay separate fares for bus and train.

During peak hours, the traffic congestion on the Tobin Bridge could prolong the journey from Downtown Chelsea to Haymarket, as the buses get stuck in traffic-jam. Once at Haymarket, the crowding on both the Green line and the Orange Line can cause delay and inconvenience. The Green Line Peak Period Loading Standard is 220% (Passengers/seat). 21% of the trips exceed the Peak hour Loading Standard and 43% exceed this standard at peak of the peak period. Peak period is defined as 6:00 to 8:45 a.m. in the morning and 4:00 to 6:15 p.m. in the evening on average weekdays²⁸.

Peak Period Loading Standard for Orange Line is 225% (Passengers/seat), 25% of the trips exceed this standard during the 30 minute peak of the peak period and an average of 14% of the trips exceed this standard during peak period²⁹.

At present, there are no credible alternatives to the above route to connect Chelsea better to LMA. For instance, among other existing routes to LMA Buses 116, 117 and 112 pass through Downtown Chelsea to Maverick Square in East Boston (See appendix 3 for bus routes). From here, one can take the Blue Line to State Station for Orange Line or Government Center for Green Line. This route requires one additional transfer compared to the Haymarket Route.

Even if the CT3 Bus service that currently runs from LMA to Logan Airport Terminals is extended to Chelsea, the total one way journey could be as long as one hour and ten minutes. While this may reduce the number of transfers required, the in-vehicle travel time actually increases. Thus, this service may not be attractive enough for residents of Chelsea or anyone traversing this route unless we find a way to also reduce the travel time. It may be

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²⁸ Urban Ring Major Investment Study, Technical Memorandum: Baseline Condition (April 1997)
necessary to run limited stop service buses in peak hours. Or it may be necessary to find a dedicated bus-way such that traffic intersections and congestion do not affect the route. Currently the CT3 bus operates on Mixed-traffic mode.

However, what makes the CT3 Bus Route important is that it traverses through some of the largest employment areas in Boston (Figure 3.5). Starting from Logan Airport, it traverses through World Trade Center/Seaport District, Andrew Station, Boston Medical Center, and Ruggles Station before arriving at Longwood Medical Area. This route according to 1991 CTPS Employment Survey provides a total of 79,593 jobs\(^3\)\(^0\). If this service were to extend to the City of Chelsea, additional 10,000 jobs will be served. In 1991, Chelsea City employed 9,441 people.

Additionally, while the CT3 route may not reduce the travel time, it will as a part of the Urban Ring, reduce congestion in the core areas of Boston and reduce the peak hour crowding standards. This will significantly improve the quality of overall public transit service and may eventually reduce travel time on the Haymarket-Green Line route that people use today.

It is important to understand that not everyone will go from end-to-end on the Urban Ring. With better connections, people living in different areas may change their jobs to a place with better connection. There is likely to be reshuffling of jobs as people shift around with the introduction of Urban Ring. Therefore, extending CT3 Bus to Chelsea may be a worthwhile experiment.

In this chapter, we saw that 69% of the Chelsea’s labor force work outside Chelsea, 80% are low skilled and 22% of them use public transportation. We also saw from the previous chapters that unemployment rate in Chelsea is high.

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\(^{29}\) Urban Ring Major Investment Study, Technical Memorandum: Baseline Condition (April 1997)
Figure 3.5 Bus Route CT3 passes through high employment centers

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Urban Ring Major Investment Study, Technical Memorandum: Baseline Condition (April 1997)
5. Findings, Conclusion and Recommendations
5. **Major Findings, Conclusion and Recommendations**

5.1 **Major Findings**

1. The Urban Ring has a good catchment area for potential riders because it passes through the area with a high concentration of low-income communities as shown in the maps. This route is identical to the current Commuter Rail Route for the most part of Chelsea. Commuter rail does not serve low-income residents of Chelsea well because the service is not frequent enough and fare is expensive. Placing the Urban Ring in the same route with more frequent service and lower fares could serve the low-income communities well.

2. A significant proportion (69%) of Chelsea Labor Force travel outside the city to work. Although Logan Airport is a major source of employment with 16,000 jobs, airport and related businesses employed only 294 Chelsea residents in 1995. The Logan Modernization Construction employed only 25 Chelsea Residents out of the 2,273 construction workers it employed. This amounts to only a small proportion of Chelsea’s labor force of more than 13,000. This is contrary to the assumption that the thesis started with. It also contradicts the Mount Auburn report that significant number of Chelsea residents worked at the airport or related businesses.

3. An average of 37% percent of Chelsea residents do not own cars. The high concentration of population who do not own cars is in low-income communities near the Urban Ring Line. Most of the households that own at least one car are concentrated in high-income communities.
4 The combination of low car ownership and location of jobs outside Chelsea are the key reasons why increased public transportation access is critical to improve employment opportunities for Chelsea’s low-income residents.

5.2 Conclusions

Given the low level of income of people of Chelsea and low car ownership, there is no doubt that the residents of Chelsea will benefit from the improved public transportation. Urban Ring is urgently needed to fulfill this need. This research shows the large size of the low-skilled labor force and relatively high unemployment rate in Chelsea. It also shows that by no means will any single institution or a city [be able to] employ all of the labor force from adjacent neighborhoods or cities. From this, we can conclude that a significant proportion of Chelsea residents will continue to travel outside Chelsea and beyond central city to get to their jobs independent of airport related business or Urban Ring locating in Chelsea. The airport related businesses will provide some additional employment but it is difficult to determine the scale of these additional jobs with respect to Chelsea residents. If the 1995 Massport statistics is any indicator of the employment trend, we can be sure that Chelsea residents face stiff competition even though the airport is a major source of employment. Besides, many other factors such as preference of workers, spatial and skill mismatch, housing value and rent, presence of children in home, and linguistic isolations affect where people work. However, one factor that will always be common to all other factors and all concerned is the state of public transportation. Thus, for the low-income immigrant residents of Chelsea, improved access to jobs in as many areas as possible is as urgent as it is important. The Urban Ring could fulfill this need.
For the types of airport related businesses locating in Chelsea, Urban Ring is not a determining factor. These businesses for the most part depend on truck-traffic, heavy and light load carriers, and independent automobiles as shown by the following figure. Most people working at the airport drive to work. Urban ring may help bring down the number of employees driving to airport, but this would not be significant. According to the Massport Officials\(^{31}\), the airport related businesses would be impacted more by the replacement and repair of the Chelsea Street Bridge or the construction of a new bridge in a different place in Chelsea Creek.

### 5.3 Recommendations

1. **Explore the possibility of extending the Massport Shuttle service to Downtown Chelsea.**

   The Urban Ring will begin construction only after 2004 or later. Until then, the city should explore the possibility of extending the Massport Employee Shuttle terminates at the Employee Parking Garage. The employee parking garage is about a mile away from Bellingham Square, which means a twenty minute walk for the people living closer to Broadway where a large number of low-income residential units are located. By extending this service to Broadway, and creating one intermediate stop in between Bellingham Square and the Parking Garage, most residents will only be a quarter of mile from any of the stops and the walking time will be reduced to five minutes.

   In an interview with John Depriest, in-charge of Traffic Management and Planning in the City planning Department of Chelsea, he mentioned that the residents of Eastern Avenue would be opposed to this idea. He said that when Massport built the Employee Parking Garage, it had to sign the agreement with the neighborhood to not to extend the shuttle service beyond the

\(^{31}\) An interview with Mr. Ken Schwartz during the Massport Presentation for Chelsea Studio on March 31, 1999.
garage. Their main concern is noise and air pollution. An alternative may be to explore the possibility of providing electric or natural gas buses for this extension which are quiet and pollution free. Such an alternative may be more amenable to residents.

2 **Extend the CT3 bus to Downtown Chelsea and experiment with limited stop services at the earliest possible.**

As mentioned earlier, the Urban Ring will take time to materialize. The challenge for the city is to find ways to improve its accessibility in such a way as to be able to take advantage of Urban Ring when it is finally built. The CT3 Bus is a new MBTA initiative that connects Longwood Medical Area to the airport. They city and the MBTA should explore the possibility of extending this service to Chelsea. This is a worthwhile experiment. While this may not be the ideal solution as a connection to Longwood Medical Area, its connection to other areas of employment may benefit the low-income residents of Chelsea. This service may be more attractive if it operates on a dedicated bus-way and adopts limited stops at the major employment centers.

3 **The City of Chelsea should have more outreach programs for the community**

The low-income and immigrant communities are not very forthcoming as reported by the Commission of Hispanic Affairs. Their illegal status keeps them from raising their voices and expressing their needs. Thus City of Chelsea should work closely with community worker groups and individuals to bridge the communication gap. The programs should focus on different issues. For instance, it should look at why only 294 people are employed at airport related businesses when there is potential for many more. Why are people not taking advantage of the one of the
nearest and the largest sources of employment? Is it lack of knowledge? If so, then the city and
the Massport should publicize the employment opportunities well and focus on how to get
employees to different employment centers.

4 Work with Massport to design Linkage Programs to employ residents of Chelsea

Given the low level of employment at the Logan Modernization Plan, the city should
take the initiative to negotiate with Massport to design linkage programs by which a certain
proportion of new construction jobs are designated for Chelsea residents. Prudential Center and
many other large development projects are examples where linkage programs were applied
successfully. This will increase the opportunity for Chelsea residents. Such a program should be
well publicized among residents.

5 Prioritize linking Chelsea to major employment centers

The City of Chelsea should study the scope of employment for Chelsea residents in
major employment centers as identified by the Urban Ring Major Investment Study, such as
Logan Airport, Kendall Square, MIT/Massachusetts Avenue, BU Medical Area, and Longwood
Medical Area. With a clear understanding of whether these areas will be able to employ residents
of Chelsea or not, prioritize transportation programs to link Chelsea to these areas.
Bibliography:

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The Urban Ring Compact, (October 1995).


Lai, T., “Immigrants are drawn by Chelsea’s hospitality” The Boston Globe (July 25, 1987)

MacQuarrie B., “Chelsea still struggling with specter of its past” The Boston Globe (November 15, 1998)


Urban Ring Major Investment Study, Technical Memorandum: Baseline Condition (April 1997)


ICF Kaiser, Urban Ring: Major Investment Study for Massachusetts Bay Transportation Authority. (1997-98)


Massachusetts Division of Employment and Training, http://www.detma.org

U.S. Department of Transportation http://www.dot.gov

Massachusetts Bay Transportation Authority, http://www.mbta.com
### Table 1.1 Population Trend

Population of Massachusetts Cities and Towns, 1940-1995

<table>
<thead>
<tr>
<th></th>
<th></th>
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<td>U.S. Decennial Census (as of April 1, 19xx)</td>
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<td>Massachusetts</td>
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<td>791,329</td>
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<td>663,906</td>
<td>655,950</td>
<td>682,180</td>
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<td>Boston</td>
<td>770,816</td>
<td>801,444</td>
<td>697,197</td>
<td>641,071</td>
<td>562,994</td>
<td>574,283</td>
<td>564,330</td>
<td>601,095</td>
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<td>Chelsea</td>
<td>41,259</td>
<td>38,912</td>
<td>33,749</td>
<td>30,625</td>
<td>25,431</td>
<td>28,710</td>
<td>29,726</td>
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<td>Revere</td>
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<td>36,763</td>
<td>40,080</td>
<td>43,159</td>
<td>42,423</td>
<td>42,786</td>
<td>43,698</td>
<td>39,512</td>
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<td>Winthrop</td>
<td>16,768</td>
<td>19,496</td>
<td>20,303</td>
<td>20,335</td>
<td>19,294</td>
<td>18,127</td>
<td>18,196</td>
<td>18,141</td>
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</table>

\(^1\)1995 Population Estimates, prepared by Miser, September 1998

\(^2\)Massachusetts State Census, 1985

Prepared by State Data Center/Mass. Inst. for Social & Economic Research

### Table 1.2 Employment 1990

Suffolk County Cities and Massachusetts

1990 Census of Employment, Summary Tape File 3

<table>
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<th></th>
<th>Persons 16 Years and over</th>
<th>Females 16 Years and Over</th>
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<tr>
<td></td>
<td>In Labor Force</td>
<td>Unemployed</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>% of LF</td>
</tr>
<tr>
<td>MA</td>
<td>3,261,863</td>
<td>67.8%</td>
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<td>Suffolk County</td>
<td>362,510</td>
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<td>Boston City</td>
<td>316,162</td>
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<td>Chelsea City</td>
<td>13,626</td>
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<tr>
<td>Revere City</td>
<td>22,165</td>
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<tr>
<td>Winthrop Town</td>
<td>10,557</td>
<td>68.1%</td>
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</table>

\(\%\) of LF = \% of Total
### Table 1.3  Population in Urban Ring Corridor Sub-area

<table>
<thead>
<tr>
<th>Corridor sub-area</th>
<th>1990</th>
<th>2020</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logan airport</td>
<td>134</td>
<td>134</td>
<td>0.0%</td>
</tr>
<tr>
<td>East Boston</td>
<td>24,508</td>
<td>24,945</td>
<td>1.8%</td>
</tr>
<tr>
<td>Chelsea</td>
<td>27,555</td>
<td>27,573</td>
<td>0.1%</td>
</tr>
<tr>
<td>Everett/Mystic River</td>
<td>20,232</td>
<td>20,309</td>
<td>0.4%</td>
</tr>
<tr>
<td>Assembly Square</td>
<td>1,098</td>
<td>1,031</td>
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<tr>
<td>Sullivan Square</td>
<td>10,005</td>
<td>9,886</td>
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</tr>
<tr>
<td>Inner Belt/Cobble Hill/Brickbottom</td>
<td>642</td>
<td>602</td>
<td>-6.2%</td>
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<tr>
<td>Union Square/Boynont yards</td>
<td>3,529</td>
<td>4,013</td>
<td>13.7%</td>
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<td>Community College</td>
<td>2,114</td>
<td>2,155</td>
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<tr>
<td>Lechmere/North Point</td>
<td>3,843</td>
<td>5,053</td>
<td>31.5%</td>
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<td>Kendall Square</td>
<td>7,636</td>
<td>9,664</td>
<td>26.6%</td>
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<tr>
<td>MIT/Massachusetts Avenue</td>
<td>12,488</td>
<td>14,639</td>
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<td>Cambridgeport</td>
<td>6,290</td>
<td>9,504</td>
<td>51.1%</td>
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<tr>
<td>Boston University</td>
<td>13,227</td>
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<tr>
<td>Kenmore Square</td>
<td>10,688</td>
<td>10,815</td>
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<tr>
<td>Longwood Medical area</td>
<td>14,835</td>
<td>15,231</td>
<td>2.7%</td>
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<td>Crosstown/Ruggles</td>
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<td>New Market/South Bay</td>
<td>5,022</td>
<td>6,088</td>
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<td>Boston Medical Center</td>
<td>15,324</td>
<td>16,646</td>
<td>8.6%</td>
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<tr>
<td>Columbia Point/Morrissey Blvd.</td>
<td>16,606</td>
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<td><strong>Corridor Total</strong></td>
<td>236,078</td>
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<td><strong>Regional Total</strong></td>
<td>4,056,945</td>
<td>4,294,990</td>
<td>5.9%</td>
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(Source: Urban Ring Major Investment Study, MBTA)

### Table 1.4  Employment in Urban Ring Corridor Sub-area

<table>
<thead>
<tr>
<th>Corridor sub-area</th>
<th>1990</th>
<th>2020</th>
<th>Change</th>
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<tbody>
<tr>
<td>Logan airport</td>
<td>15,290</td>
<td>16,962</td>
<td>10.9%</td>
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<tr>
<td>East Boston</td>
<td>6,526</td>
<td>6,770</td>
<td>3.7%</td>
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<td>9,441</td>
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<td>2,625</td>
<td>4,400</td>
<td>67.6%</td>
</tr>
<tr>
<td>Sullivan Square</td>
<td>7,259</td>
<td>10,018</td>
<td>38.0%</td>
</tr>
<tr>
<td>Inner Belt/Cobble Hill/Brickbottom</td>
<td>3,437</td>
<td>4,377</td>
<td>27.3%</td>
</tr>
<tr>
<td>Union Square/Boynont yards</td>
<td>1,777</td>
<td>2,132</td>
<td>20.0%</td>
</tr>
<tr>
<td>Community College</td>
<td>1,333</td>
<td>1,333</td>
<td>0.0%</td>
</tr>
<tr>
<td>Lechmere/North Point</td>
<td>7,953</td>
<td>9,737</td>
<td>22.4%</td>
</tr>
<tr>
<td>Kendall Square</td>
<td>22,970</td>
<td>27,299</td>
<td>18.8%</td>
</tr>
<tr>
<td>MIT/Massachusetts Avenue</td>
<td>16,083</td>
<td>19,180</td>
<td>19.3%</td>
</tr>
<tr>
<td>Cambridgeport</td>
<td>2,946</td>
<td>3,129</td>
<td>6.2%</td>
</tr>
<tr>
<td>Boston University</td>
<td>12,321</td>
<td>17,237</td>
<td>39.9%</td>
</tr>
<tr>
<td>Kenmore Square</td>
<td>5,314</td>
<td>5,757</td>
<td>8.3%</td>
</tr>
<tr>
<td>Longwood Medical area</td>
<td>30,450</td>
<td>35,435</td>
<td>16.4%</td>
</tr>
<tr>
<td>Crosstown/Ruggles</td>
<td>11,825</td>
<td>15,424</td>
<td>30.4%</td>
</tr>
<tr>
<td>New Market/South Bay</td>
<td>9,707</td>
<td>12,377</td>
<td>27.5%</td>
</tr>
<tr>
<td>Boston Medical Center</td>
<td>10,995</td>
<td>12,239</td>
<td>11.3%</td>
</tr>
<tr>
<td>Columbia Point/Morrissey Blvd.</td>
<td>11,170</td>
<td>11,896</td>
<td>6.5%</td>
</tr>
<tr>
<td><strong>Corridor Total</strong></td>
<td>199,400</td>
<td>241,048</td>
<td>20.9%</td>
</tr>
<tr>
<td><strong>Regional Total</strong></td>
<td>2,161,757</td>
<td>2,489,757</td>
<td>15.2%</td>
</tr>
</tbody>
</table>

(Source: Urban Ring Major Investment Study, MBTA)
### Table 1.5  Household Income and Auto, 1990

<table>
<thead>
<tr>
<th>Urban Ring Study Corridor sub-area, 1990</th>
<th>Average Household Income (Dollars)</th>
<th>Average Household Auto Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logan airport</td>
<td>36,833</td>
<td>0.8</td>
</tr>
<tr>
<td>East Boston</td>
<td>27,627</td>
<td>0.77</td>
</tr>
<tr>
<td>Chelsea</td>
<td>28,338</td>
<td>0.90</td>
</tr>
<tr>
<td>Everett/Mystic River</td>
<td>33,593</td>
<td>1.18</td>
</tr>
<tr>
<td>Assembly Square</td>
<td>35,099</td>
<td>1.06</td>
</tr>
<tr>
<td>Sullivan Square</td>
<td>34,046</td>
<td>0.99</td>
</tr>
<tr>
<td>Inner Belt/Cobble Hill/Brickbottom</td>
<td>24,341</td>
<td>0.57</td>
</tr>
<tr>
<td>Union Square/Boynton yards</td>
<td>31,331</td>
<td>0.87</td>
</tr>
<tr>
<td>Community College</td>
<td>36,812</td>
<td>0.85</td>
</tr>
<tr>
<td>Lechmere/North Point</td>
<td>26,069</td>
<td>0.89</td>
</tr>
<tr>
<td>Kendall Square</td>
<td>29,990</td>
<td>0.91</td>
</tr>
<tr>
<td>MIT/Massachusetts Avenue</td>
<td>25,650</td>
<td>0.84</td>
</tr>
<tr>
<td>Cambridgeport</td>
<td>34,945</td>
<td>0.95</td>
</tr>
<tr>
<td>Boston University</td>
<td>21,657</td>
<td>0.85</td>
</tr>
<tr>
<td>Kenmore Square</td>
<td>21,966</td>
<td>0.51</td>
</tr>
<tr>
<td>Longwood Medical area</td>
<td>23,713</td>
<td>0.55</td>
</tr>
<tr>
<td>Crosstown/Ruggles</td>
<td>26,117</td>
<td>0.55</td>
</tr>
<tr>
<td>New Market/South Bay</td>
<td>20,935</td>
<td>0.48</td>
</tr>
<tr>
<td>Boston Medical Center</td>
<td>26,916</td>
<td>0.76</td>
</tr>
<tr>
<td>Columbia Point/Morrissey Blvd.</td>
<td>27,580</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Corridor Total</strong></td>
<td><strong>28,678</strong></td>
<td><strong>0.80</strong></td>
</tr>
<tr>
<td><strong>Regional Total</strong></td>
<td><strong>46,583</strong></td>
<td><strong>1.37</strong></td>
</tr>
</tbody>
</table>

(Source: Urban Ring Major Investment Study, MBTA)

### Table 1.6  Employment 1998

<table>
<thead>
<tr>
<th>City</th>
<th>Labor Force</th>
<th>Employed</th>
<th>Unemployed</th>
<th>Unemp. Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston</td>
<td>299129</td>
<td>290086</td>
<td>9043</td>
<td>3%</td>
</tr>
<tr>
<td>Brookline Town</td>
<td>32189</td>
<td>31730</td>
<td>459</td>
<td>1.40%</td>
</tr>
<tr>
<td>Cambridge City</td>
<td>55659</td>
<td>54680</td>
<td>979</td>
<td>1.80%</td>
</tr>
<tr>
<td>Chelsea City</td>
<td>12507</td>
<td>11906</td>
<td>601</td>
<td>4.80%</td>
</tr>
<tr>
<td>Everett City</td>
<td>18061</td>
<td>18030</td>
<td>571</td>
<td>3.10%</td>
</tr>
<tr>
<td>Somerville City</td>
<td>44920</td>
<td>44036</td>
<td>884</td>
<td>2.00%</td>
</tr>
</tbody>
</table>

Source: Massachusetts Division of Employment and Training, (http://www.detma.org/lmi/laus/laus1998.txt)
Table 1.7  Data from the Maps

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of workers working in place of residence</td>
<td>31%</td>
</tr>
<tr>
<td>Proportion of workers working outside place of residence</td>
<td>69%</td>
</tr>
<tr>
<td>Proportion of workers working in Central City</td>
<td>42%</td>
</tr>
<tr>
<td>Proportion of workers working outside Central City</td>
<td>54%</td>
</tr>
<tr>
<td>Proportion of low-skilled workers (Out of total labor force)</td>
<td>80%</td>
</tr>
<tr>
<td>Proportion of high-skilled workers (Out of total labor force)</td>
<td>20%</td>
</tr>
<tr>
<td>Proportion of workers who drive alone to work</td>
<td>49%</td>
</tr>
<tr>
<td>Proportion of employed workers who walk to work</td>
<td>9%</td>
</tr>
<tr>
<td>Proportion of employed workers who take public transport to work</td>
<td>22%</td>
</tr>
<tr>
<td>Proportion of employed workers who take commuter rail to work</td>
<td>0.84%</td>
</tr>
<tr>
<td>Occupied Housing Units with No Cars</td>
<td>37%</td>
</tr>
<tr>
<td>Average population density (Persons/acre)</td>
<td>38</td>
</tr>
<tr>
<td>Population Living Below Poverty Level</td>
<td>6,715</td>
</tr>
<tr>
<td>Percent of Population Below Poverty Level</td>
<td>23%</td>
</tr>
</tbody>
</table>

Table 1.8  Trips Generated in TAZ O

<table>
<thead>
<tr>
<th>Traffic Zone Group</th>
<th>Total Daily Person Trips</th>
<th>Intra-Zonal Trips</th>
<th>Study Corridor Trips</th>
<th>Inner Core Trips</th>
<th>Nearest Radial Corridor Trips</th>
<th>Balance of Region Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>O (1990)</td>
<td>97,500</td>
<td>11,700</td>
<td>8,500</td>
<td>18,100</td>
<td>22,600</td>
<td>36,600</td>
</tr>
<tr>
<td>O (2020)</td>
<td>117,700</td>
<td>14,900</td>
<td>10,300</td>
<td>23,200</td>
<td>24,300</td>
<td>45,000</td>
</tr>
</tbody>
</table>

(Source: Urban Ring Major Investment Study, MBTA)

2  Trip Generation Analysis

Chelsea falls under traffic zone grouping O. A total of 97,500 daily person trips are made to and from this grouping, broken down as follows.

- Intra-zonal – 12 percent
- Among the Urban Ring Traffic Zoning Groupings – 9 percent
- To/From Boston Inner Core – 19 percent
- To and from North Shore Corridor (Nearest Radial Corridor) – 23 percent
- To/from Balance of region – 37 percent

The North Corridor accounts for the highest share of trips between this grouping and the balance of the region, at 22 percent, followed by the Northwest Corridor at almost 9 percent. The potential market for corridor transportation improvements is estimated at 45,100 trips, or 46 percent of daily person trips made to and from traffic Zoning group O. By 2020, total trips made to and from Chelsea are expected to increase to 117,700 per day. Not much change in travel pattern is forecasted.
3 Alternative Routes to Logan Airport

To get to the airport, available MBTA buses are 112, 116, and 117 to Maverick Square: 10 minutes (Could take longer in busy traffic or bad weather conditions, especially snow)
Wait at Maverick Square for Blue line; 0 - 8 minutes
Maverick Square to Airport Station: 2 minutes (not longer)
Wait at the airport station: 0 - 5 minutes
To the terminals: 4 - 7 minutes
Minimum travel time to airport 16 minutes
Maximum travel time to airport 32 minutes

Figure 4 Route Maps of Buses that Serve Chelsea