Key Worker Housing: A Demand Analysis of Middle-Income Workforce Housing in Eastern Massachusetts

by

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Submitted to the Department of Urban Studies and Planning in
Partial Fulfillment of the Requirements for the Degrees of

MASTER OF SCIENCE IN REAL ESTATE DEVELOPMENT

and

MASTER IN CITY PLANNING

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

September 2005

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Abstract

The Boston Metropolitan Area is one of the most expensive places to live in the United States. In recent years studies have speculated that middle-income workers have had to endure increased commute times as they have moved farther away from their jobs in order to live in adequate housing that is affordable. These long commutes may signal shortage and demand for more housing that the area's workforce can afford in the Boston metro area.

This thesis intends to substantiate or debunk some of the above claims using Eastern Massachusetts' teacher, nurse, firefighter, and policeman "key workers" as a proxy for middle-income workforce households, and to better understand where demand may be greatest for middle-income housing. Key workers provide essential education, heath, and community safety services fundamental to the long-term vitality of our cities and towns. Key workers would therefore likely be at the forefront of any new middle-income housing policy either at the town or state level.

The analysis integrates both 2000 Census micro-level individual and micro-level household data by job location to provide a more accurate picture of affordability and demand on the household level for 165 communities in Eastern Massachusetts. Incorporating a spatial multi-dimensional approach beyond simplistic median incomes and median house price comparisons, this thesis layers additional pieces of critical individual and household data such as number of jobs by location, homeownership and rental rates, marriage rates, commute times, and housing types. Once mapped by 35 discrete areas to show distinctive area differences, this rigorous multi-dimensional analysis offers a more realistic and more accurate state of localized key worker housing demographics and demand.

Particular attention is paid to 30-44 key worker rental households who are the most likely candidates for first time home purchases and Boston's estimated 8,720 key workers who both work and live in Boston. The City of Boston is an important focal point due to its 24% share of all full-time key worker jobs and residency requirements for many city employees.

It is the recommendation of this thesis that the cities and towns whose key workers travel the longest commute times should investigate their current housing options vis-à-vis key worker household incomes and consider key worker housing programs and supply incentives in order to preserve quality cost effective key public services. Boston should also strongly weigh a key worker housing program if it hopes to strengthen its residency requirement and retain community stabilizing key worker and middle-income workforce households.

Thesis Supervisor: Henry O. Pollakowski
Title: Research Associate, MIT Center for Real Estate

Acknowledgements

Recognition and praise to all the teachers, nurses, firefighters, and police officers across Eastern Massachusetts who humbly educate our children, heal us when we are sick, and keep us safe from fires and harm.

First, I would like to thank Lisa Davis at New Boston Fund for originating the idea of a thesis on middle-income and key worker households in Eastern Massachusetts.

Other industry professionals that I would like to thank are Kirk Sykes of New Boston Fund and Rolf Goetze at the Boston Redevelopment Authority.

Enormous gratitude and praises to my advisors Henry Pollakowski and Professor Lynn Fisher for their invaluable guidance, encouragement, and high standards.

Many thanks to my talented and brilliant thesis “sister” Margaret Fitzgerald Wagner.

Andrew Jakabovics for sharing his Stata and ArcGIS knowledge.

Special shout out to team 10-485 for making the thesis writing experience as fun as humanly possible.

I would like to single out Professor Dennis Frenchman for his valuable lessons both inside and outside the classroom and also thank all of the incredible professors at MIT that I have learned so much from over the past two years.

My parents for their many years of encouragement, love, and support.

This thesis is dedicated to my own key worker, my sister Lauren, who has recently embarked on a lifelong career in nursing.

Lastly, I want to thank my wife Marcy for all her patience, understanding, and unconditional love over the past two years at MIT. You are my best friend, my partner, and my muse.

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Introduction

As housing costs have soared nationwide, many policy makers have grown increasingly aware of working families' housing needs. Currently, having a full-time job does not guarantee decent and affordable housing. Many studies have been completed in the last five years showing working families moving farther from their jobs which in turn causes long commutes, less time at home and increased traffic congestion. More specifically, studies have speculated that across the nation an increasing number of key community workers like teachers, nurses, police officers and firefighters, cannot afford to live in the communities they serve.

At the same time, the Boston Metropolitan Area is one of the most expensive places to live in the United States. Therefore, given the recent housing market conditions, housing advocates in Massachusetts have speculated that workers have had to endure increased commute times as they have moved farther away from their jobs in order to live in adequate housing that is affordable. These long commutes may signal shortage and demand for more housing that the area's workforce can afford in the Boston metro area.

This thesis intends to substantiate or debunk some of the above claims as they relate to Eastern Massachusetts' teacher, nurse, firefighter, and policeman "key workers", and to better understand where demand may be greatest for key worker housing based such factors as job location, household incomes, age, and commute times. Job location is one of the key factors in determining housing demand in any metropolitan area but few if any affordability studies in Massachusetts have incorporated micro-level job data by location. Nor have any studies utilized micro-level job data to map area differences of the abovementioned demand factors across Eastern Massachusetts.

The utilization of micro-level location specific individual and household data in this thesis should provide a more accurate picture of housing affordability and housing demand in 165 communities across Eastern Massachusetts. Particular attention is paid to 30-44 year old key

worker renter households with the knowledge that this demographic is very likely to consider a first home purchase in the near term. This work also spotlights key workers who work in the City of Boston, as Boston comprises approximately 24% of all key worker jobs in the region. People who work and live in Boston key worker households are further investigated by place of residence to provide insights into this important segment, especially in light of Boston's residency requirements for many of Boston workers. In all cases, statistics for these key worker segments by job location are not only calculated but mapped to show important area differences.

Margaret Fitzgerald Wagner's sister thesis entitled *Key Worker Housing: A Demographic Analysis of Working Families in Eastern Massachusetts*, undertakes a rigorous demographic profiling of a sample of key worker households in the 165 communities. It found for example, as a group, that 73% of all key worker households own homes as compared to 69% of all households with at least one full time worker in Massachusetts As of 2000, all key workers tended to commute on average 20 minutes versus 30 minutes for all workers in Eastern Massachusetts as a whole. As a whole, Ms. Fitzgerald Wagner's thesis found that although key worker households may work more hours they are typically equal or better off than a middle-income median household with at least one full-time worker in Eastern Massachusetts in most respects (homeownership, incomes, etc.).

This thesis builds upon the Fitzgerald Wagner thesis by analyzing and mapping location differences in critical individual and household data such as number of jobs, homeownership and rental rates, marriage rates, and commute times. The thorough multi-dimensional analysis offers a more realistic and more accurate state of localized key worker housing demographics and housing demand in 2000 and forward to today's 2005 red-hot housing market

Exactly where are key worker jobs located? Where do key workers households home own versus rent? In the 30-44 age bracket, how far are key workers commuting to and from their job locations? For the City of Boston, how many key workers are able to both work and

live in the City and where in the City do they tend to live? The location specific demand analysis in this thesis with its accompanying maps uncover some striking area differences in demand for key worker housing across Eastern Massachusetts that were previously indiscernible in more generic blanket studies of affordability in the state. As key workers in many areas fall within the 80-120% area median income grouping, key worker provide a good proxy for the state of middle-income workforce housing in Eastern Massachusetts and in the City of Boston.

This thesis intends to answer these important and timely questions above. As a way to create a backdrop for our analysis, Chapter 1 discusses the housing needs for working families across the United States. Chapter 2 details the recent housing market trends in the Boston Metropolitan Area, followed by a discussion on the housing needs for working families specifically in Massachusetts in Chapter 3. Chapter 3 also includes a brief discussion on how this thesis is distinctive from other studies in its analysis of "key workers" in Eastern Massachusetts. Next Chapter 4 reviews recent government programs targeting workforce housing both in the United States and abroad. In Chapter 5 we define what we call a "key worker," followed a clear explanation of the data used and our methodology for analysis in Chapter 6. Finally, in Chapter 7 we present our key findings and analysis before our conclusions in Chapter 8.

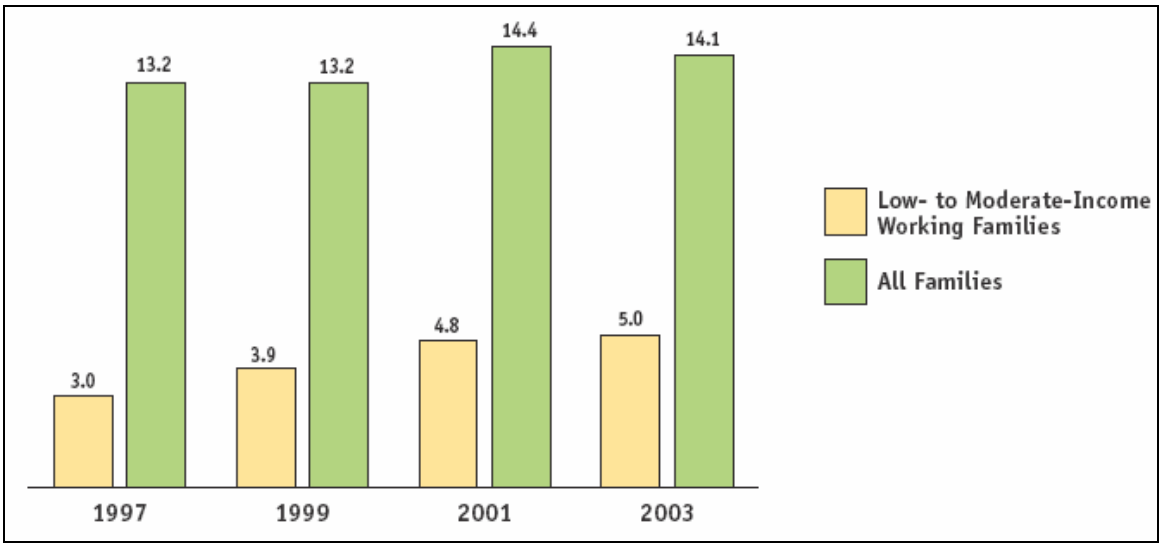
Chapter 1: Housing Needs for Working Families in the United States

In recent years across the nation, the housing market has been strong with record setting house prices, home sales, and rates of homeownership. Low interest rates and mortgage lenders' willingness to accommodate borrowers' needs with numerous mortgage products, low down payments and high loan-to-values have contributed to appreciating house prices and an increasing number of homeowners. In the majority of the country, average household income has also increased to remain on par with median house prices. Therefore, although house prices have appreciated rapidly across the nation, housing is still relatively affordable and within reach for the majority of the population. Of concern are the metropolitan areas in which the median house prices have exceeded the average household income making it especially difficult for first time homebuyers to enter the homeownership market despite favorable interest rates.[1] As home prices have soared, many speculate that working families increasingly are having difficulties finding decent and affordable housing.

In 2000, the Center for Housing Policy published one of the first studies on workforce housing entitled *Housing America's Working Families*, focusing primarily on those low- to moderate-income working families[2] with "critical housing needs."[3] In 2005, the Center updated the study and published *The Housing Landscape for America's Working Families 2005.* The updated study found that of the almost 43 million low- to moderate-income working families in the country, 5 million of them had critical housing needs in 2003. This represents a 67% increase from 1997 when there were only about 3 million low- to moderate-income families with "critical housing needs," as can be seen in the figure below.

[1] *State of the Nation's Housing 2005,* 2.
[2] Low- to moderate-working families defined as those who work a full-time job or equivalent and earn between the minimum wage and up to 120% of AMI in their area. *Housing America's Working Families,* 2.
[3] Critical housing need defined as spending more than 50% of your income on housing costs and/or living in severely inadequate housing conditions. *Housing America's Working Families*, 2.

Figure 1: US Households with Critical Housing Needs (Millions)



Source: *Housing Landscape,* 7.

Housing Landscape shows that although "critical housing needs" are defined as working households with either a severe cost burden (paying more than 50% of income towards housing costs) or living in extremely poor conditions, the majority of families faced a severe cost burden. Of the 5 million households with critical housing needs, approximately 4.3 million of them paid more than 50% of their income.[4] Of these 4.3 million families, 2.7 experienced one-way commutes of 45 minutes or greater and 1.6 lived in overcrowded conditions.[5] The updated study also shows that nationwide the majority of low- to moderate-income working families with critical housing needs have incomes below 50% of area median income, depend on only one wage earner, are homeowners rather than renters, and are households without children (either single-person household or more than one person with no children).[6] It is interesting to note

[4] *Housing Landscape*, 14.
[5] *Housing Landscape*, 33.
[6] *Housing Landscape*, 10-11.

that in 2003 about 38.5% of the 5 million working families lived in the city while 42% lived in the suburbs, a pattern prevailed from 1997 through 2003.[7]

As a follow up to the *Housing Landscape* report, the Center for Housing Policy published *Something's Gotta Give: Working Families and the Cost of Housing*. Approximately 4.2 million working families are severely cost burdened (paying more than half of their income towards housing costs), leaving them less money to spend on other necessities like food, clothing, health insurance and education. *Something's Gotta Give* shows that families that pay more than 50% of their income for housing are 23% more likely to have difficulties purchasing adequate food and 28% more likely to lack health insurance than those families paying less for housing.[8]

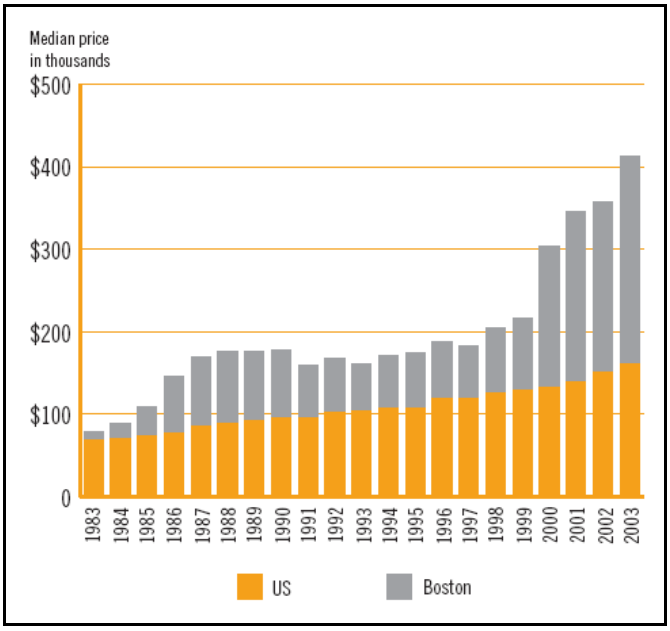
[7] *Housing Landscape,* 24.
[8] *Something's Gotta Give*, 8.

Chapter 2: Recent Housing Trends in the Boston Metropolitan Area

The Boston housing market has followed the national trends of rapid house price appreciation, increased homeownership, and a softening rental market over the last few years. The local economy flourished between 1995 and 2000 evidenced by increased jobs, decreased unemployment rate, low rental vacancy rates, and increased house prices and rental rates. Between 2001 and 2003, the local economy was in a recession suffering from a decrease in jobs, decrease in population and households, increase in rental vacancies, and decrease in rents.

In terms of homeownership, even when Boston was experiencing a weakened economy between 2001 and 2003, house prices continued to grow, as can be seen in the figure below.

Figure 2: Median House Price Boston versus US



Source: *Warren Group and The Greater Boston Housing Report Card 2003*, 8.

As a result, in 2003, the average-income household could afford a house at the median home price in only 70 of the 161 towns in Greater Boston, according to The Center for Urban

and Regional Policy's *The Greater Boston Housing Report Card 2003*. The number of "affordable" communities fell to 70 in 2003 from 95 towns in 2001 and 149 towns in 1998.[9] It is estimated that first-time homebuyers[10] could afford to buy a house in 13 of the 161 towns in Greater Boston in 2003, down from 43 towns in 2001 and 116 towns in 1998.[11] Further, it is estimated that about 30% of homeowners (three in ten) paid in excess of 30% of their income for housing costs.[12] It should be noted that this study utilized a methodology based upon place or residence rather than place of work, which is a significant difference between this study and the analysis included in this thesis.

A 2004 report prepared for the Citizens' Housing and Planning Association and the Massachusetts Housing Partnership, entitled *Winners and Losers in the Massachusetts Housing Market: Recent Changes in Housing Demand, Supply and Affordability*, reports that the largest national percentage increase in housing prices between 1980 and 2003 occurred in Massachusetts.[13] This rapid house price appreciation has created clear winners and losers. The winners are homeowners who entered the market previous to the large jump in house prices in 2000. These fortunate homeowners saw the value of their homes increase, which in turn created additional equity in their homes. At the same time, these families had the ability to refinance their existing mortgages at lower interest rates, making them even bigger "winners" in the homeownership market.

The losers, on the other hand, are those families that did not purchase a home previous to 2000, and are struggling in the current market. Among the losers are low-income families who not only are suffering from high rental costs, but also cannot entertain the idea of homeownership with home prices at their current level. Other losers include young families looking to move to Massachusetts but end up moving to other locations where the rent is not as

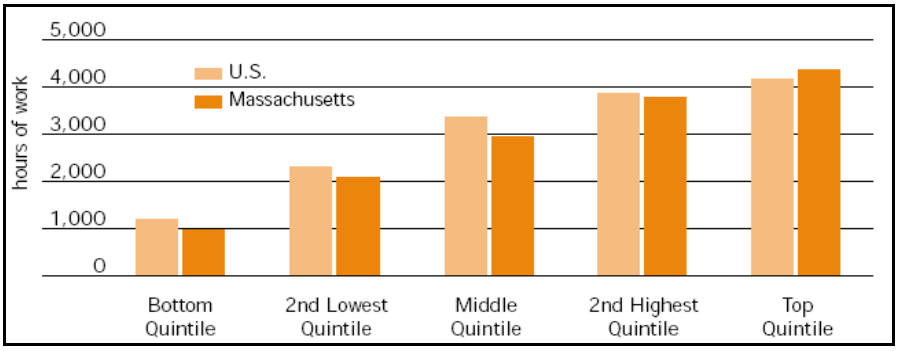
[9] *The Greater Boston Housing Report Card 2003*, 5.
[10] First-time homebuyer is defined as a household earning 80% of median household income, assumed to be purchasing a home priced at 80% of median home price.
[11] *The Greater Boston Housing Report Card 2003*, 5.
[12] *The Greater Boston Housing Report Card 2003*, 6.
[13] *Winners and Losers*, 1.

high and the purchase of a "starter home" is a viable option. This in turn makes Massachusetts a loser as well. If housing costs are too high such that young workers are discouraged from living here and businesses are discouraged from locating here, what is the future of the State?

And lastly, the other losers are those working middle-income families that stay in Massachusetts, but are forced to move further from their jobs and work longer hours, which negatively impacts family life. The *Winners and Losers* report states that on the surface housing prices and median incomes have increased proportionately in Massachusetts. However, upon further analysis, it appears that this is due to more hours worked by each worker as well as more workers per household.[14] As can be seen in the below figure from *The State of the American Dream* study, families earning the most money in Massachusetts had to work more than four times as many hours as those families earning the least. Therefore, Massachusetts families have had to work harder and longer in order to afford to be homeowners.

[14] *The State of the American Dream in Massachusetts, 2002,* 112-119.

Figure 3: Average Hours of Work by All Family Members by Quintile in Massachusetts, 1999



Source: *The State of the American Dream in Massachusetts, 2002*, 135.

This is especially true for employment among wives in married couple families. The table below depicts just how dramatic the change in hours worked was from 1979 to 1999.

Figure 4: Median Annual Hours of Employment among Wives

	1979	1989	1999-2000	1979 to 1999-2000 Absolute Change	1979 to 1999-2000 Relative Change (%)
U.S.	690	1,300	1,650	960	139.1
MASSACHUSETTS					
Total	728	1,248	1,560	832	114.3

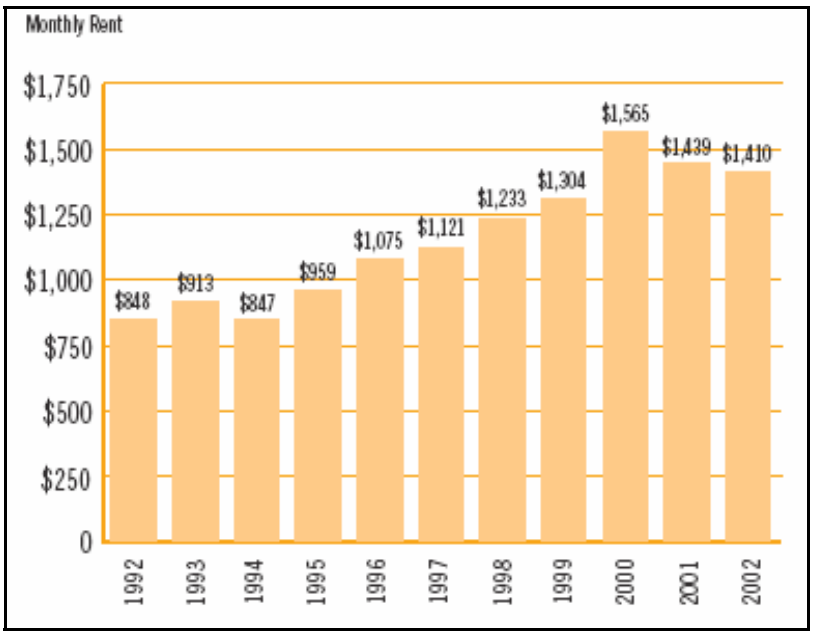
Source: *The State of American Dream in Massachusetts, 2002,* 117.

More specifically in the Greater Boston area, according to the *Winners and Losers* study, "first-time homebuyers in Eastern Massachusetts [have] to make hard choices, such as paying more than they should for a home and placing stress on their household finances, moving farther away from the Boston Metro Area and possibly having a long commute to and from work, or not purchasing a home at all."[15]

[15] *Winners and Losers*, 26.

In terms of the rental market, per the *Greater Boston Report Card 2003,* rental rates were exorbitantly high prior to the local recession, for rents increased 63% between 1995 and 2000. Therefore, even though rents decreased during the weakened economic period of 2001 to 2003, rents fell to a level that was still unattainable for many households. The historical monthly rents for a 900 square foot apartment in the Boston MSA are illustrated below.

Figure 5: Monthly Rent for a 900 SF Apartment in the Boston MSA



Source: *The Greater Boston Housing Report Card 2003,* 21.

Regardless of decreased rents and increased vacancy, in 2003 approximately 43% of renters were paying more than 30% of their income for rent and approximately 22% of renters were paying more than 50% of their income for rent.[16] The *Winners and Losers in the Massachusetts Housing Market* echoes this sentiment, citing that Massachusetts ranked as the most expensive state in which to rent a home per the National Low Income Housing Coalition's

[16] *The Greater Boston Housing Report Card 2003,* 5.

2003 Annual Report.[17] The figure below shows the wage data that the National Low Income Housing Coalition used to make this determination.

Figure 6: 2003 Wage Data for Massachusetts and Its MSAs

State and MSA	Median renter annual income	Income needed to afford 2BR FMR as percent of median renter income	Percent of renters unable to afford 2BR FMR	Housing wage for 2 BR FMR
Massachusetts Total	$36,194	129	61	$22.40
Barnstable–Yarmouth, MA	$31,440	123	59	$18.60
Boston, MA–NH	$41,148	138	64	$27.29
Brockton, MA	$32,574	128	61	$20.12
Fitchburg–Leominster, MA	$31,214	103	50	$15.48
Lawrence, MA–NH	$33,312	117	57	$18.67
Lowell, MA–NH	$37,175	115	54	$20.48
New Bedford, MA	$23,066	143	67	$15.83
Pittsfield, MA	$25,902	95	46	$11.87
Providence–Fall River—Warwick, RI–MA	$26,382	103	50	$13.04
Springfield, MA	$25,716	107	52	$13.19
Worcester, MA–CT	$32,229	103	50	$15.90

Source: *Winners and Losers,* 5.

Although none of the referenced studies above are perfect in their methodology and analysis, they provide a general understanding of recent housing trends for working families. In sum, these studies report that working renters and homeowners across the country and in Boston are experiencing increased housing cost burdens. According to these studies, low and middle-income working families have to work longer hours and make longer commutes in order to find housing that is affordable. In Massachusetts, "those left behind include renters and low- and middle-income working families who cannot gain entry to the market."[18] It is imperative that workers can afford to live in close proximity to the communities in which they work. Even more important is that the "key workers," those whose are providing the necessary public services to

[17] *Winners and Losers*, 7.
[18] *Winners and Losers,* 3.

these communities, such as police officers, firefighters, nurses and teachers, can afford to live in the communities for which they serve.

Chapter 3: Housing Needs for Working Families in Massachusetts

The findings referenced above demonstrate the importance of the workforce housing issue in the United States, as well as the issue of affordable housing for working families in the Boston Metropolitan Area. Many of the above referenced workforce housing studies focus on low- to moderate-income families with critical housing needs. For the purposes of this thesis, we want to specifically target households in which there is a key community worker, such as teachers, nurses, firefighters and police officers. In 2004, the National Association of Home Builders published a report entitled *Where is Workforce Housing Located?: A Study of the Geography of Housing Affordability*, which only studied teachers, police officers, nurses and sales persons as individuals in the 25 largest metropolitan areas in the United States.

Using 2000 Census data, the authors created an affordability index comparing the average individual earnings per occupation of the primary earner (as opposed to household income per occupation) to the value of homes as reported by the owner for each of the 25 metro areas. It is important to clarify that the study first categorized households based on occupation of the primary earner and then compared the "median earnings for a person in a particular occupation"[19] as compared to the self-reported value of the home. The methodology and analysis included in the NAHB study that is cited below vastly differ from the methodology and analysis that we used as part of our thesis research. However, this study is one of the only research papers we could find to date that focuses specifically on "key worker" occupation groups in metropolitan areas, which is why we have included it as a reference.

With this affordability index, they classified and mapped the census tracts as affordable or unaffordable to the four occupation classes. The results for all 25 metro areas are shown in the figure below.

[19] *Where is the Workforce Housing Located*, 3.

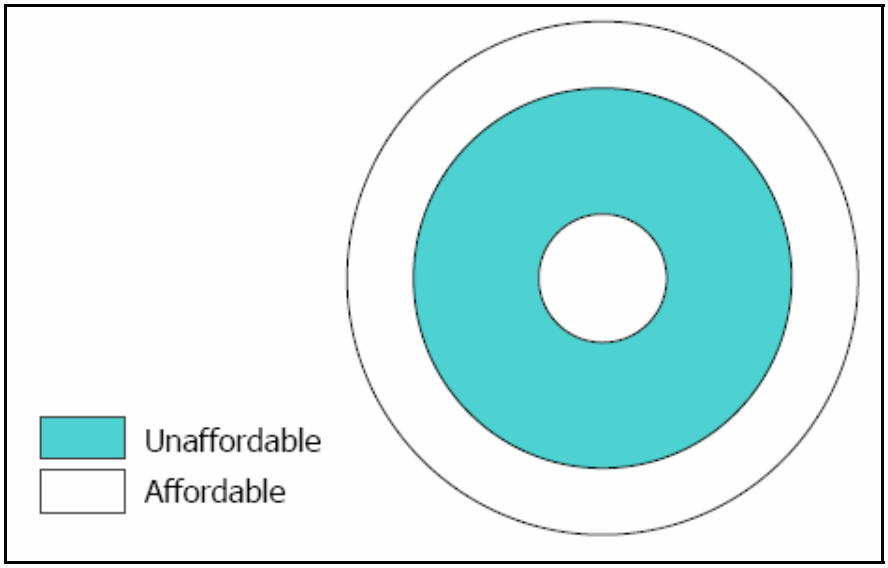
Figure 7: Housing Opportunity Index for Census Tracts in the Top 25 Metro Areas

Type of Tract	Occupation			
	Teachers	Police Officers	Nurses	Retail Sales Persons
All	44.9%	37.3%	40.7%	5.4%
Unaffordable	15.4%	13.2%	14.4%	3.3%
Affordable	82.8%	81.2%	82.2%	70.2%

Source: *Where is Workforce Housing Located?*, 4

The affordable locations within the 25 metro areas followed a pattern. Generally affordable census tracts for policemen, teachers and nurses were in the central city and around the fringe of metropolitan area. As seen above, there were very few locations that were affordable to sales persons. The illustration below shows the affordability for these workers in the typical metropolitan area.

Figure 8: Diagram of a Typical Metro Area



Source: *Where is Workforce Housing Located?*, 2.

Boston, New York and San Francisco had the least amount of affordable housing within the metro area for the four occupations, as seen in the table below.

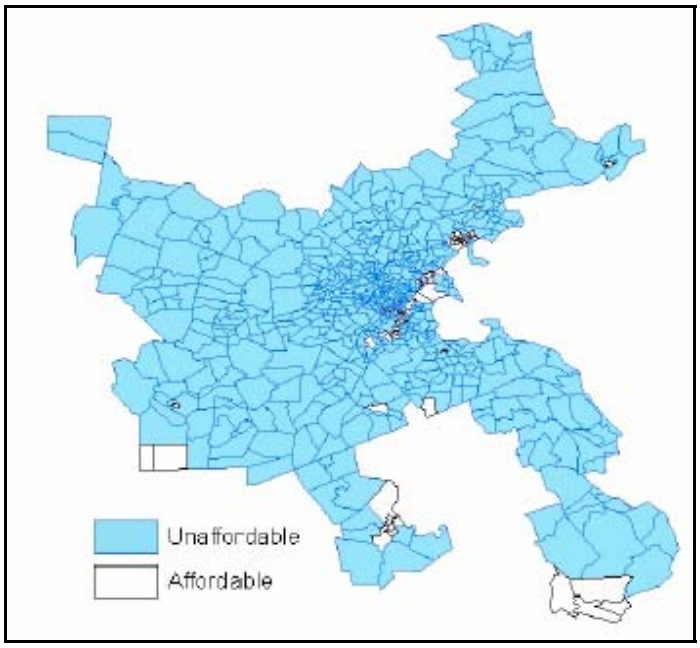
Figure 9: Share of Tracts Affordable to Workers in Various Occupations

	teachers	police	nurses	sales
Boston, MA	9.3%	9.3%	3.4%	0.0%
New York, NY	7.6%	3.1%	3.1%	0.2%
San Francisco, CA	0.3%	1.0%	0.5%	0.0%

Source: *Where is Workforce Housing Located?*, 11.

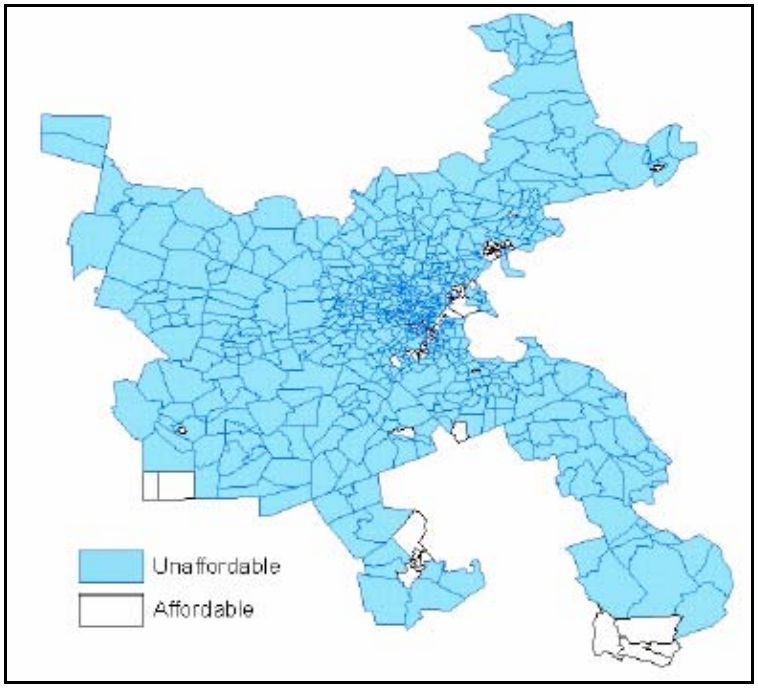
Below are the maps depicting affordability for the four occupations in the Boston metropolitan area:

Figure 10: Tracts Affordable to Teachers in the Boston, MA



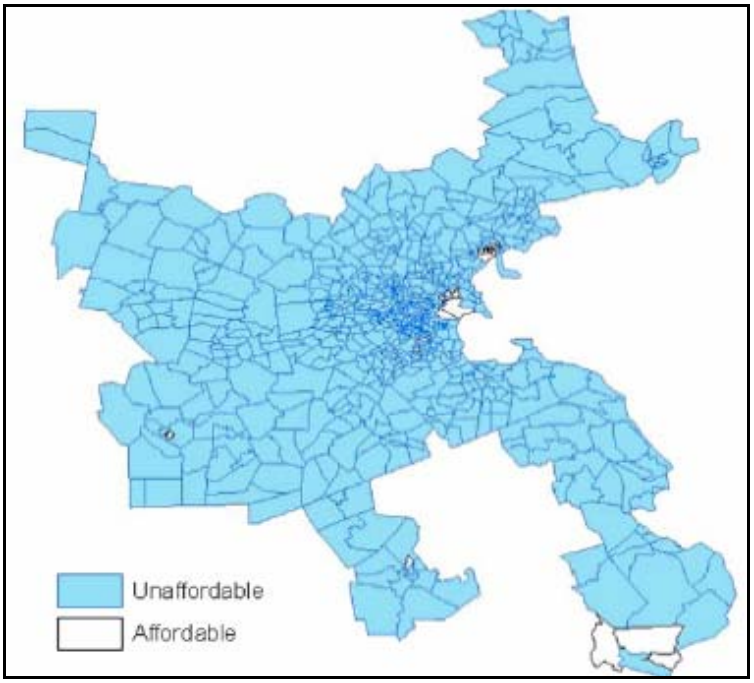
Source: *Where is Workforce Housing Located?*, 14

Figure 11: Tracts Affordable to Policemen in the Boston, MA



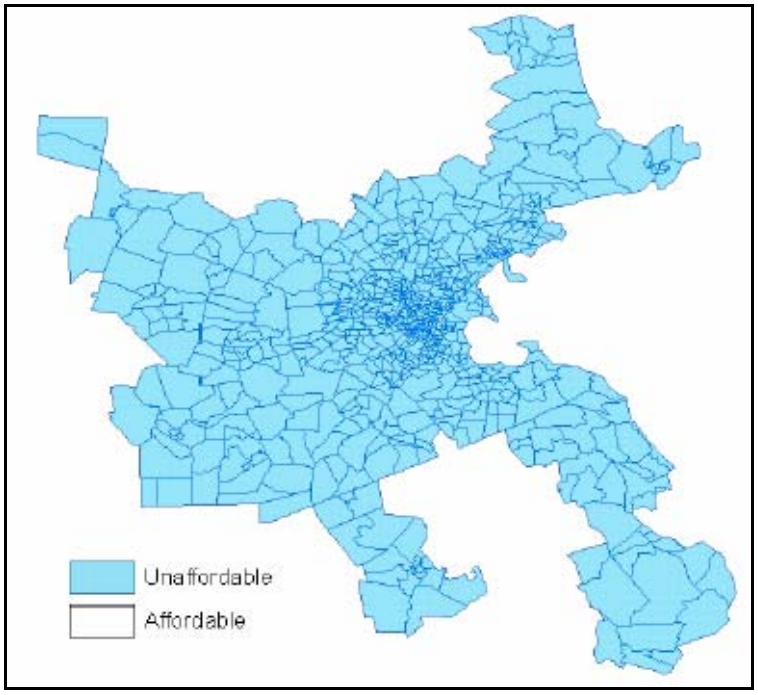
Source: *Where is Workforce Housing Located?*, 30.

Figure 12: Tracts Affordable to Nurses in the Boston, MA



Source: *Where is Workforce Housing Located?*, 46.

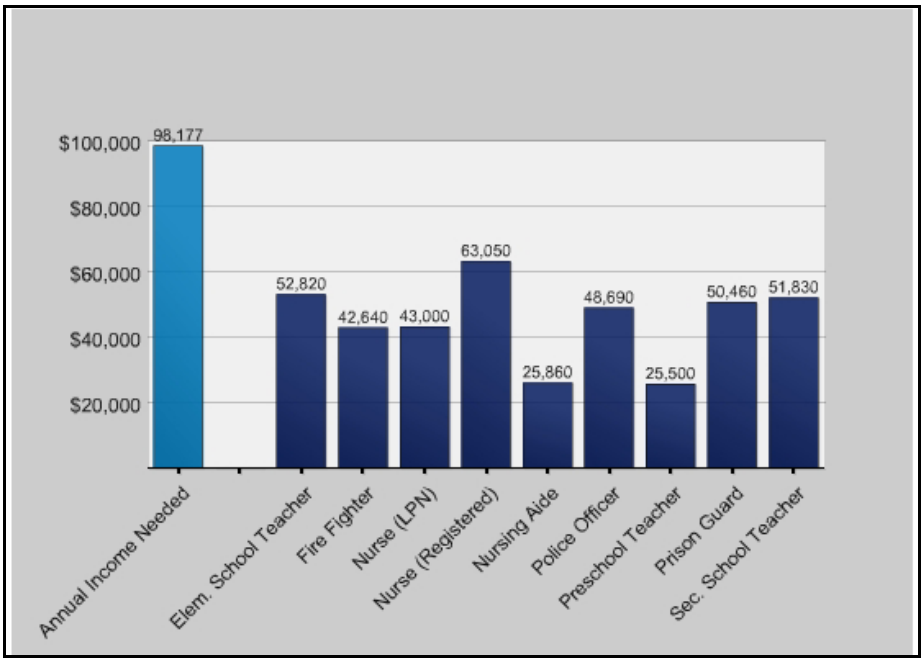
Figure 13: Tracts Affordable to Sales Persons in the Boston, MA



Source: *Where is Workforce Housing Located?*, 62.

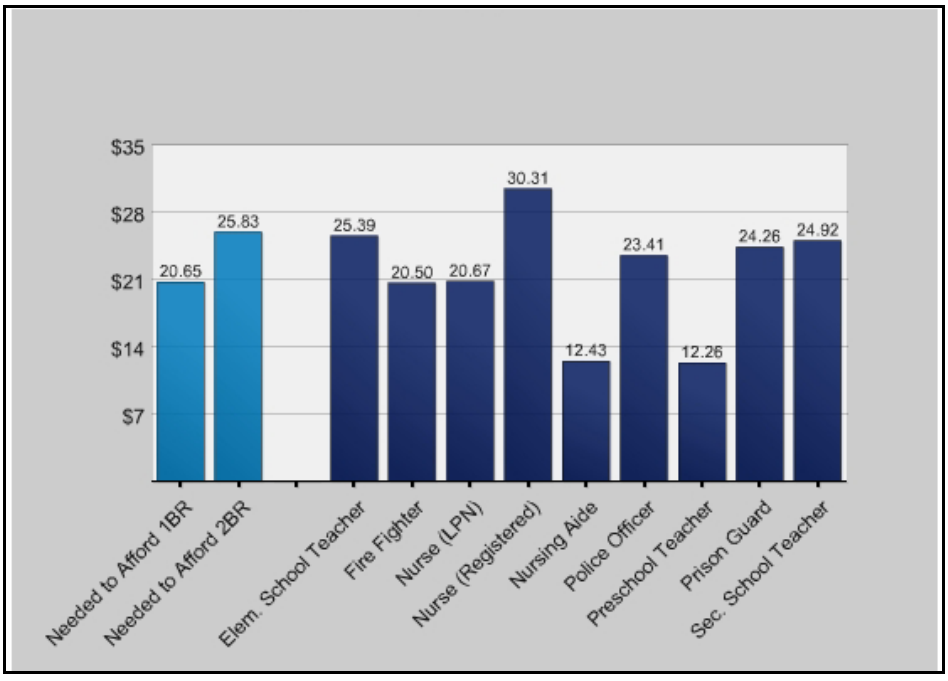
Similarly, The National Housing Conference website has an interactive database which graphs median individual incomes for various occupations as compared to the income needed to afford the median home price or rent in a specified geographic region. The following two figures depict the median salaries, home prices and rents as compared to the salaries needed to afford to rent or own in the Boston Metro Area as of November 2003.

Figure 14: Boston Homeownership Market, 2003 (Median Home Price 2003: $315,000)



Source: National Housing Conference website, http://www.nhc.org

Figure 15: Boston Rental Market, 2003 (Fair Market Rent 2003: $1074- 1br and $1343- 2br)



Source: National Housing Conference website, http://www.nhc.org

On the surface, both the National Housing Conference website and NAHB's "*Where is Workforce Housing Located?"* demonstrate a desperate need for housing that is affordable to key community workers in the Boston Metropolitan Area. However, both of these studies use key worker individual income as compared to median home price and/or rent, disregarding the household in which the key worker lives. By comparing individual income to household price, the lack of housing affordability for these occupations is grossly exaggerated. This thesis not only analyzes the individual key worker by job location, but also the entire household in which they dwell. This approach allows us to comprehensively study and understand the key workers' realistic financial position.

The intent is to describe in detail the demographic and locational characteristics of households in which there is a teacher, nurse, firefighter or police officer working in Eastern Massachusetts, by looking at factors like household income, housing costs as a percentage of household income, travel time to work, number of workers in the house, building size, number of bedrooms, etc. as compared to all worker households in Eastern Massachusetts by job location. Examining households rather than individuals is not only more rigorous, but also is more accurate, for according to the NAHB study, Eastern Massachusetts is unaffordable to the majority of key workers. However, we know that many key workers currently are living in Eastern Massachusetts.

Before we began our research and analysis, we reviewed current proposed workforce housing programs as a way to help us further refine our research parameters and questions. A summary of two of the more comprehensive programs follows in the next chapter.

Chapter 4: Key Worker and Workforce Housing Programs

UK Key Worker Living Program

Launched in March 2004, The UK "Key Worker Living" program is the evolution of the Starter Home Initiative which began in September 2001 and was on track to place over 10,000 key workers into home ownership by middle of 2005. The program is targeted at public services in parts of England where the high cost of housing is contributing to serious recruitment and retention problems in the key public services of health, education, and community safety.

According to Deputy Prime Minister, John Prescott, the program is critical in helping to keep the skills needed in key front line public service sectors.

> "We are determined to make a difference in the performance of our schools and hospitals and help those working in community safety. The 'Key Worker Living' programme offers housing solutions to those in front line roles in key public services in London, the South East and the East where recruitment and retention is particularly difficult."[20]

The new US $1.26 billion (British £690 million)[21] program specifically targets eligibility and assistance for the following "key workers."

- Nurses and other NHS (Nation Health Service) staff;
- Teachers in schools and in further education and sixth form colleges;
- Police officers and some civilian staff in some police forces;
- Prison service and probation service staff;
- Social workers, educational psychologists, planners (in London), occupational therapists and (from May 2004) speech and language therapists employed by local authorities; and
- Whole-time junior fire officers and retained fire fighters (all grades) in some fire and rescue services (currently only in Hertfordshire).

[20] UK Office of Deputy Prime Minister Press Release, 03/23/05, "New Housing Programme aims to keep skills needed in key public services"
[21] Based upon 1 US Dollar = 0.546862 GB Pound on 5/27/05 (source: http://www.xe.com)

Eligibility does vary somewhat across regions depending on local recruitment and retention policies. As of June 2005, the current financing and subsidy schemes are as follows:

- "Equity loans" of up to £50,000 (US $91,429) to help key workers buy a home on the open market or a new property built by a registered social landlord.[22] [23]
- Higher-value equity loans of up to £100,000 (US $182,858) for a small group of school teachers with the potential to become leaders of London's education system in the future.
- Shared ownership of newly-built properties. (You buy at least 25% of the home and pay a reduced rent on the remaining share).[24]
- "Intermediate renting" where the rent is set at a level between that charged by social and private landlords.[25]

The Key Worker Living schemes outlined above aim to provide housing assistance to key worker at different life-stages; home ownership for first time buyers, larger properties to meet the household needs of families (e.g. family sized homes) of existing home owners, shared ownership schemes and properties for rent at affordable prices for those who require more flexibility or do not wish to rush into home ownership.

[22] Total loan amount up to £50,000 is dependant upon household income, savings, any property already owned, any financial commitments such as student loans, the mortgage one can get, and the purchase price of the property.

[23] An equity loan is defined as a loan that does not require repayment until the key worker household sells the property or ceases to be employed as a key worker. At that time repayment is based upon a percentage of the property's value at the time. For example, if one received a £40,000 equity loan to buy a home for £160,000, the loan would represent 25% of the purchase price, and one would be required to repay 25% of the value of the home when one sells the property or ceases being a key worker.

[24] Shared ownership allows the key worker to buy a share (for instance 50%) of a newly built property within reasonable travel distance of the workplace and the key worker pays a reduced rent to a registered social landlord who will own the remaining share of the property. One can increase their ownership in the future or even buy the property outright. If the property is sold, the percentage of proceeds received is equal to the percentage of property owned. Again, if one stops being a key worker, they are no longer eligible for assistance.

[25] "Intermediate rent" homes are typically 75% to 80% of the local market rent. Short-hold tenancy is assured while one remains a key worker.

The "Key Worker Living" program is by far the most comprehensive and most generously funded program focused on key workers to date in Europe or the United States.[26] The next several years should shed light on its success in recruitment and retaining of key workers in key public services in London, the South East, and the East of the United Kingdom. Many questions remain outstanding in the short-term. Do the inclusionary zoning mechanisms that require developers to set aside upwards of 30-50% of residential units to both low-income and key worker households exact too much financial burden on the development community? What is the fiscal cost burden of administering such a wide-ranging and complex program? Is the list of eligible key workers too broad or too narrow? Hopefully these questions will be answered as the program has additional time to mature and show results.

San Francisco Proposition J

The 2004 San Francisco Proposition J ballot initiative created incentives for developers in the construction of middle-income owner-occupied "workforce housing" in return for relaxed height and density restrictions, expedited permit review and planning commission hearings, and provided exemptions from the standard conditional-use process. A "Workforce Household" was defined as a household whose combined annual gross income for all members does not exceed 120 percent of the area median income for the San Francisco Metropolitan Statistical Area, as calculated by the United States Department of Housing and Urban Development (HUD) adjusted for household size in accordance with adjustment factors adopted by HUD. The incentives were linked to projects providing a workforce housing percentage based upon a formula of either 39% minus the Affordable Housing Percentage (i.e. 39% - 12% = 27%) or 35%

[26] The HUD FY 2005 overall budget is $31.3 billion for a total US population of approximately 295.7 million, which is almost 4.9 times as large as the UK population of approximately 60.4 million. If one were to multiple the key worker program financing by the 4.9 population multiplier, the total US dollar amount of the program would be US $6.2 billion, or one-fifth of the HUD budget.

minus the Affordable Housing Percentage. Two distinct workforce housing neighborhoods in the downtown and San Francisco waterfront were also designated.

Proposition J was rejected at the polls by a margin of a 116,686 to 49,948, primarily due to a sentiment that the legislation was conceived too much behind closed doors at the exclusion of housing advocates and neighborhood groups. Proposition J's focus on home ownership also had trouble attracting tenant advocates progressives in a city where 65 percent of residents are renters. Still, Proposition J shines new light on the severity of the housing shortage for households earning 80% to 120% of area median income in supply constrained city such as San Francisco. It seems only a matter of time before a similar more politically palatable workforce housing initiative will pass in San Francisco or another high cost city such as Boston, New York, or San Diego.

HUD's Officer and Teacher Next Door Program

The U.S. Department of Housing and Urban Development (HUD) offers two programs for teachers and police officers with the explicit belief that police officers and teachers help make American communities stronger and safer. The programs aim to encourage homeownership in low and moderate-income households for these occupations by making homeownership faster and more affordable in targeted neighborhoods. In order for a teacher to participate they must be ""employed full-time by a public school, private school, or federal, state, county, or municipal educational agency as a state-certified classroom teacher or administrator in grades K-12." Teachers must also certify that they are employed by an educational agency that serves the school district/jurisdiction in which the home they are purchasing is located.[27] For police officer or "law enforcement officers" they are require to prove that they are "employed full-time by a Federal, state, county or municipal government; or a public or private college or university." (they) must be "sworn to uphold, and make arrests for violations of, Federal, state,

[27] Please visit http://www.hud.gov/offices/hsg/sfh/reo/tnd/tnd.cfm for program specifics

county, or municipal law." Their employer must certify that they are a full-time police officer with the general power of arrest.[28] Police officers are not required to serve in the district/ jurisdiction in which they purchase a home.

Teacher and Officer Next Door properties are listed and sold exclusively over the Internet and only comprise of single family homes located in HUD designated Revitalization Areas.only.[29] Bids are awarded once each week and the bid must in the amount of the list price. Once awarded however, the teacher or police office may purchase the property at a 50 percent discount for the list price (i.e listed at $100,000 bought for $50,000). In all cases, the purchaser is required to sign a second mortgage and note for the amount but no interest or payments are required on this "silent second" provided the three-year occupancy requirement is upheld.

While an intriguing program as a whole, several important locational issues immediately surface when analyzing Eastern Massachusetts key workers. First, there are only six designated Revitalization Areas in the entire State of Massachusetts and only one of them, Brockton, falls into our Eastern Massachusetts 165 city and town grouping. Within Brockton itself, the Revitalization Area is only a little over a 4 block area abutting state highway 24. Not exactly the first choice location for a young teacher or police married household.[30] Noble in its goals of wanting to make American communities stronger and safer, the Teacher Next Door and Officer Next Door HUD programs are unlikely to have much impact in Massachusetts without a much broader geographic scope outside of just the designated Revitalization Areas.

[28] Please visit http://www.hud.gov/offices/hsg/sfh/reo/ond/ond.cfm for program specifics
[29] Revitalization Area Locator: http://hud.esri.com/egis/sf/revite/welcome.htm
[30] On 7/28/05 nor were any properties even available for purchase in the Brockton Revitalization Area

Chapter 5: Key Worker Definition

This thesis like Margaret Fitzgerald Wagner's thesis entitled *Key Worker Housing: A Demographic Analysis of Working Families in Eastern Massachusetts*, focuses on full-time teachers, nurses, police officers and firefighters, or "key workers" who work in 165 Eastern Massachusetts communities. Both authors felt that it was important to concentrate our efforts on these occupations not only because they provide essential community services, but also they are frequently discussed as part of the middle-income housing affordability debate. Further, we determined that Eastern Massachusetts' "key workers" should be defined as those who work in Eastern Massachusetts, not those who live in Eastern Massachusetts. Therefore, we focused on the key workers' place of work rather than the place of residence. And lastly, we based our analysis on full-time key workers due to our focus on "workforce" housing. The key worker households that we analyzed therefore had at least one full-time worker.

Although many cities in the United States are developing workforce housing programs, the target group is identified by the local area median income not occupation. However, this thesis focuses on key workers by occupation, not simply income bracket. The intent is to identify and confirm the income brackets in which these workers fall in Eastern Massachusetts, as well as other demographic factors for these households, through the rigorous analysis of 2000 Census long form Public Use Microdata Sample (PUMS) data. It is also important to consider occupation in the context of residency requirements in many cities and towns for certain types of workers. In Boston for example, a controversial law requires that for many occupations city employees live in the city itself. While many older city employees are exempt because of grandfather clauses negotiated by the unions in the past, younger firefighter and police officers are increasingly obliged to live within Boston city limits.[31]

[31] Boston Globe, "*Residency Rule Draws Criticism; Emerges as Issue in City Election"*

To determine which occupations we wanted to study, we relied on the key worker definitions from the United Kingdom's one-year old program and the National Housing Association of Builder's study *Where is Workforce Housing Located.* The occupations and Census occupation codes (in parentheses) used in this thesis are:

- **Teachers**: preschool and kindergarten teachers (230), elementary and middle school teachers (231), secondary school teachers (232), and special education teachers (233).
- **Nurses:** registered nurses (313), licensed practical and licensed vocational nurses (350); and nursing, psychiatric, and home health aides (360).
- **Firefighters:** firefighters (374).
- **Police Officers:** bailiffs, correctional officers, and jailers (380), detectives and criminal investigators (382), parking enforcement workers (384), police and sheriff's patrol officers (385).

Chapter 6: Data and Research Methodology

In order to assess the household and personal characteristics of key workers, we analyzed the Public Use Microdata Sample (PUMS) from the 2000 Census of Population and Housing for the States of Massachusetts, Rhode Island and New Hampshire. The states of Rhode Island and New Hampshire were included in order to capture those key workers who work in the 165 Eastern Massachusetts communities but live in Rhode Island and New Hampshire. Unlike the Census summary files which present aggregated data, PUMS data allows you to customize the "raw" survey data for individual research purposes. The survey data in PUMS is actual Census questionnaire responses describing individual housing unit characteristics and personal characteristics of the inhabitants. For confidentiality purposes, names, addresses and geographic identifiers have been removed.

There are two sub-sets of PUMS data - the 1% sample and the 5% sample. We have used the 5% sample in our analysis. The 5% sample represents approximately 1 out of 20 housing units (occupied and vacant) and the people in the occupied units. There are weights for each person and housing record that when applied to the individual records in the 5% sample expand the sample size to the actual total. For example in the State of Massachusetts only, the 5% sample population unweighted is 318,565 whereas the total census population is 6,353,449 persons. In the case of Massachusetts households, the 5% sample households unweighted is 142,183 whereas the total census households is 2,623,069

As described above, as part of maintaining confidentiality of the persons and households, geographic identifiers have been removed from the PUMS data. Instead, the 5% PUMS data is grouped by unique geographic units Public Use Microdata Areas (PUMAs), which contain a minimum population of 100,000.[32] PUMAs are based generally on city boundaries or census tracts, allowing for whole places to be included in a PUMA in most cases. Therefore,

[32] PUMAs are only identified on the 5-percent files and not on the 1-percent files. This is another primary factor for our use of the 5-percent sample PUMS data.

the PUMA level is the smallest geographic region to analyze the microdata due to confidentiality issues. At first we thought that this limited our data analysis, however, upon closer examination, we saw that the 165 cities and towns that we are studying in Eastern Massachusetts are contained wholly in 35 PUMAs. We concluded that this level of detail is more than sufficient for the purposes of this thesis. See figure 16 and figure 17 for maps of PUMAs in Massachusetts and a list of the 165 cities and towns and the corresponding PUMA. Figure XXX and XXX provide "keys" for the PUMAs map: one sorted by town alphabetically with the corresponding PUMA and one sorted by PUMA numerically with the corresponding towns.

The 5% PUMS data is separated into two types of records, housing unit records and person records, each with different variables. There is one housing unit record for each household in the sample that includes geographic, tenure, housing and household information. Each housing unit record contains a unique serial number as an identifier that corresponds to the serial number that is included in every person record. There are person records for every member of each household, which include personal information as well as the unique household serial number. For example, all four person records for a family of four would have the same serial number that corresponds to the serial number included in the household record.

The Census Bureau attempts to present the cleanest and most complete data as possible through controlling for nonsampling error whenever possible. However, in order to tailor the data to our study, we limited the number of PUMS variables and then filtered the data. Our large data set sample sizes analyzed would likely result in large 90-percent confidence intervals and low standard errors based upon the guidelines set out in U.S. Census Bureau's *Public Use Microdata Sample Technical Documentation*. Please refer to the technical documentation for more information on calculation of confidence intervals and standard errors.[33]

[33] The U.S. Census Bureau's *Public Use Microdata Sample Technical Documentation* can be found at http://www.census.gov/prdo/cen2000/doc/pums.pdf

The variables that we studied as part of our analysis are presented below in two tables[34]:

Person Record Variables	
• Housing/Group Quarters (GQ) Unit Serial Number • Public Use Microdata Area Code (PUMA) • Super Public Use Microdata Area Code (SuperPUMA) • Person Sequence Number; Relationship • Presence and Age of Own Children • Sex • Age • Industry (NAICS) • Place of Birth for 5% file • Occupation (SOC) for 5% file • Marital Status Educational Attainment • Employment Status Recode	• Place of Work PUMA • Place of Work SuperPUMA • Means of Transportation to Work • Vehicle Occupancy • Time Leaving for Work • Travel Time to Work • Occupation (Census) for 5% file • Class of Worker; Weeks Worked in 1999 • Usual Hours Worked per Week Last Year • Wage/Salary Income in 1999 • Person's Total Income in 1999 • Person's Total Earnings in 1999. • Residence 5 Years Ago

Household Record Variables	
• Housing/Group Quarters (GQ) Unit Serial Number • Public Use Microdata Area Code (PUMA); • Super Public Use Microdata Area Code (SuperPUMA) • Number of Person Records Following this Housing Record • Type of Unit • Tenure • Size of Building • Year Building Built • Year Moved In • Bedrooms • Number of Rooms • Number of Vehicles Available • Monthly Rent • Mortgage Status • Mortgage Payment (monthly amount) • Second Mortgage Status	• Second Mortgage Payment (monthly amount) • Property Tax Amount (annual) • Property Insurance Amount (annual) • Condominium Fee (monthly) • Household/Family TypeNumber of People in Family • Number of Own Children in Household (unweighted) • Presence and Age of Own Children under 18 years • Selected Monthly Owner Costs • Selected Monthly Owner Costs as a Percentage of Household Income • Gross Rent • Gross Rent as a Percentage of Household Income Last Year • Workers in Family During the Last Year • Family Type and Employment Status • Family Type and Work Experience of Householder • Household Income • Family Income.

[34] *For more detail regarding these variables, please refer to the U.S. Census Bureau's *Public Use Microdata Sample Technical Documentation's* Data Dictionary for the 5% sample. It can be found at www.census.gov/prod/cen2000/doc/pums.pdf

In order to create a baseline dataset of all full-time key workers and key worker households in Eastern Massachusetts, we started with the States of Massachusetts, Rhode Island and New Hampshire PUMS data from the 2000 Census, and applied the following filters to all person records for the three States:

- 35 PUMA numbers for 165 cities and towns in Eastern Massachusetts applied to the Place of Work PUMA (POWPUMA5) variable
- 12 key worker occupation codes discussed above
- Age less than 65 years of age
- No group housing persons due to incomplete records
- Weeks worked per year greater than or equal to 50
- Hours worked per week greater or equal to 35[35]
- Income from wages greater than $1

This dataset gave us the serial numbers for all key employees working full-time in Eastern Massachusetts. We then re-filtered the States of Massachusetts, Rhode Island and New Hampshire person records by the serial numbers for all key workers to create a baseline dataset of person records for all inhabitants of a key worker household in Eastern Massachusetts. This data set gave us all person records for the key workers' spouses and other household occupants regardless of their occupation, age or working status. And lastly, we filtered the States of Massachusetts, Rhode Island and New Hampshire household records by the serial numbers for all key workers to create a baseline dataset of all key worker households with one full-time key worker employed in Eastern Massachusetts.

[35] Per the 2000 Census, full-time is defined as those who work at least 50 weeks per year and 35 hours per week.

In order to put our key worker findings into context, we needed to compare them against all workers employed in Eastern Massachusetts. Therefore, we created three more datasets exactly as explained above, from the person and household records from the States of Massachusetts, Rhode Island and New Hampshire. We applied five of the same six filters described above. Obviously when creating datasets for all workers, we did not apply the occupation code filter. Therefore, we had three base datasets of all occupations of workers and households of those full-time workers employed in Eastern Massachusetts. Because we used the same filters for both all workers and key workers, we had three base datasets for each group that were comparable.

Throughout our analysis we ran many filters and sorts in order to reach our conclusions. For example, we wanted to look at just male key worker individuals and their households. Therefore, we filtered the Eastern Massachusetts key worker dataset by gender. Once we had the serial numbers of male key workers in Eastern Massachusetts, we had to match these serial numbers to person records for Massachusetts, Rhode Island and New Hampshire to create a dataset of all inhabitants in the male key worker house. And finally, we then matched these serial numbers against the household records for Massachusetts, Rhode Island and New Hampshire to create a dataset of all household records with a male key worker employed in full-time job in Eastern Massachusetts.

For aged 30-44 key worker households, we only included households that included a full-time key worker between the ages of 30 and 44 years old. In the case of work and live in Boston key workers, we used the place of residence variable (PUMA5) and place of work variable (POWPUMA5) to filter for individuals and households where the key worker both works (POWPUMA5 = 3300) and lives in the City of Boston (PUMA5 = 3301, 3302, 3303, 3304, or 3305).

It is important to note that in the various analyses, there are less household records than person records, for some of the persons are cohabitating. For example, there are some key

workers who are married to one another so that they represent two person records but only one household record.

ArcGIS 9 was used to generate the various maps in the subsequent chapters. Town and PUMA boundary layers come from MassGIS and the US Census website while all data analysis for the maps was done by Margaret Fitzgerald Wagner and the author. The City of Boston comprises only one place of work PUMA (3300) but is broken into 5 separate place of living PUMAs (3301, 3302, 3303, 3304, and 3305). The author alone is responsible for any mapping errors.

We present our research findings in the chapter that follows. The appendices contain the supporting data analysis for the maps and findings that are discussed in the body of this thesis. In the chapters that follow as well as in the appendices, we use many terms whose definitions are consistent throughout the data analysis and findings. For quick reference and clarification purposes, the definitions of the important categories are stated below.

Definitions

- Key Workers: Teachers, nurses, firefighters or police officers working full-time in Eastern Massachusetts (records filtered as described above).
- All Workers: Any person working full-time in Eastern Massachusetts (records filtered as described above).
- Work and Live in Boston Key Worker: Teachers, nurses, firefighters or police officers working both full-time in Boston and living in Boston as their primary residence.
- Key Worker Household: Any household in which a key worker is residing.
- All Worker Household: Any household in which an all worker is residing.
- Work and Live in Boston Key Worker Household: Any household in which a Work and Live in Boston key worker is residing. The household will therefore be in Boston.

- Eastern Massachusetts: This term includes 165 cities and towns on the following page:

It is important to reiterate again before presenting our findings that our analysis is based upon 5 percent sample data and should not be used as true counts of key worker individuals or key worker households. Our findings are estimates only and should be utilized accordingly.

List of 165 Studied Cities and Towns - Location of Key Workers Jobs

- Abington
- Acton
- Amesbury
- Andover
- Arlington
- Ashland
- Avon
- Ayer
- Bedford
- Bellingham
- Belmont
- Berkley
- Berlin
- Beverly
- Billerica
- Blackstone
- Bolton
- Boston
- Boston
- Boston
- Boston
- Boston
- Boxborough
- Boxford
- Braintree
- Bridgewater
- Brockton
- Brookline
- Burlington
- Cambridge
- Canton
- Carlisle
- Carver
- Chelmsford
- Chelsea
- Cohasset
- Concord
- Danvers
- Dedham
- Dighton
- Dover
- Dracut
- Dunstable
- Duxbury
- East Bridgewater
- Easton
- Essex
- Everett
- Foxborough
- Framingham
- Franklin
- Georgetown
- Gloucester
- Groton
- Groveland
- Halifax
- Hamilton
- Hanover
- Hanson
- Harvard
- Haverhill
- Hingham
- Holbrook
- Holliston
- Hopedale
- Hopkinton
- Hudson
- Hull
- Ipswich
- Kingston
- Lakeville
- Lancaster
- Lawrence
- Lexington
- Lincoln
- Littleton
- Lowell
- Lynn
- Lynnfield
- Malden
- Manchester
- Mansfield
- Marblehead
- Marlborough
- Marshfield
- Maynard
- Medfield
- Medford
- Medway
- Melrose
- Mendon
- Merrimac
- Methuen
- Middleborough
- Middleton
- Milford
- Millis
- Millville
- Milton
- Nahant
- Natick
- Needham
- Newbury
- Newburyport
- Newton
- Norfolk
- North Andover
- North Reading
- Norton
- Norwell
- Norwood
- Peabody
- Pembroke
- Pepperell
- Plainville
- Plymouth
- Plympton
- Quincy
- Randolph
- Raynham
- Reading
- Revere
- Rockland
- Rockport
- Rowley
- Salem
- Salisbury
- Saugus
- Scituate
- Sharon
- Sherborn
- Shirley
- Somerville
- Southborough
- Stoneham
- Stoughton
- Stow
- Sudbury
- Swampscott
- Taunton
- Tewksbury
- Topsfield
- Townsend
- Tyngsborough
- Upton
- Wakefield
- Walpole
- Waltham
- Wareham
- Watertown
- Wayland
- Wellesley
- Wenham
- West Bridgewater
- West Newbury
- Westford
- Weston
- Westwood
- Weymouth
- Whitman
- Wilmington
- Winchester
- Winthrop
- Woburn
- Wrentham

Figure 16: Map of 165 Cities and Towns of Eastern Massachusetts (bounded by thick borders)

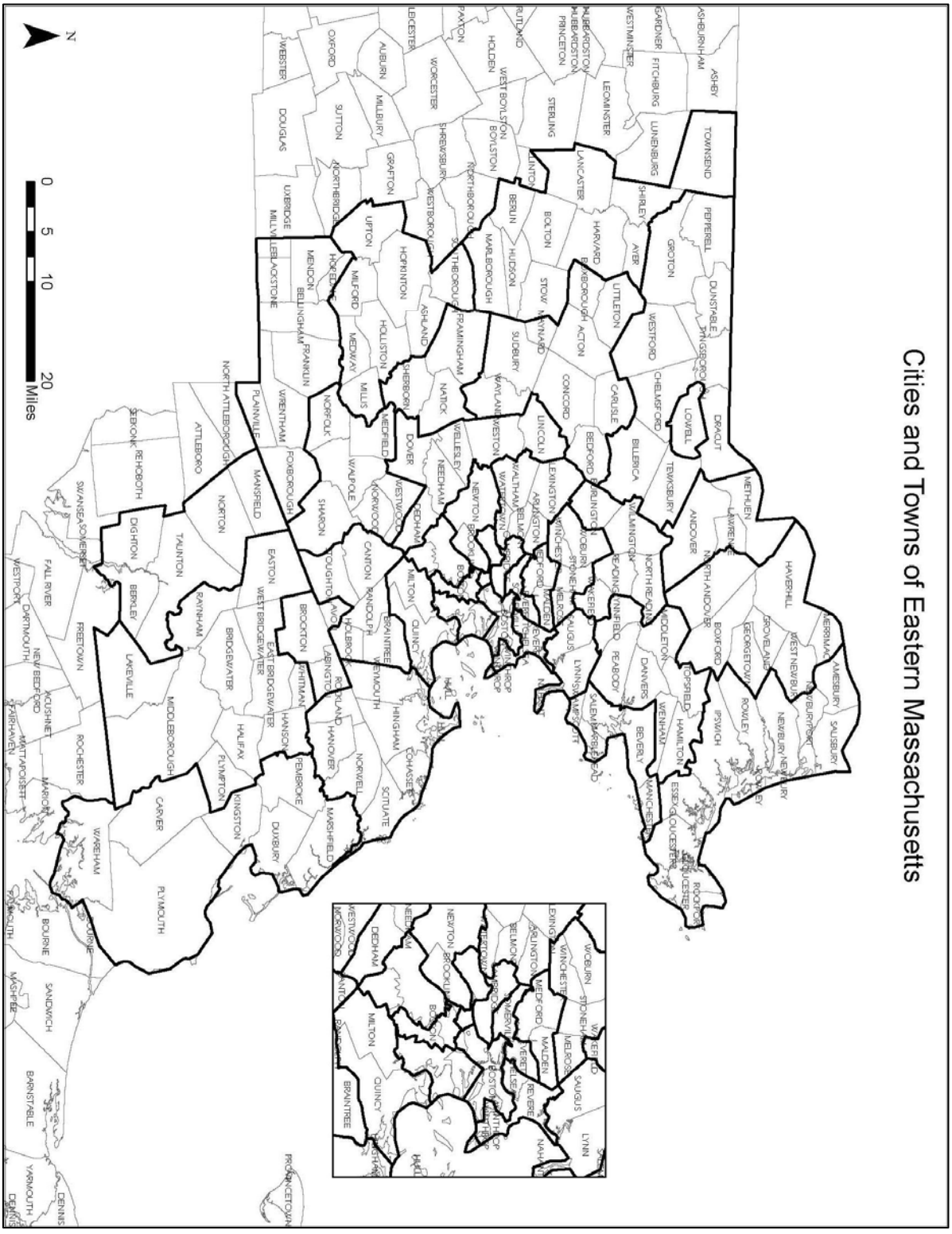
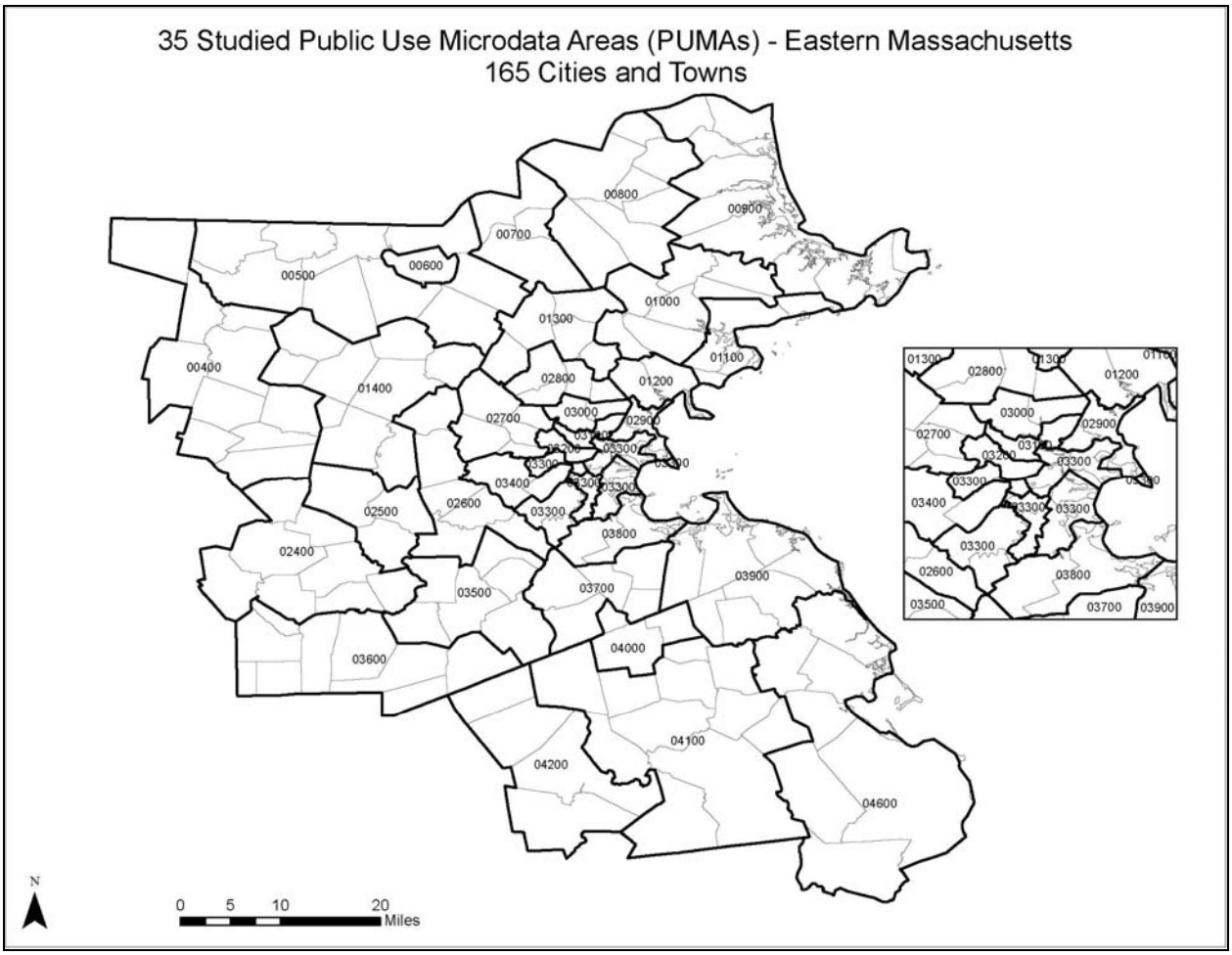


Figure 17: Map of 35 Studied Public Use Microdata Areas (PUMAs) in Eastern Massachusetts



List of PUMAs and the Corresponding Towns

PUMA	Town	PUMA	Town	PUMA	Town	PUMA	Town
00400		**01100**		**02800**		**03800**	
	Ayer		Beverly		Melrose		Milton
	Berlin		Manchester		Stoneham		Quincy
	Bolton		Marblehead		Winchester	**03900**	
	Harvard		Salem		Woburn		Cohasset
	Hudson		Swampscott	**02900**			Hanover
	Lancaster	**01200**			Chelsea		Hingham
	Marlborough		Lynn		Revere		Hull
	Shirley		Nahant		Winthrop		Norwell
	Stow		Saugus	**03000**			Rockland
	Townsend	**01300**			Malden		Scituate
00500			Burlington		Medford		Weymouth
	Billerica		North Reading	**03100**		**04000**	
	Chelmsford		Reading		Everett		Abington
	Dracut		Wakefield		Somerville		Avon
	Dunstable		Wilmington	**03200**			Brockton
	Groton	**01400**			Cambridge	**04100**	
	Pepperell		Acton	**03301**			Bridgewater
	Tewksbury		Bedford		Boston		East Bridgewater
	Tyngsborough		Boxborough	**03302**			Easton
	Westford		Carlisle		Boston		Halifax
00600			Concord	**03303**			Hanson
	Lowell		Littleton		Boston		Lakeville
00700			Maynard	**03304**			Middleborough
	Andover		Sudbury		Boston		Plympton
	Lawrence		Wayland	**03305**			Raynham
	Methuen	**02400**			Boston		West Bridgewater
00800			Ashland	**03400**			Whitman
	Boxford		Holliston		Brookline	**04200**	
	Georgetown		Hopkinton		Newton		Berkley
	Groveland		Medway	**03500**			Mansfield
	Haverhill		Milford		Medfield		Norton
	Merrimac		Millis		Norfolk		Taunton
	North Andover		Southborough		Norwood		Dighton
	West Newbury		Upton		Sharon	**04600**	
00900		**02500**			Walpole		Carver
	Amesbury		Framingham		Westwood		Duxbury
	Essex		Natick	**03600**			Kingston
	Gloucester		Sherborn		Bellingham		Marshfield
	Ipswich	**02600**			Blackstone		Pembroke
	Newbury		Dedham		Foxborough		Plymouth
	Newburyport		Dover		Franklin		Wareham
	Rockport		Lincoln		Hopedale		
	Rowley		Needham		Mendon		
	Salisbury		Wellesley		Millville		
01000			Weston		Plainville		
	Danvers	**02700**			Wrentham		
	Hamilton		Arlington	**03700**			
	Lynnfield		Belmont		Braintree		
	Middleton		Lexington		Canton		
	Peabody		Waltham		Holbrook		
	Topsfield		Watertown		Randolph		
	Wenham				Stoughton		

List of Towns and the Corresponding PUMA

Town	PUMA	Town	PUMA	Town	PUMA
Abington	04000	Halifax	04100	Norwood	03500
Acton	01400	Hamilton	01000	Peabody	01000
Amesbury	00900	Hanover	03900	Pembroke	04600
Andover	00700	Hanson	04100	Pepperell	00500
Arlington	02700	Harvard	00400	Plainville	03600
Ashland	02400	Haverhill	00800	Plymouth	04600
Avon	04000	Hingham	03900	Plympton	04100
Ayer	00400	Holbrook	03700	Quincy	03800
Bedford	01400	Holliston	02400	Randolph	03700
Bellingham	03600	Hopedale	03600	Raynham	04100
Belmont	02700	Hopkinton	02400	Reading	01300
Berkley	04200	Hudson	00400	Revere	02900
Berlin	00400	Hull	03900	Rockland	03900
Beverly	01100	Ipswich	00900	Rockport	00900
Billerica	00500	Kingston	04600	Rowley	00900
Blackstone	03600	Lakeville	04100	Salem	01100
Bolton	00400	Lancaster	00400	Salisbury	00900
Boston	03301	Lawrence	00700	Saugus	01200
Boston	03302	Lexington	02700	Scituate	03900
Boston	03303	Lincoln	02600	Sharon	03500
Boston	03304	Littleton	01400	Sherborn	02500
Boston	03305	Lowell	00600	Shirley	00400
Boxborough	01400	Lynn	01200	Somerville	03100
Boxford	00800	Lynnfield	01000	Southborough	02400
Braintree	03700	Malden	03000	Stoneham	02800
Bridgewater	04100	Manchester	01100	Stoughton	03700
Brockton	04000	Mansfield	04200	Stow	00400
Brookline	03400	Marblehead	01100	Sudbury	01400
Burlington	01300	Marlborough	00400	Swampscott	01100
Cambridge	03200	Marshfield	04600	Taunton	04200
Canton	03700	Maynard	01400	Tewksbury	00500
Carlisle	01400	Medfield	03500	Topsfield	01000
Carver	04600	Medford	03000	Townsend	00400
Chelmsford	00500	Medway	02400	Tyngsborough	00500
Chelsea	02900	Melrose	02800	Upton	02400
Cohasset	03900	Mendon	03600	Wakefield	01300
Concord	01400	Merrimac	00800	Walpole	03500
Danvers	01000	Methuen	00700	Waltham	02700
Dedham	02600	Middleborough	04100	Wareham	04600
Dighton	04200	Middleton	01000	Watertown	02700
Dover	02600	Milford	02400	Wayland	01400
Dracut	00500	Millis	02400	Wellesley	02600
Dunstable	00500	Millville	03600	Wenham	01000
Duxbury	04600	Milton	03800	West Bridgewater	04100
East Bridgewater	04100	Nahant	01200	West Newbury	00800
Easton	04100	Natick	02500	Westford	00500
Essex	00900	Needham	02600	Weston	02600
Everett	03100	Newbury	00900	Westwood	03500
Foxborough	03600	Newburyport	00900	Weymouth	03900
Framingham	02500	Newton	03400	Whitman	04100
Franklin	03600	Norfolk	03500	Wilmington	01300
Georgetown	00800	North Andover	00800	Winchester	02800
Gloucester	00900	North Reading	01300	Winthrop	02900
Groton	00500	Norton	04200	Woburn	02800
Groveland	00800	Norwell	03900	Wrentham	03600

Chapter 7: Key Findings and Analysis

As a whole, Eastern Massachusetts Key Worker households look very much like the middle of the road median household in the region albeit with household incomes typically somewhat higher at 100-130% of area median income or AMI.[36] Margaret Fitzgerald Wagner's 2005 master's thesis entitled *Key Worker Housing: A Demographic Analysis of Working Families in Eastern Massachusetts* provides an excellent resource in comparing key worker household demographics in comparison to other households and individuals in the region.

A spatial demand analysis shows that Boston remains a hub for key worker jobs as it does for Eastern Massachusetts as whole. Boston provides 24% of all key worker jobs just as it provides 24% of all full-time jobs. At the same time an estimated 11% of all worker households are in the City of Boston with 47% working and living in the City.[37] For key worker households the percentage of work and live drops to 40%. Once location analysis is undertaken and spatial maps are produced, local variations and patterns begin to emerge to help shed light on localized demand for key worker housing in the region.

All Key Worker Households by Job Location

A spatial analysis of all key worker households and individuals relative to job location found the following major findings.

- Outside of Boston with its 24% share of key workers, key workers jobs are evenly distributed across the region with PUMA shares running from 2-4% of the key worker workforce. Key worker households comprise 8.8% of all households with at least 1 full-time worker.

[36] Per the U. S. Census Bureau, income from wages is defined as, "total money earnings received for work performed as an employee during the past 12 months. It includes wages, salary, armed forces pay, commissions, tips, piece-rate payments, and cash bonuses earned before deductions were made for taxes, bonds, pensions, union dues, etc." Household income is defined as, "the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not."

[37] Boston jobs are aggregated into 1 place of work puma but separated into 5 place of residence PUMAs.

- Median key worker wages are highest in the $42,000 to $48,400 range for key worker who work inside the Route 128 beltway and to the northwest while higher median household incomes by job location above $80,000 are concentrated both within Route 128 and the three outlying PUMAs of 800 (North Andover north to Merrimac), 3600 (Foxborough west to Millville), and 3900 (Hull south to Hanover).
- There exist two distinct bands by job location of higher than 75% homeownership and one distinct band of greater than 30% renters.
- Commute times are highest for key workers that work in some of the most expensive housing areas of the state. As of 2000, a majority of key worker in these high cost PUMAs were forced to endure the longest commutes (median 25-30 minutes) and live the farthest away from their key workplaces.

All Key Worker Households Counts

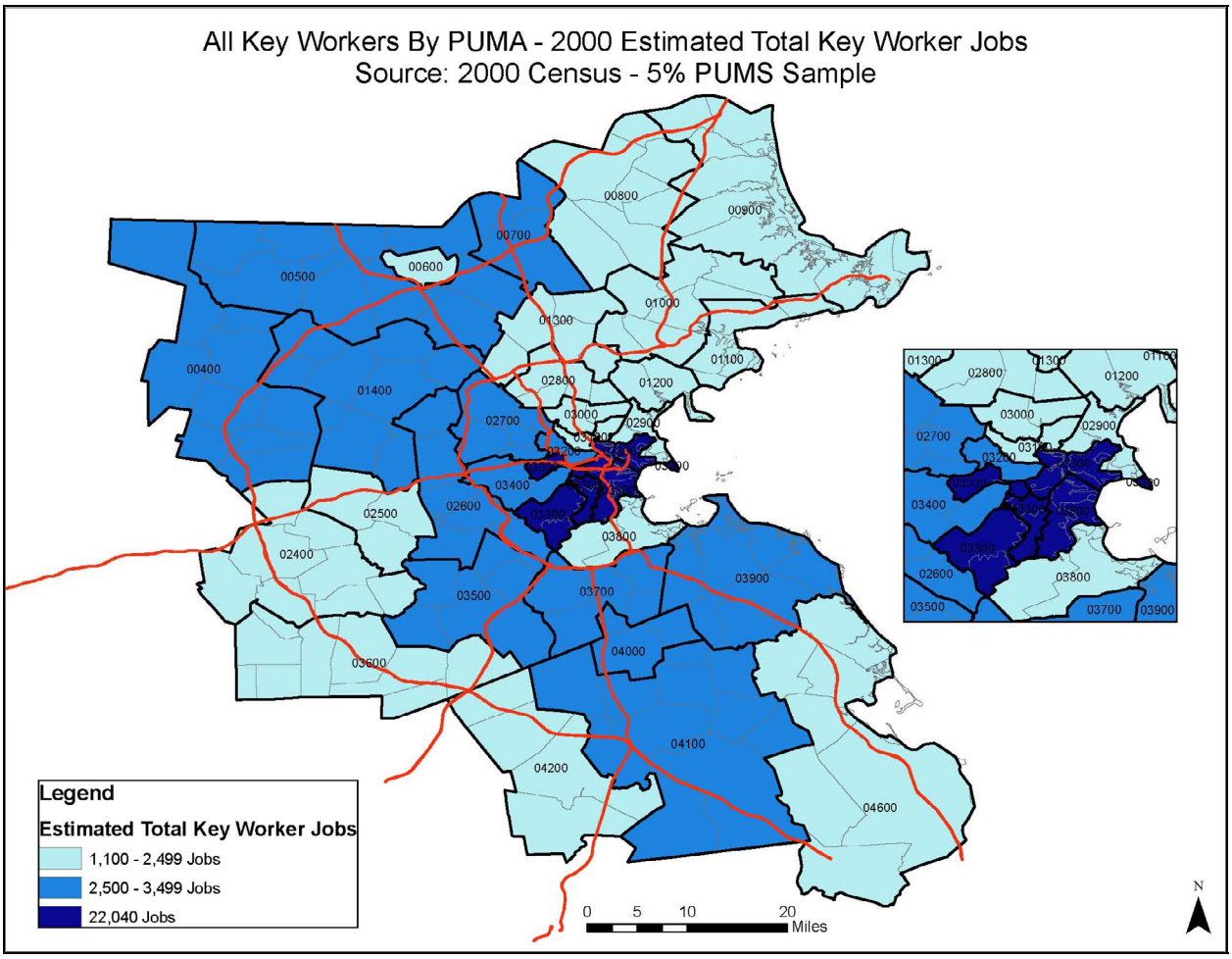
Full-Time Workers and Households: Employed in Eastern Massachusetts				
	SAMPLE		**ESTIMATE**	
	Persons	***Households***	***Persons***	***Households***
All Workers	66,925	50,415	1,338,500	1,008,300
Key Workers	4,616	4,414	92,320	88,280
Key Workers as a Percent of All Workers			6.9%	8.8%
Of the key workers & key worker households, the breakout is as follows:				
Teachers	1,547	1,468	30,940	29,360
Nurses	2,004	1,912	40,080	38,240
Firefighters	323	317	6,460	6,340
Police	742	717	14,840	14,340

It is important to reiterate again before presenting our findings that our analysis is based upon 5 percent sample data and should not be used as true counts of key worker individuals or key worker households. Our findings are estimates only and should be utilized accordingly.

Where are the Jobs?

As the major employment and population center in the region, it should come as no surprise that the City of Boston provides the highest number of key worker jobs. As Figure 18 below highlights, an estimated 22,040 jobs, or 24% of all key workers work in the City. Appendix C-1 further states how Boston provides employment to an estimated 14% of all teacher jobs, 16% of all firefighter jobs, 28% of all police jobs, and a disproportionate 31% of all nurse jobs. Outside of Boston, the key worker jobs are fairly evenly distributed in terms of total jobs in each PUMA. Please visit Appendix C-1 for a breakdown of total estimated jobs and estimated occupation totals for each PUMA.

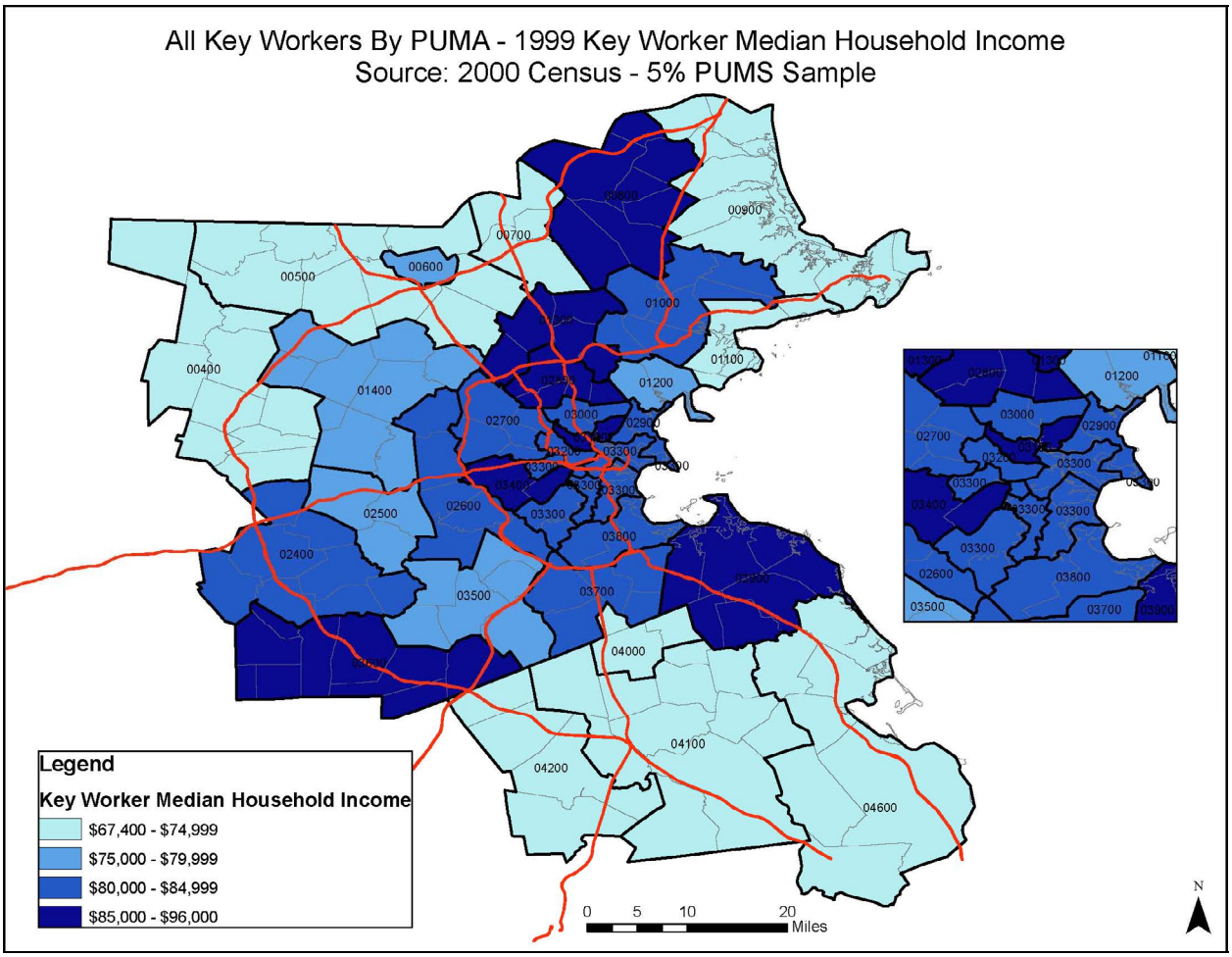
Figure 18: All Key Workers by Job Location PUMA: 2000 Estimated Key Worker Jobs



Household and Wage Income Variation Across the Region

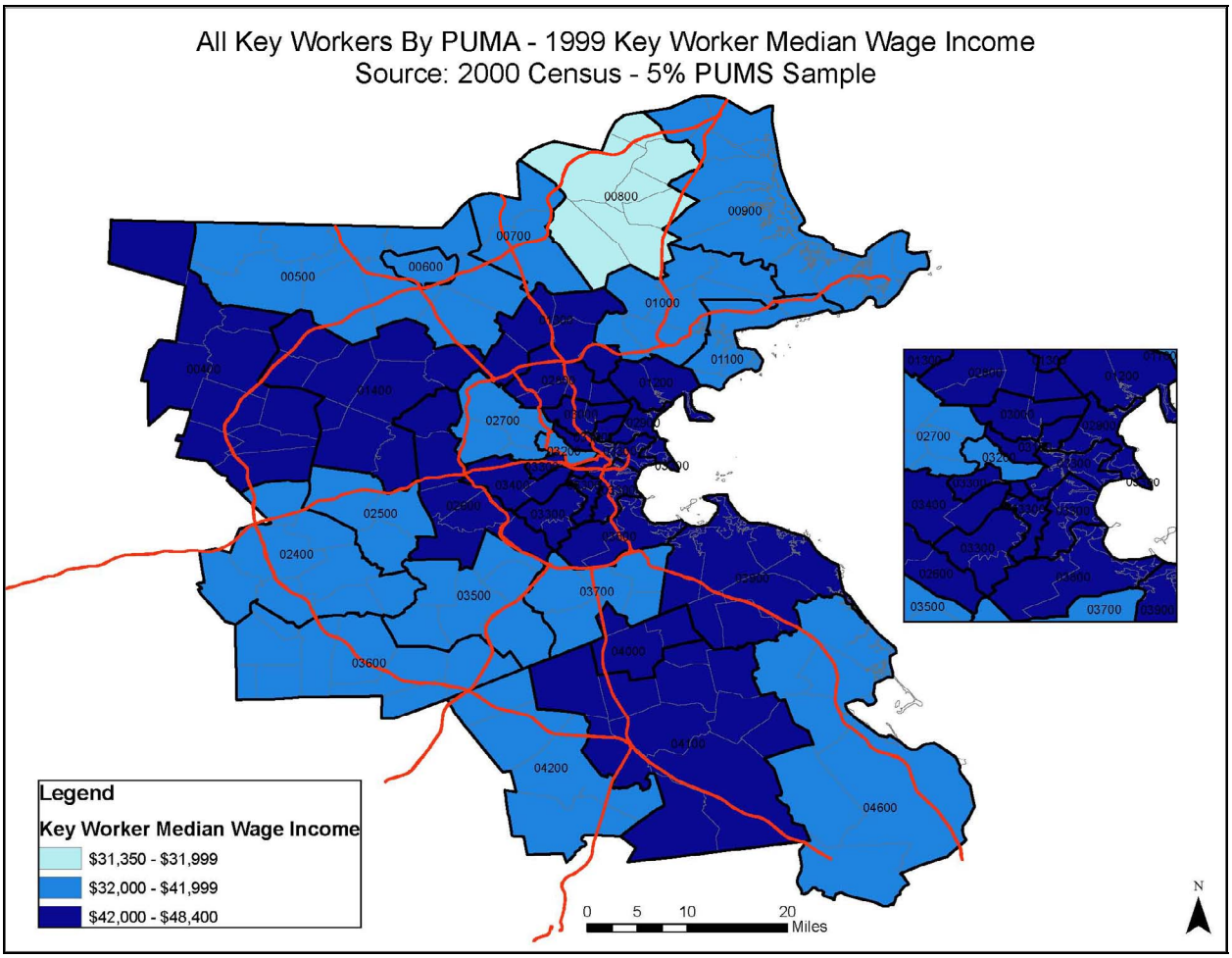
Figure 19 demonstrates how household median incomes follow a fairly consistent pattern of higher household incomes in the PUMAs closest to Boston and directly to the west. The map illustrates how key worker household incomes are usually lowest in the PUMAs by where people work the furthest away from Boston in terms of drive times (i.e. far South Shore and past 495) and where cost of living expenses are typically lower. Notably, Boston key worker household incomes while higher than the average for all worker households at $80,650 is one notch below the highest bracket of median household incomes for key worker households.

Figure 19: All Key Workers by Job Location PUMA: 1999 Median Household Income



Individual wages incomes also follow a pattern of higher wage incomes in the PUMAs closest to Boston and directly to the west. However, Figure 20 demonstrates how higher key worker wages are uniformly more prevalent in the Route 128 belt and into the wealthier western suburbs. PUMAs 4000 (Abington, Avon, and Brockton) and 4100 (Bridgewater and surrounds) also jump into the highest wage bracket. Since household income is in the lowest bracket for these PUMAs, further examination might show the upwards wage push related to difficulty attracting skilled teachers, nurses, policeman, and firefighters to those cities and towns.

Figure 20: All Key Workers by Job Location PUMA: 1999 Median Wage Income



Where are the Homeowners and Renters?

Figures 21 and 22 highlight very two distinct patterns of homeownership and rental housing in the 35 PUMAs. While homeownership is overall at least 66% for all key worker households across the region, it jumps to over 75% in two bands. The first band runs southwest of Route 128 and the second band runs predominantly north of Route 128 with several traditionally middle income workforce PUMAs (Northern inner rings suburbs, e.g. Everett, Malden, Revere) due north of Boston also included.

Figure 21: All Key Workers by Job Location PUMA: 2000 Percentage Homeowner Households

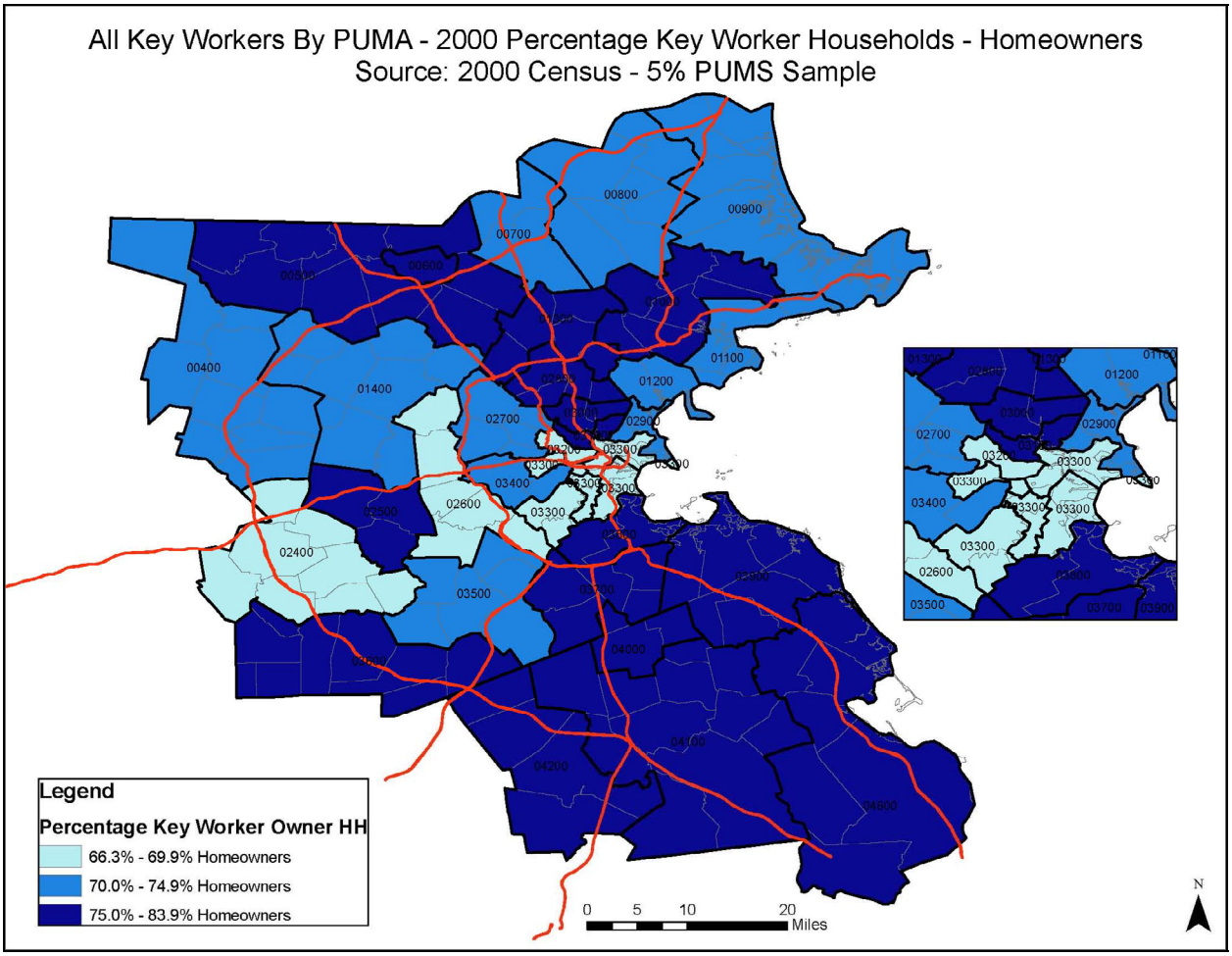
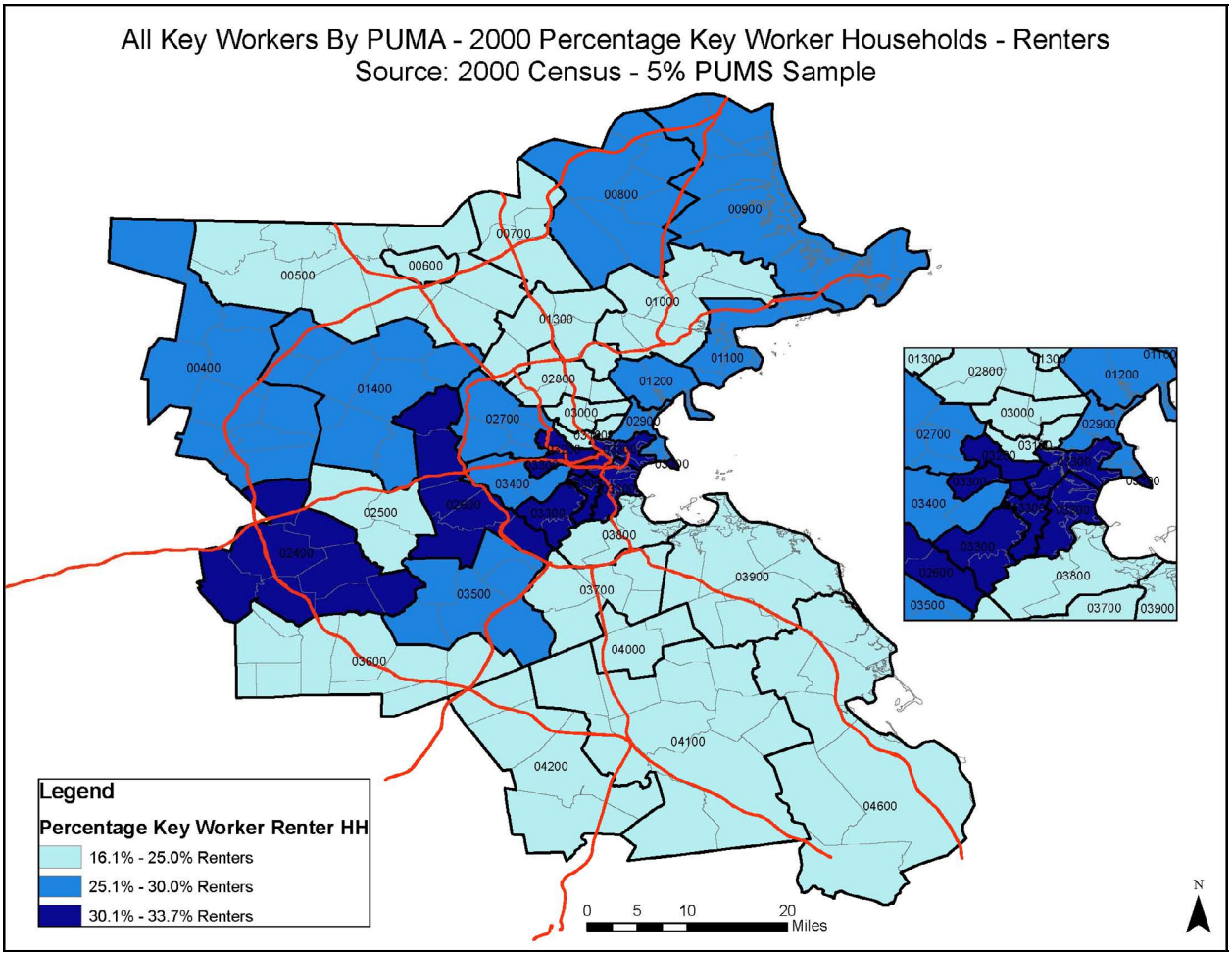


Figure 22 maps how the 30% plus rental housing band runs due west from Boston along the route of the Mass Pike with the notable exception of PUMA 2500 which includes the towns of Framingham, Sherborn, and part of Natick. Lacking further data on home prices and total rental housing stock, the higher percentages of rental households is either due to higher home prices in these PUMAs, larger percentages of available rental stock (as the case in Boston), or a combination of both factors.

Figure 22: All Key Workers by Job Location PUMA: 2000 Percentage Renter Households



Commute Time Variation Across the Region

Figure 23 illuminates how commute times vary across Eastern Massachusetts for all key workers. Not surprisingly, commute times are highest in Boston and the immediate western suburbs likely due to inner city congestion and higher use of public transportation which typically results in a longer commute. Commute times are shortest (see full list below) for the north shore and in PUMAs 600, 700, 4200, and 4600. Conversely, median commute times run 25-30 minutes in the area due west past Route 128 all the way to Route 495. It appears that in the higher housing cost and limited rental stock towns and cities of the western suburbs key worker households are less able to live close to their jobs potentially to the detriment of the people that they serve. It is also important to state that these are median commute times. A full 50% of all key workers commute longer than the median commute time.

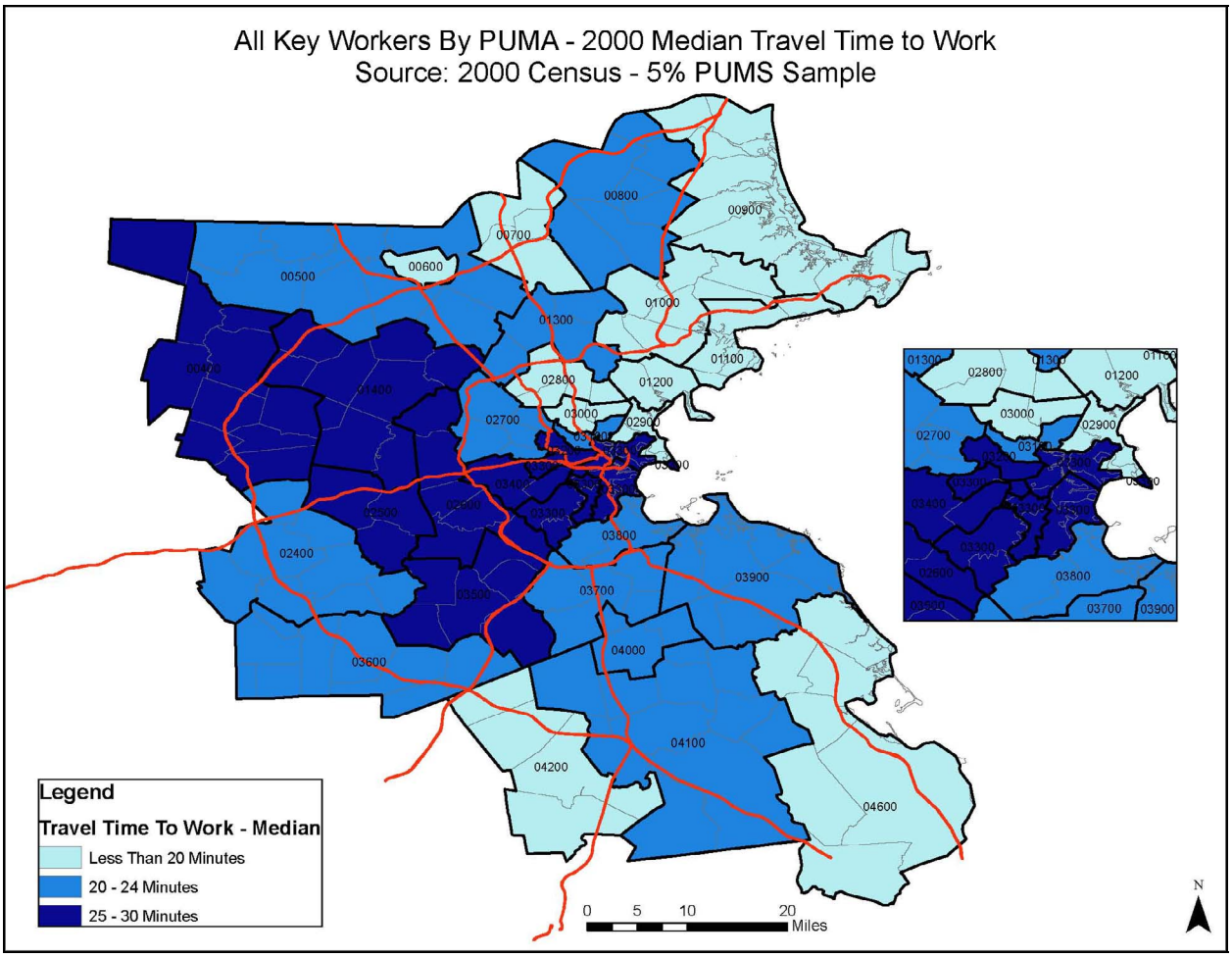
Less than 20 minutes average commute time:

- Lowell (600); Andover, Lawrence, and Methuen (700); Amesbury, Essex, Gloucester, Ipswich, Newbury, Newburyport, Rockport, Rowley, Salisbury (900); Danvers, Hamilton, Lynnfield, Middleton, Peabody, Topsfield, Wenham (1000); Beverly, Manchester, Marblehead, Salem, Swampscott (1100); Lynn, Nahant, Saugus (1200); Melrose, Stoneham, Winchester, Woburn (2800); Chelsea, Revere, Winthrop (2900); Malden, Medford (3000); Berkley, Mansfield, Norton, Taunton, Dighton (4200); and Carver, Duxbury, Kingston, Marshfield, Pembroke, Plymouth, and Wareham

30 minutes average commute time:

- Boston (3300); Acton, Bedford, Boxborough, Carlisle, Concord, Littleton, Maynard, Sudbury, Wayland (1400)

Figure 23: All Key Workers by Job Location PUMA: 2000 Median Travel Time to Work



30-44 Year Old Key Worker Renter Households

In this next section, we focus on 30-44 year old key worker households for several important reasons. First, this group contains the individuals and households most likely to purchase their first home due to their age. Second, they show a higher propensity to transition to marriage and finally they exhibit more stable and higher income streams in comparison to twenty something individuals. In short, this age bracket and overall group are the ones more likely to start a family and "nest" with a first home than younger ages when workers are more mobile and older ages when most households have already purchased a home if they could afford to do so.

- There exist an estimated 10,540 30-44 renter key worker households in the 165 cites and towns with an estimated 3,020 renter key worker households in Boston.
- Boston employs an even greater 29% share (versus 24% of all key workers) for 30-44 renter key worker jobs. Outside of Boston, 30-44 renter key workers jobs remain evenly distributed across the region with PUMA shares running from 1-4% of the estimated key worker workforce.
- 30-44 age renter key worker 1999 wages are only above $42,000 in two PUMAs, 400 (Malborough north to Townsend) and 3900 (Hull south to Hanover). 30-44 age renter key worker households earn over $65,000 in 1999 dollars in only 4 out of the 35 PUMAs (4100 – south of Brockton, 4200 – south of Foxborough, 400, and 2400 – farthest west in Eastern .Massachusetts). The figures and data implies that most 30-44 renter key worker households are making close or below the 1999 HUD Boston PMSA income limit of $62,700.
- Marriage rates for 30-44 key worker rental workers are 39% (38% Boston). While significantly lower than 30-44 key workers as a whole, it hints that a good portion of 30-44 age rental key worker households (approximately 4,100) will likely pursue home

ownership in the short tem or have explored home ownership but have been unable to afford a home purchase within reasonable distance to their jobs.

- Commute times are high for 30-44 year old key workers whether they rent or own. They remain highest for 30-44 age key workers that work in the most expensive housing areas of the state. Referencing Appendix D-3, 30-44 age renter key workers have to endure 30 plus minute commutes in 11 PUMAs while all 30-44 age key workers have to endure 30 plus minute commutes in 4 PUMAs.

30-44 Key Worker Renter Households Counts

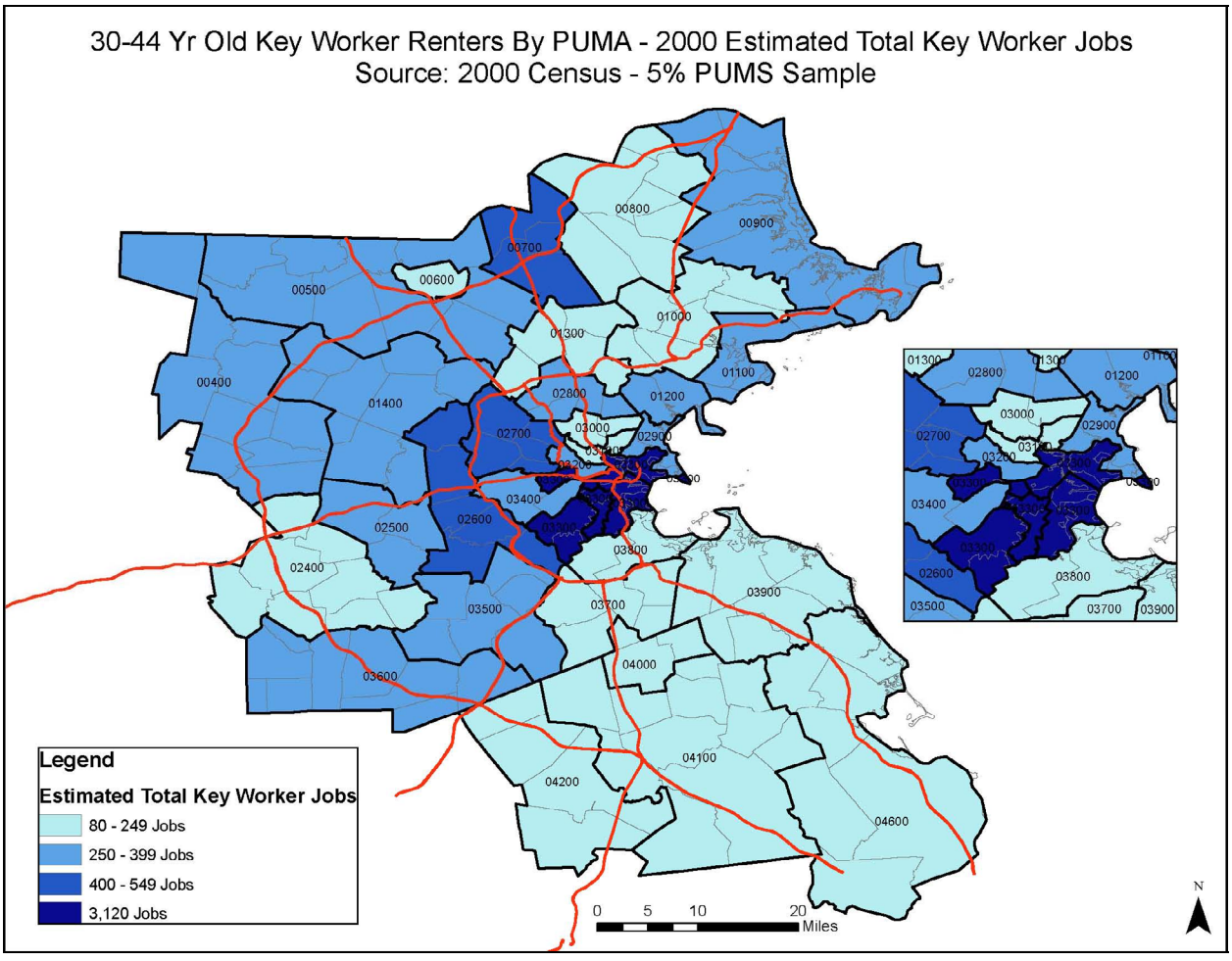
30-44 Full-Time Key Worker Renter Households: Employed in E. Massachusetts				
	SAMPLE		**ESTIMATE**	
	Persons	***Households***	***Persons***	***Households***
All Full Time 30-44 Workers	30,323	23,387	606,460	467,740
30-44 Full Time Key Worker Renters	543	523	10,860	10,460
Key Workers Renters as a % of 30-44 Workers			1.6%	2.2%
Of the key workers & key worker households, the breakout is as follows:				
Teachers	154	146	3,080	2,920
Nurses	284	273	5,680	5,460
Firefighters	26	26	520	520
Police	79	78	1,580	1,60

It is important to reiterate again in our findings that our analysis is based upon 5 percent sample data and should not be used as true counts of key worker individuals or key worker households. Our findings are estimates only and should be utilized accordingly.

Jobs, Incomes, and Marital Status

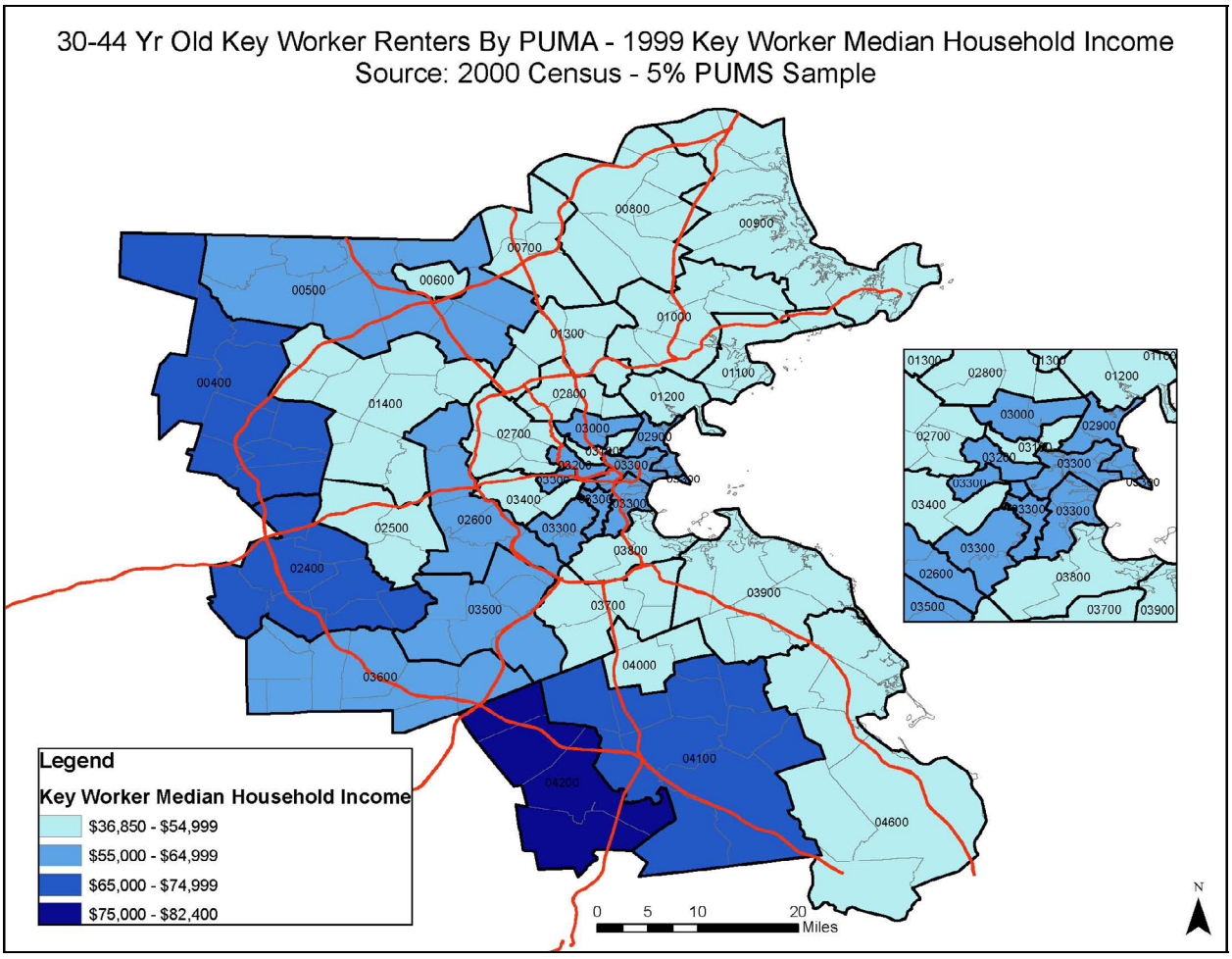
The City of Boston continues to contain the highest number of key worker jobs in the 30-44 age key worker renter group. As the figure below shows, an estimated 3,120, or 29% of all 30-44 age key workers renters work in the City. Appendix D-3 further illuminates how Boston provides employment to an estimated 19% of all teacher jobs, 8% of all firefighter jobs, and a disproportionate 31% of all nurse jobs and 39% of all police jobs in the 30-44 age key worker renter group. 30-44 age key worker renter jobs are fewer in the south shore and to the north of the city. These are typically the same areas where total key worker jobs counts are lowest. Appendix D-3 details total estimated jobs and estimated occupation totals for each PUMA.

Figure 24: 30-44 Key Worker Renters by Job Location PUMA: 2000 Estimated Key Worker Jobs



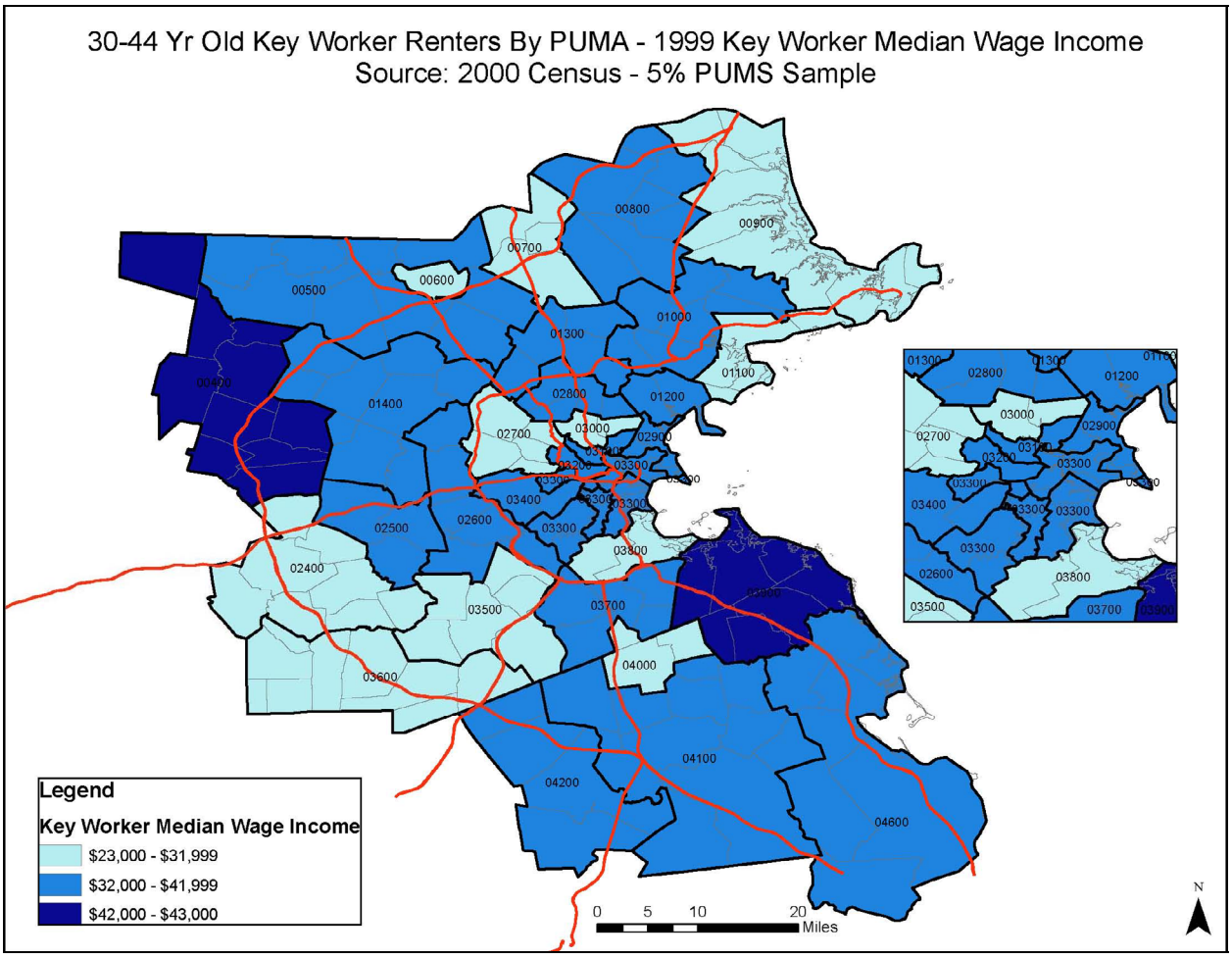
In Figure 25 below, median household income for 30-44 age key worker renters is typically significantly lower than for all key worker households. In only four PUMAs (4100 – south of Brockton, 4200 – south of Foxborough, 400 - Malborough north to Townsend, and 2400 – farthest west in Eastern Massachusetts) do 30-44 age key worker renter households earn more than $65,000. While marriage rates are lower for 30-44 renters at 39% versus 61% for all 30-44 key workers, median age for 30-44 renters at a 36 median is only one year younger. While household incomes can be partially explained by marriage rates it also reasonable to speculate that there is a shortage of home ownership products types in the location and price points for married 30-44 key worker households where household incomes are lower.

Figure 25: 30-44 Key Worker Renters by Job Location PUMA: 1999 Median Household Income



As shown in Figure 26, 30-44 renter key worker household wage incomes by job location mimics the patterns of income distribution for all key workers with one notable exception. Instead of many PUMA incomes above $42,000, most 30-44 renter key worker individuals earn one wage bracket down in the $32,000 to $41,999 range instead of $42,000 to $48,480 for all key workers. Much of this is explained by older more experienced workers in the all workers pool. Only two PUMAs 400 (Malborough north to Townsend) and 3900 (Hull south to Hanover) provide employment for 30-44 age renter key worker that earn over $42,000. Further town level investigation is required to understand what pay policies or other factors are pushing up wages in these areas versus areas closer to Boston where wages for all key worker wages are higher.

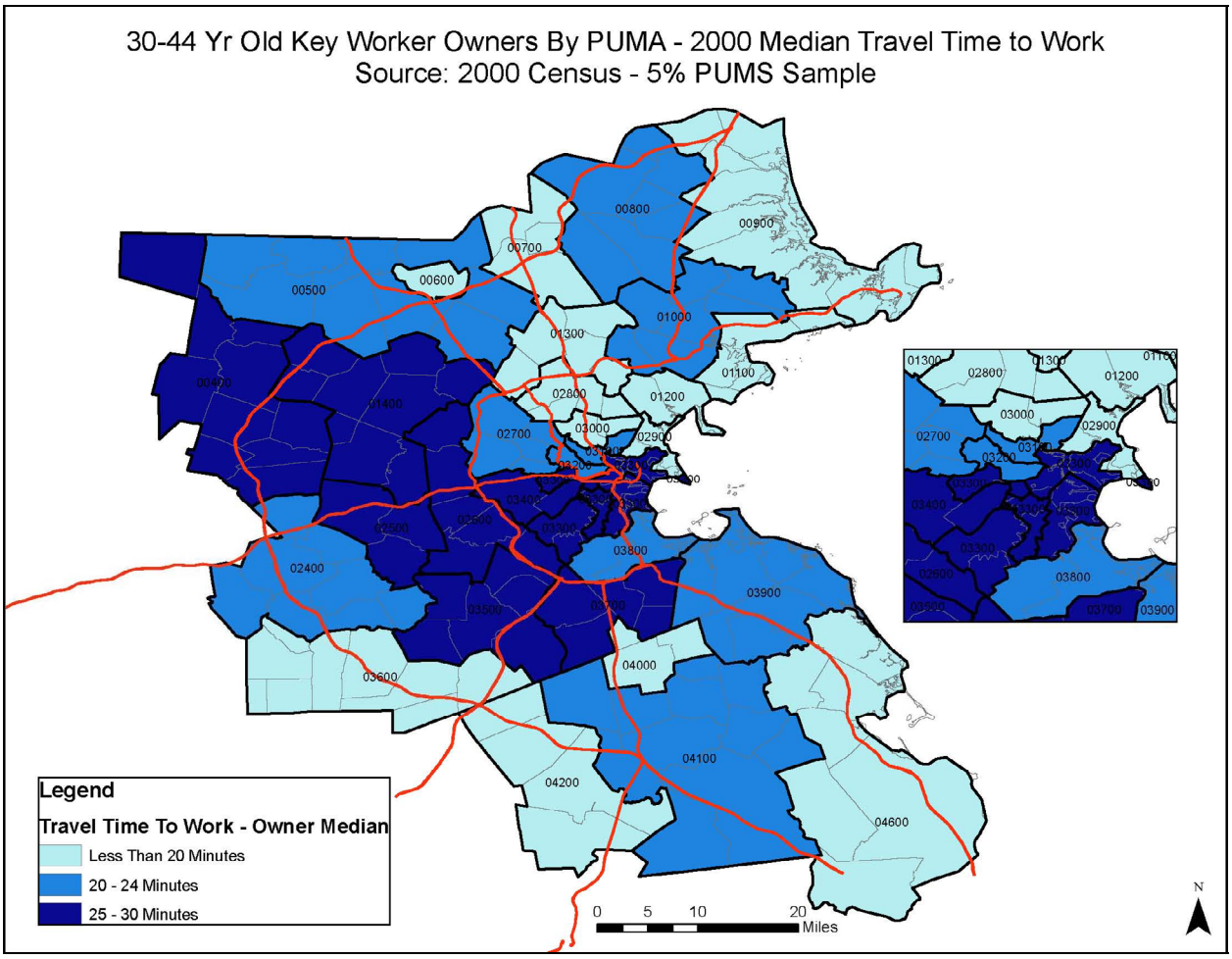
Figure 26: 30-44 Key Worker Renters by Job Location PUMA: 1999 Median Wage Income



Commute Time Variation Across the Region

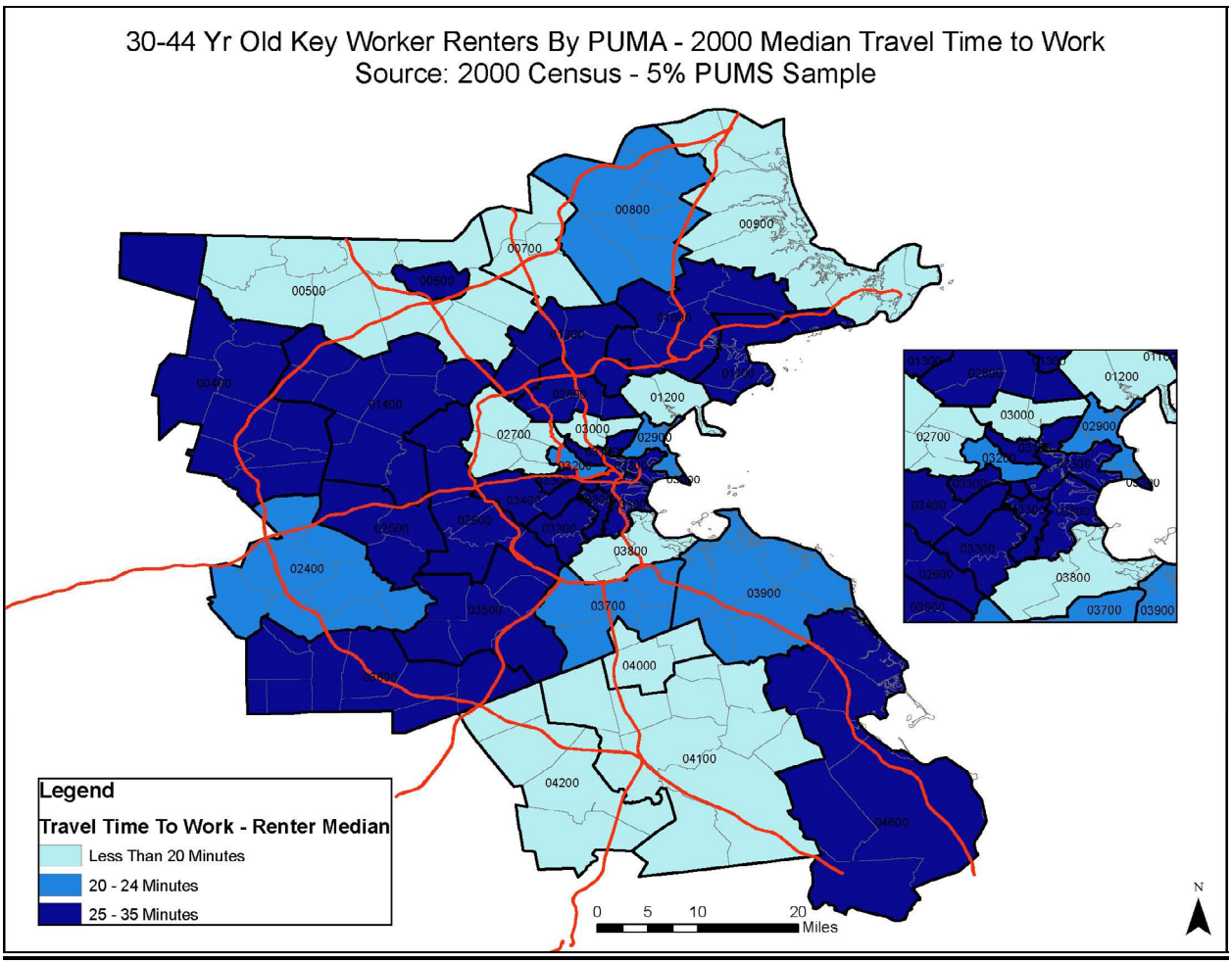
Figure 27 showcases how commute times are almost all equivalent for 30-44 owner key worker households as for all key worker households. Please visit Appendix D-2 for supporting statistics and counts by PUMA. Commute times remain highest in Boston and the immediate western suburbs at 25 to 30 minutes median commute time. In other words, key worker households that have been able to purchase a home are no better or worse off than all key worker households as a whole. Additional analysis into year of home purchase tied to a housing price index might provide additional clues if younger key worker families are burdened with longer commute times due to "drive until you qualify" price constraints.

Figure 27: 30-44 Key Worker Owners by Job Location PUMA: 2000 Median Travel Time to Work



30-44 age renter key workers however endure some of the longest commute times of any group studied and reside the furthest away from the communities they serve. Figure 28 elucidates how commute times are over 25 minutes for over half of the PUMAs. These commute times point to two likely causes. The first likely culprit is a shortage of rental housing in cities and towns close to key worker jobs. The second potential culprit is self-selection of younger (yet still over 30) unmarried key worker renting in cities and towns where other similar young unmarried workers reside. An exhaustive comparison of job location to residential location would better clarify exactly where 30-44 key workers rent in comparison to their jobs.

Figure 28: 30-44 Key Worker Renters Job Location PUMA: 2000 Median Travel Time to Work



Boston 30-44 Key Worker Renter Households

According to 2000 US Census data, an estimated 3,020 key worker renter households existed in Boston in 2000[38] 62% of individuals were not married, median household income was $64,000, and median wage income was $37,000. We will look at key workers that both work and live in Boston in the next section but it still important to highlight several noteworthy findings. Nurses comprise a whopping 60% of all 30-44 key worker renters that work in the City of Boston. Firefighters at 5% of all key workers working in Boston only make up 1% of 30-44 key worker renters. An estimated 1,180 30-44 key worker renter are married households and still rent. Please refer to Appendix D-3 for additional statistics on 30-44 age renter key workers.

Figure 29: 30-44 Boston Key Worker Renters: Detailed Descriptive Statistics

Median Values		
Age		36
Income from Wages		37,000
Travel Time in Minutes		30
Household Income		64,000
Married	1,180	38%
Not Married	1,940	62%
		100%
Percent (%) by Housing Type of 30-44 Key Worker Family		
Single Family Home	300	10%
2-4 Unit Building	1,680	56%
5-19 Unit Building	500	17%
20+ Unit Building	540	17%
Other Type of Housing	-	0%
		100%
As a Percent (%) of Total 30-44 Key Worker Jobs in Boston		
Teachers	600	19%
Nurses	1,860	60%
Firefighters	40	1%
Policemen	620	20%
		100%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs	36,680	
Teachers		2%
Nurses		5%
Firefighters		0.1%
Policemen		2%
As a Percent (%) of Total 30-44 Full Time Jobs in All 35 PUMAs	606,460	Total 30-44 Full Time Jobs
Teachers	600	0.1%
Nurses	1,860	0.3%
Firefighters	40	0.0%
Policemen	620	0.1%
Total Key Worker Jobs	3,120	0.5%
As a Percent (%) of Total 30-44 Full Time Households in All 35 PUMAs	467,740	Total 30-44 Households With At Least 1 Full Time Worker
Total Key Worker Households	3,020	0.6%

[38] It is important to note a small sample size of 151 households.

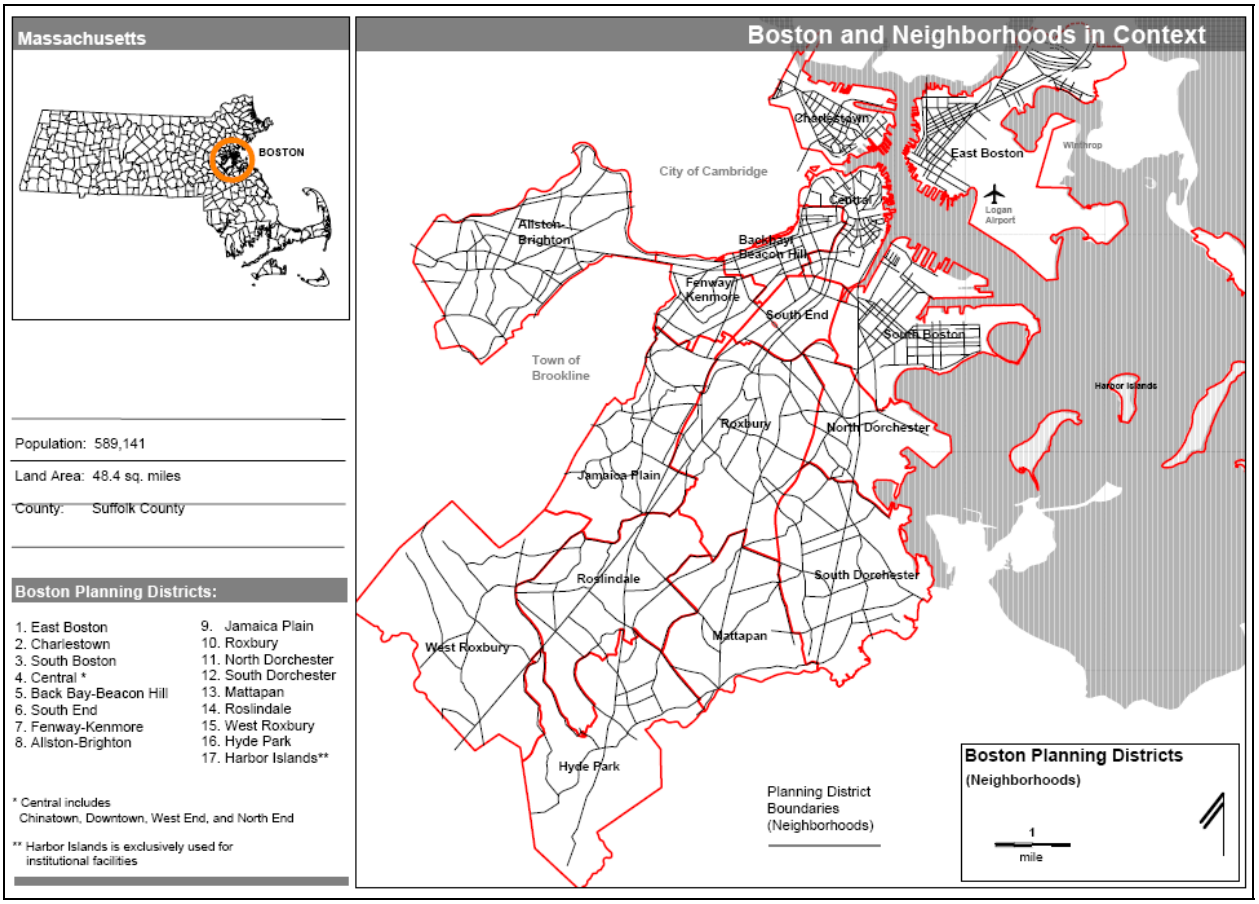
Work and Live in Boston Key Worker Households

In this next section, we delve deeper into those 30-44 year old key workers that both work and live in the same place. In previously section, the analysis was based upon the key worker job location and not city or town of residence. The City of Boston provides a unique opportunity look at key workers who both work and live in the same city. The residency requirement for many of Boston's city workers adds another degree of relevancy although it is important to note that of the four key worker occupations studied in this thesis, nurses are not typically city employees and therefore are not subject to present or future residency requirements.

The entire city of Boston is broken into 5 distinct place of residence PUMAs that somewhat align up with existing Boston neighborhoods. While we cannot pinpoint the place of work PUMA in Boston for each key worker works we can however pinpoint which of the 5 distinct PUMAs the individual key worker actually resides. Our findings summarized in figure 30 below provide evidence that an estimated 40 percent of all key workers that work in Boston also live within the City of Boston. Work and live in Boston percentages are highest for teachers at 47 percent, followed by 43 percent for firefighters, 40 percent for policeman, and 36 percent for nurses.

- The highest estimated numbers of key workers live in PUMA 3304 (South Boston, North Dorchester, and South Dorchester) and 3305 (Jamaica Plain, Roslindale, West Roxbury, and Hyde Park) at 2,200 and 2,860 respectively. Median household income for these two areas is $74,000 and $74,200. $74,000 is 118% of HUD Boston PMSA area household median income in 1999.
- An estimated 82% of key workers that live and work in Boston live in the three PUMAs, 3303 (Roxbury and Mattapan), 3304 and 3305. This is considerably lower than the 59% who live in these neighborhoods for all Boston full-time working residents.
- Homeownership rates are higher where household incomes are higher, peaking at 72% in Jamaica Plain, Roslindale, West Roxbury, and Hyde Park. This is true even though average marriage rates for the neighborhoods are below 50% at 47%
- Our analysis found an almost 50/50 split of estimated rental and owner households (4,100 rent versus 4,180 own).
- In comparison to all key workers across eastern Massachusetts, most key workers that work and live in Boston are not married. Warranting further investigation, it appears that Boston continues to have a tough time retaining married key worker families.
- An average of 47% of all households reside in 2-4 unit buildings. Only in Jamaica Plain, Roslindale, West Roxbury, and Hyde Park does single family homes dominate at 57%.

Figure 30: Boston and Neighborhoods in Context



Source: Boston Redevelopment Authority

<u>5 Place of Residence PUMAs and corresponding Boston neighborhoods:</u>

PUMA 3301: Allston-Brighton and Fenway-Kenmore

PUMA 3302: Charlestown, East Boston, Back Bay-Beacon Hill, Central, and South End

PUMA 3303: Roxbury and Mattapan

PUMA 3304: South Boston, North Dorchester, and South Dorchester

PUMA 3305: Jamaica Plain, Roslindale, West Roxbury, and Hyde Park

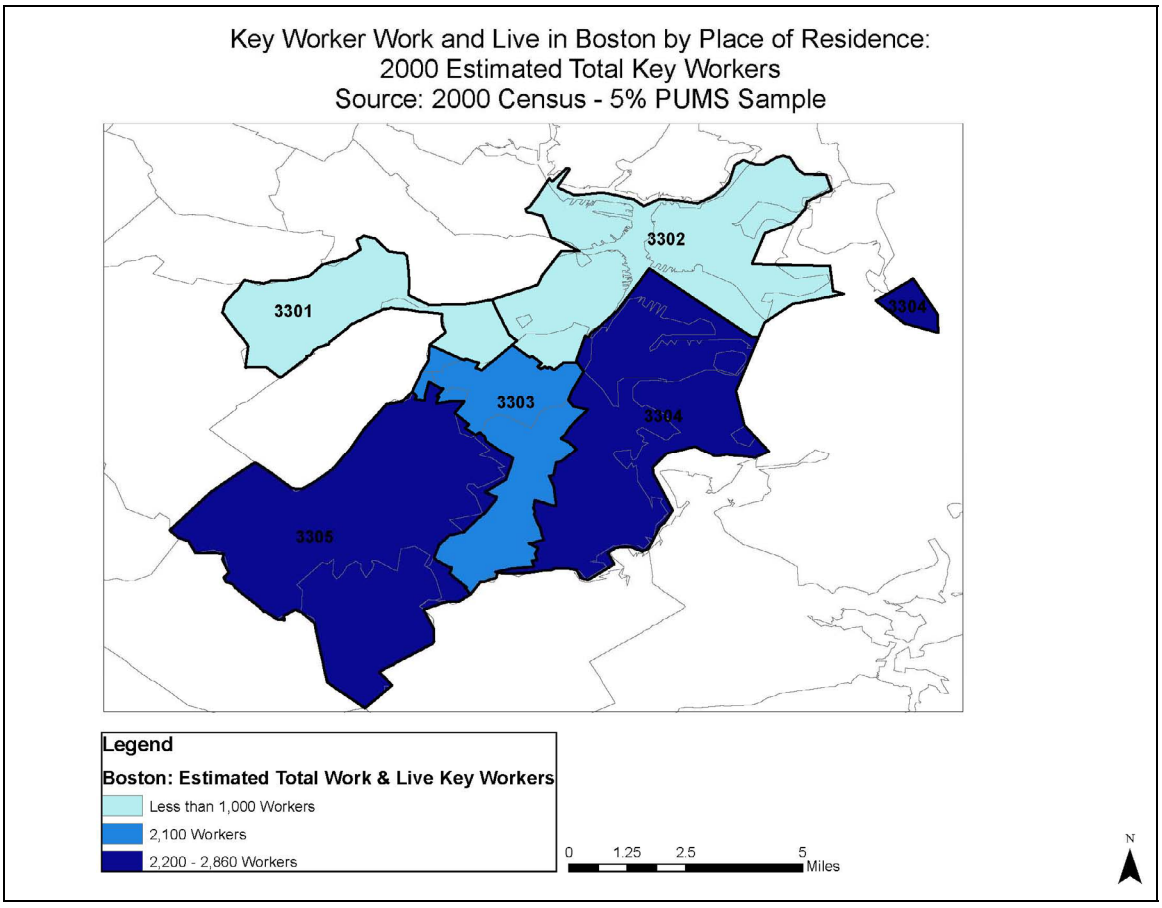
Figure 31: Work and Live in Boston Key Workers: Detailed Descriptive Statistics

Place of Residence PUMA	Totals	3301	3302	3303	3304	3305	
Median Values							
Age	41	32	44	41	36	43	
Income from Wages	40,000	34,000	50,000	30,000	40,000	41,000	
Travel Time in Minutes	20	20	20	28	20	20	
Household Income	73,500	69,700	73,500	55,950	74,000	74,200	
Married	41%	23%	48%	37%	41%	47%	
Not Married	59%	77%	52%	63%	59%	53%	
As a Percent (%) of Key Workers Living and Working in Boston							
Owners	44%	19%	52%	35%	44%	72%	
Renters	56%	81%	45%	64%	56%	27%	
Other	1%	0%	2%	1%	0%	1%	
Percent (%) by Housing Type of Boston Key Worker Family							
Single Family Home	20%	16%	11%	20%	23%	57%	
2-4 Unit Building	41%	39%	41%	61%	65%	30%	
5-19 Unit Building	13%	16%	30%	13%	7%	6%	
20+ Unit Building	7%	29%	18%	7%	5%	7%	
Other Type of Housing	0%	0%	0%	0%	0%	0%	
As a Percent (%) of Total Key Worker Jobs in PUMA							
Teachers	27%	39%	33%	22%	20%	23%	
Nurses	51%	45%	50%	66%	45%	47%	
Firefighters	4%	0%	4%	4%	9%	5%	
Policemen	18%	16%	13%	8%	26%	25%	
	100%	100%	100%	100%	100%	100%	
As a Percent (%) of Total Key Worker Jobs - Live/Work in Boston		7%	11%	24%	25%	33%	100%
Live/Work Jobs As a Percent (%) of All Occupation Jobs in Boston	22,040	estimated full-time key worker jobs in Boston					
Teachers	47%	11%	14%	22%	21%	31%	100%
Nurses	36%	6%	10%	31%	22%	30%	100%
Firefighters	43%	0%	9%	17%	43%	30%	100%
Policemen	40%	6%	7%	11%	34%	42%	100%
Total Key Worker Jobs - Both Work and Live in Boston	8,720						
Total Key Worker Households - Both Work and Live in Boston	8,340						
% of Key Workers Jobs - Both Work and Live in Boston	40%						
	100% Est.						
All FT Jobs in 165 Cities and Towns of E.Mass - 100% Estimate	1,338,500						
All Boston Full-Time Jobs - 100% Estimate	319,840						
All Boston Residents Working Full-Time Job - 100% Estimate	150,440	22,360	39,900	22,740	29,580	35,860	
Boston Full-Time Jobs as a % of All Jobs	24%						
Boston Residents as a % of All Jobs in E.Mass	11%	15%	27%	15%	20%	24%	100%
Boston Residents as a % of All Boston Jobs	47%						
	5% Sample						
All Jobs in 165 Citie and Towns of E.Mass - 5% Sample	66,925						
All Boston Full-Time Jobs - 5% Sample	15,992						
All Boston Residents Working Full-Time Job - 5% Sample	7,522	1,118	1,995	1,137	1,479	1,793	

Worker Totals and Percentage of Workers

An estimated 7,180 or 82% of key workers that work and live in Boston reside in PUMAs 3303, 3304, and 3305 (Roxbury, Mattapan, South Boston, North Dorchester, South Dorchester, Jamaica Plain, Roslindale, West Roxbury, and Hyde Park). One third of key worker resides in PUMA 3305 (Jamaica Plain, Roslindale, West Roxbury, and Hyde Park) which contains predominately single family and 2-4 unit housing stock. Of the estimated 8,720 total work and live key workers, 24% are teachers, 51% are nurses, 5% are firefighters, and 19% are policeman. Teachers and nurses rates are higher than their overall percentage of the key jobs in Boston but this might be explained with their higher rate of younger female unmarried workers versus police and firefighter professions which are predominantly male and older. Please refer to Appendix E for statistics, counts, and estimates for each PUMA.

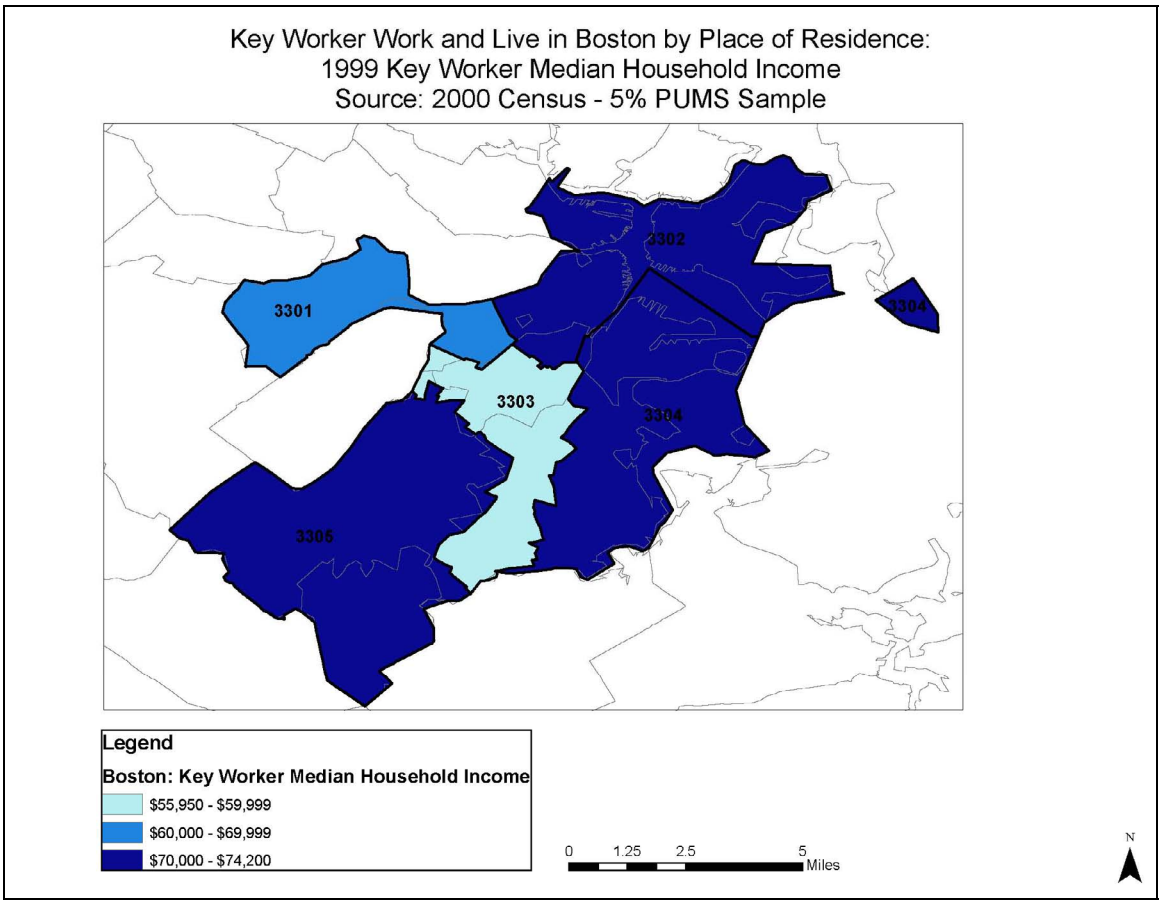
Figure 32: Work and Live in Boston Key Workers: 2000 Estimated Key Workers



Household and Wage Incomes

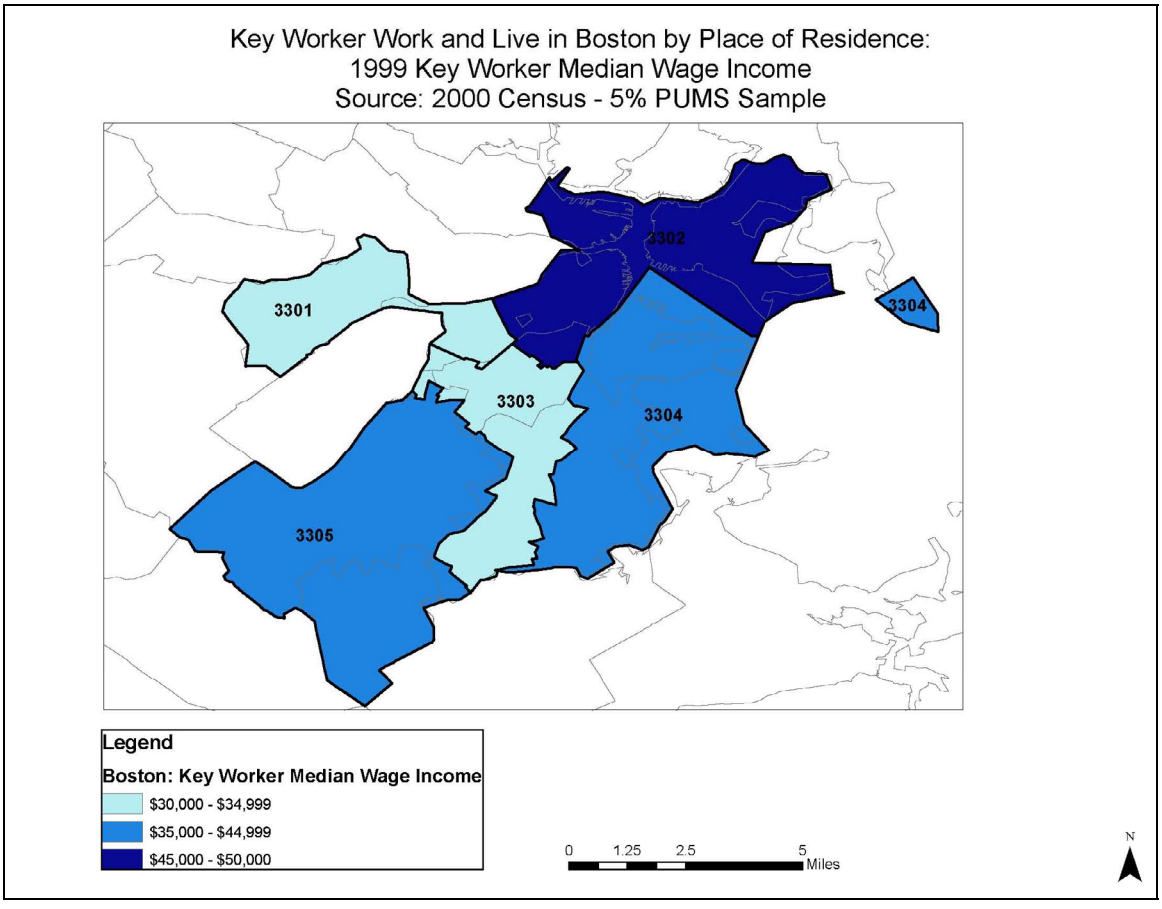
As illustrated in figure 33 below and figure 32 above, median household incomes are fairly clustered from $69,700 to $74,200 in all areas except PUMA 3303 (Roxbury and Mattapan). Roxbury and Mattapan residents also endure the longest median commute times at 28 minutes. Household incomes for Allston-Brighton and Fenway-Kenmore are surprisingly high considering the low median age and low marriage rates at only 23%. This is likely explained by the higher percentage of younger non-related workers living together in the same rental apartment.

Figure 33: Work and Live in Boston Key Workers: 1999 Median Household Income



Wage incomes vary much more widely than household incomes across the 5 PUMAs. As shown in figure 33 and figure 34, median wage incomes are lowest in 3301 (Allston-Brighton and Fenway-Kenmore) and 3303 (Roxbury and Mattapan) at $34,000 and $30,000 and peak at $50,000 in 3302 (Charlestown, East Boston, Back Bay-Beacon Hill, Central, and the South End). Higher residence rates in 5 plus unit building for 3301 (Allston-Brighton and Fenway-Kenmore), further buttresses speculation that key workers in 3301, while younger are living more commonly together with other non-related workers in apartments. Without knowledge of location specific rental and housing costs, it is also hypothesized that lower income individuals whether younger singles or in lower wage positions are choosing to live in the less expensive and/or more dense neighborhoods that they can afford.

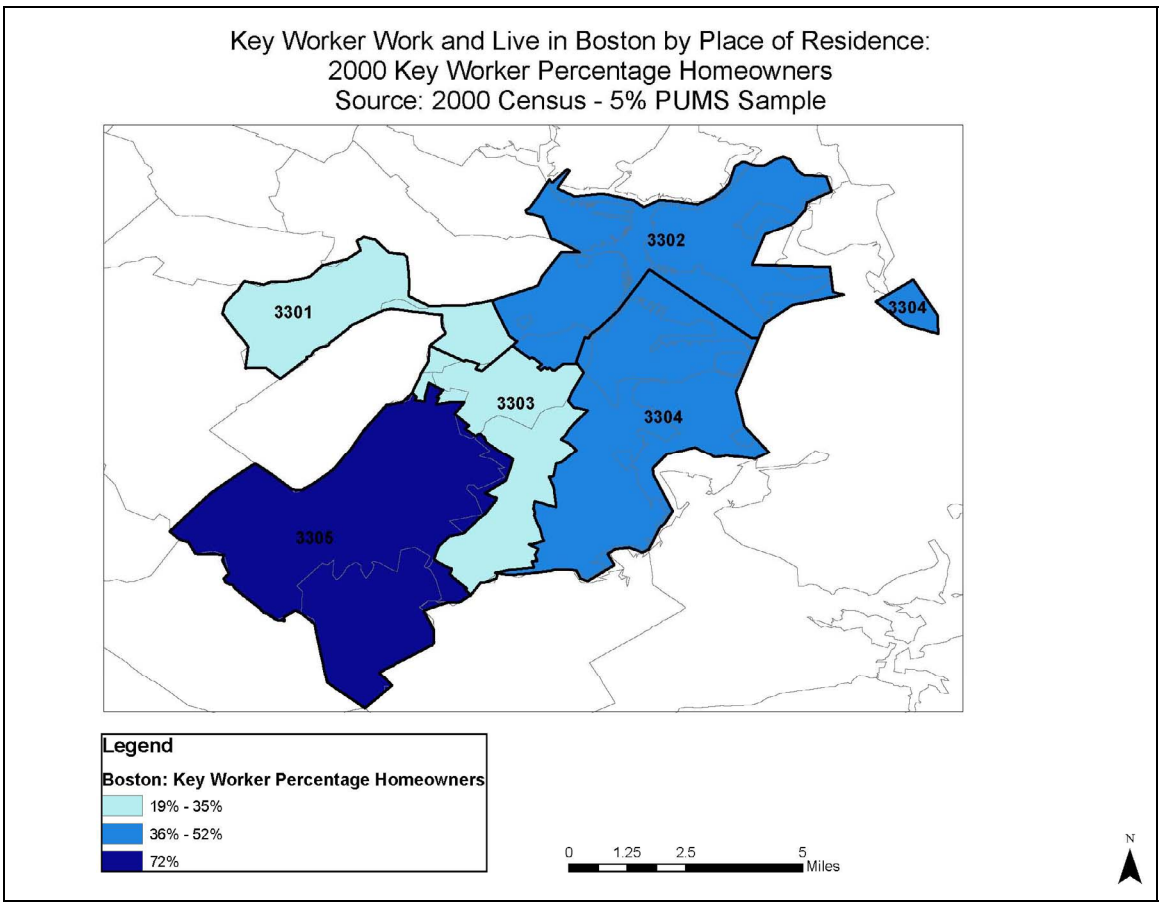
Figure 34: Work and Live in Boston Key Workers: 1999 Median Wage Income



What are the homeownership and marriage rates?

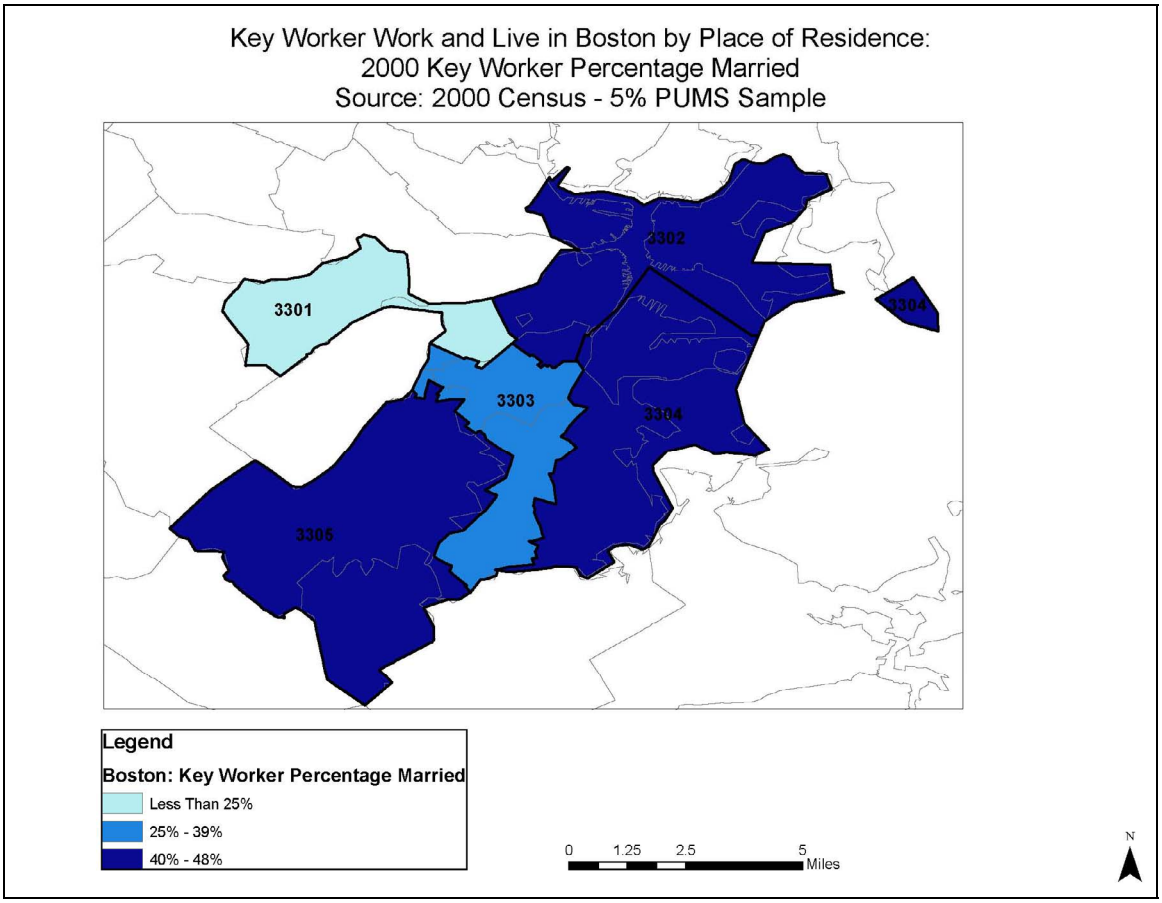
Overall homeownership for work and live in Boston household is right at 50%. This is 17% lower than the 67% rate for all key workers whose job is located in Boston. Homeownership rates also differ widely across Boston. Figure 36 illustrates how homeownership is lowest at 19% in 3301 (Allston-Brighton and Fenway-Kenmore) and highest at 72% in PUMA 3305 (Jamaica Plain, Roslindale, West Roxbury, and Hyde Park). Homeownership is lower at 35% and 44% in PUMAs 3303 (Roxbury and Mattapan) and 3304 (South Boston, North Dorchester, and South Dorchester) even though the over 80% of the housing stock is either single family homes or 2-4 unit buildings.

Figure 35: Work and Live in Boston Key Workers: 2000 Percentage Homeowner Households



Marriage rates are below 50% in all neighborhoods. In comparison to all key workers at 71%, this leads to conjecture that Boston has a tough time retaining married key worker families. Marriage rates are lowest at 23% and 37% in PUMAs 3301 (Allston-Brighton and Fenway-Kenmore) and 3303 (Roxbury and Mattapan) where homeownership rates are also the lowest. Marriage rates are highest at 48 and 47% in PUMAs 3302 (Charlestown, East Boston, Back Bay-Beacon Hill, Central, and the South End) and 3305 (Jamaica Plain, Roslindale, West Roxbury, and Hyde Park) respectively where homeownership rates are also highest. Surprisingly, homeownership rates in 3305 are 72% even though marriage rates are only 47%.

Figure 36: Work and Live in Boston Key Workers: 2000 Percentage Married Households



What type of homes are people living in?

Referencing figure 37 below, residence in single family homes is less than 24% in all areas except for PUMA 3305 (Jamaica Plain, Roslindale, West Roxbury, and Hyde Park) where single family residence jumps to 57%. Over 30% of each occupation type lives in this part of Boston pointing to a possible preference for single family and 2-4 unit living for key worker households. A comparison against total housing stock by housing type for each area would help to further strengthen this hypothesis.

Figure 37: Work and Live in Boston Key Workers: 2000 Percentage Living in Single Family Homes

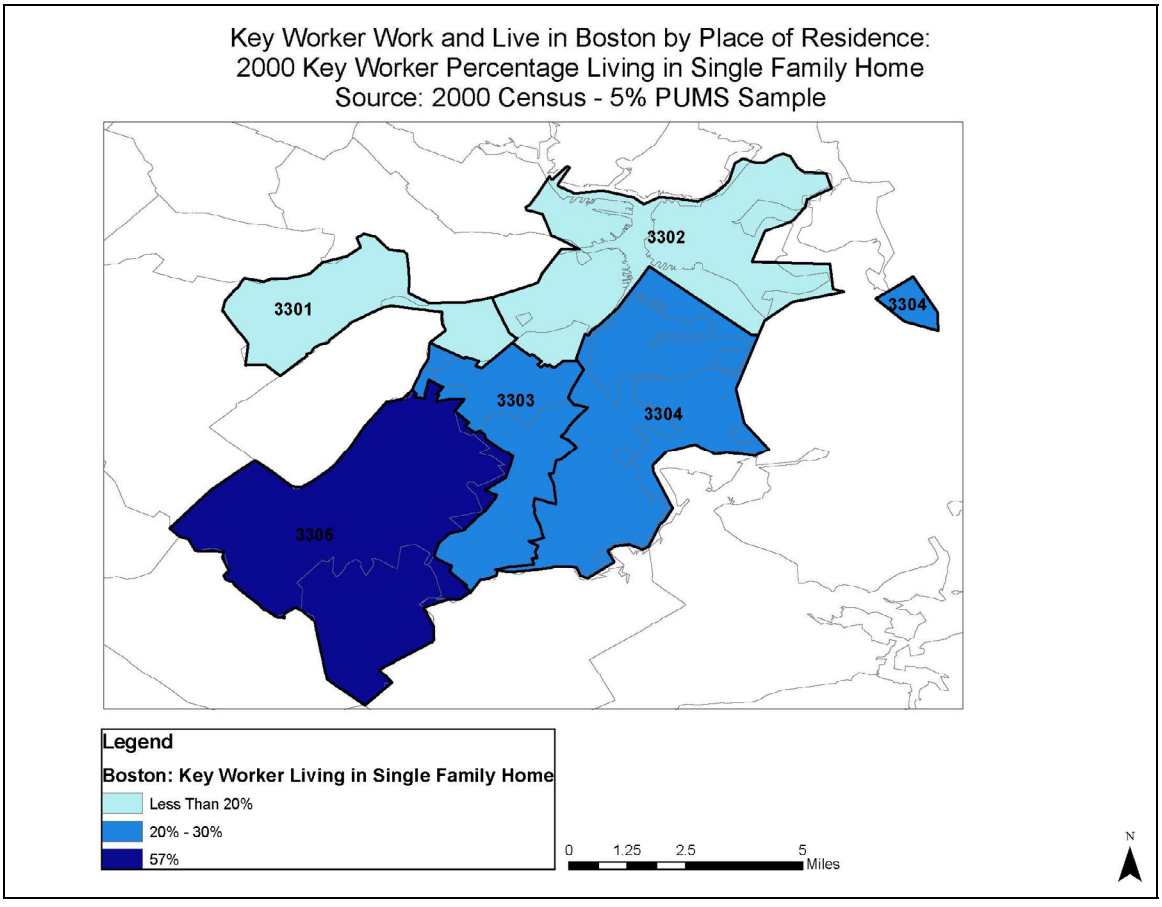
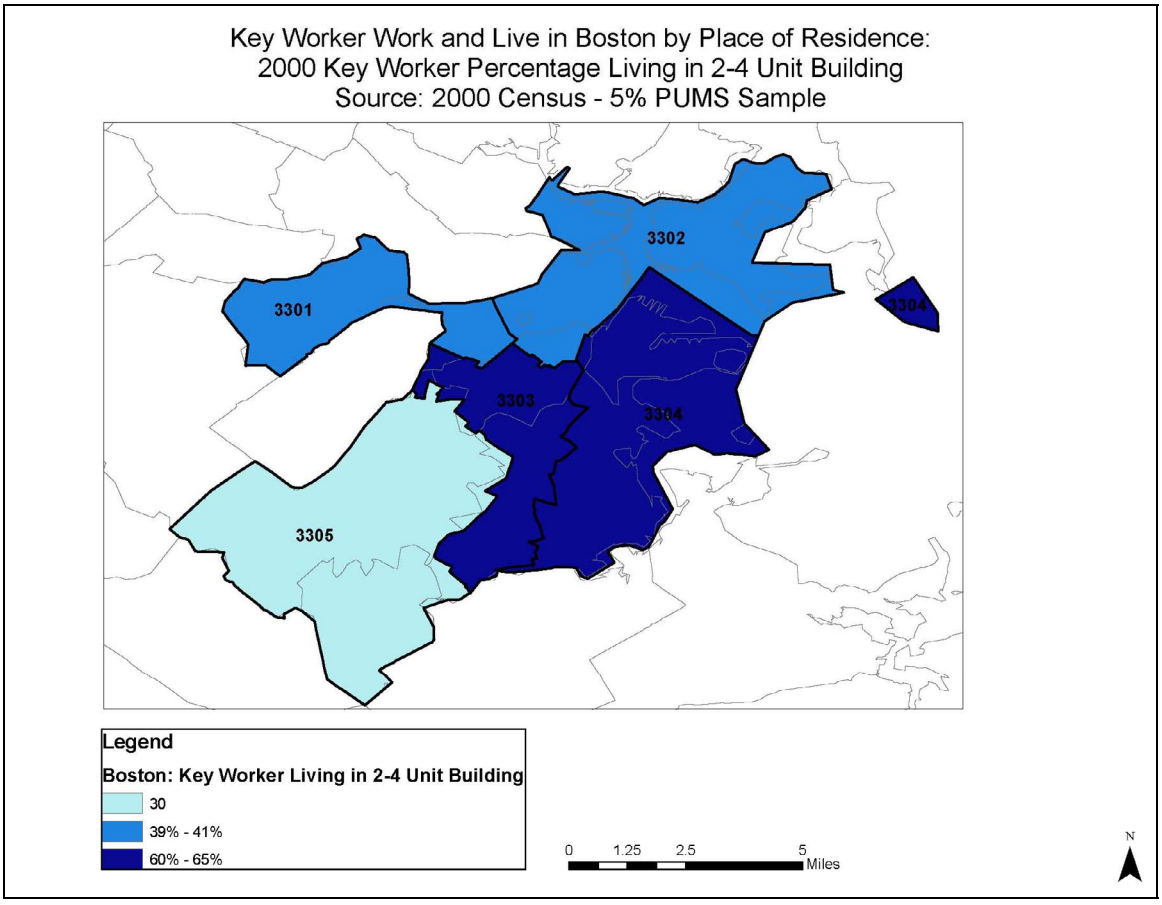


Figure 38 below shows that over 60% of those key workers living in PUMAs 3303 (Roxbury and Mattapan) and 3304 (South Boston, North Dorchester, and South Dorchester) reside in 2-4 unit buildings. Combining these numbers with the greater than 55% rental rates leads to the conjecture that as of 2000 many of these 2-4 unit buildings had not been converted into condominiums. An interesting study would be to contrast these 2000 numbers to today's rate in light of the boom in condo conversions in the City of Boston.

Figure 38: Work and Live in Boston Key Workers: 2000 Percentage Living in 2-4 Unit Buildings



Hypothetical 2005 Home Purchase Price Points: 30 to 44 Age Key Worker Households

So if the majority of key worker households exceed 120% of area median income, do key workers face a housing affordability issue? From the data presented above, which is based on the 2000 Census, it appears that the answer is no on average for all key workers. However, as discussed previously, there have been winners and losers in this housing market as house prices have soared in the recent past. The people who were already homeowners at the time of the 2000 Census, are probably not facing the same degree of housing challenges as those younger, first time homebuyers today in 2005. Therefore, in order to assess the key worker housing affordability issue as of today, we focused on just key workers employed in Eastern Massachusetts, ages 30 to 44, who were renting at the time of the 2000 Census. We also further refined this group, by separating out those key workers who were married and those who were married and working in Boston.

The goal of the exercise is to determine price points for home purchase prices for the three groups discussed above, as compared to the published HUD median incomes from 1999 to 2005. To accomplish this, we started with the median annual household incomes in 1999 for the three specific groups mentioned above, and inflated them at 4.4% per year until 2005. The inflation rate is based on the blended 1999 to 2005 CPI rent index multiplier. We then made the assumption that 25% of this median annual income would be mortgage payments. We determined that if 30% of household income would be spent on housing costs, approximately 5% would pay for taxes and insurance, leaving 25% for the mortgage payment.

With the monthly income available for mortgage payments, we determined an affordable mortgage based on a 6% interest rate. Next, assuming an 80% loan to value ratio and the mortgage amount calculated described above, we determined what the home purchase price point and 20% down payment amount would be for the three renter groups described above, as well as for someone earning the HUD median income. The detailed results of this analysis are

presented in the spreadsheet below. However, in summary, we calculated the following median price points and down payments for the different groups in 2005:

- **All renters aged 30-44 employed in Eastern Massachusetts**
    - Median home price point: $313,000
    - Down payment: $63,000
- **All married renters aged 30-44 employed in Eastern Massachusetts**
    - Median home price point: $369,000
    - Down payment: $74,000
- **All married renters aged 30-44 employed in Boston**
    - Median home price point: $377,000
    - Down payment: $75,000
- **HUD median income for Boston MSA**
    - Median home price point: $359,000
    - Down payment: $72,000

Although the price points do not look terribly low at first blush, you must question realistically what product these 30-44 age key worker households would be able to afford at these price points, in comparison to what these key worker households want to consume. This is especially true for married key workers working the City of Boston who may be tied to a residency requirement that limits their locational choice to city boundaries. The City of Boston might well consider additional programs or policies to spur additional development of key worker housing in Boston such as additional targeted key worker mortgage programs, expedited zoning and bonuses for developers, or subsidy of city owned land in land assembly.

Applicable to all groups, the down payment amounts for all three renter groups are substantial, and require a high level of disposable savings. Due to the overwhelming number of

down payment assistance programs, as well as private mortgage insurance, it is unlikely that all of these first time homebuyers would be putting 20% down. Even if the key workers were able to use PMI, take on a second mortgage or only put 10% down, they would be paying for it in another way. For example, PMI or a second mortgage would increase the monthly debt obligations for the key worker, and lower the overall home purchase price that they would be able to afford.

Based on the price points in the current market and the size of down payments, especially in comparison to the HUD median income calculations, first time buyer younger key workers (30-44) households do appear to face a house price affordability issue even though on the whole all ages of key workers households may not.

Figure 39: 2005 Home Purchase Price Points for 30-44 Key Worker Renters

2005 Home Purchase Price Points: 30 to 44 Year Old Married Key Workers Currently Renting

4.4% Blended 1999-2005 CPI - Rent Index Multipier (www.bls.gov) 4.40%	1999	2000	2001	2002	2003	2004	2005
HUD Limits - Boston PMSA Median Family Income	$62,700	$65,500	$70,000	$74,200	$80,800	$82,600	$82,600
30 to 44: All Key Workers Renters Median Household Income	$55,600	$58,046	$60,600	$63,267	$66,051	$68,957	$71,991
30 to 44: Married Renters Median Household Income - All PUMAs	$65,700	$68,591	$71,609	$74,760	$78,049	$81,483	$85,068
30 to 44: Married Renters Median Household Income - Boston Only	$67,000	$69,948	$73,026	$76,239	$79,593	$83,095	$86,752
25% on mortgage + 5% on Insurance and Taxes (30% PITI) = 30% of Gross Total Monthly Income on Housing 25.00%	1999	2000	2001	2002	2003	2004	2005
HUD - Boston PMSA Median Family Incomes							
Annual	$15,675	$16,375	$17,500	$18,550	$20,200	$20,650	$20,650
Monthly Mortgage Payments @ 25% Monthly Income	$1,306	$1,365	$1,458	$1,546	$1,683	$1,721	$1,721
Affordable Mortgage Total	$217,872	$227,601	$243,238	$257,832	$280,766	$287,021	$287,021
Home Purchase Price @ 80% LTV and 30yr fixed 6% interest mortgage	**$272,339**	**$284,501**	**$304,047**	**$322,290**	**$350,957**	**$358,776**	**$358,776**
Downpayment	$54,468	$56,900	$60,809	$64,458	$70,191	$71,755	$71,755
30 to 44: All Key Workers Renters Median Household Income							
Annual	$13,900	$14,512	$15,150	$15,817	$16,513	$17,239	$17,998
Monthly Mortgage Payments @ 25% Monthly Income	$1,158	$1,209	$1,263	$1,318	$1,376	$1,437	$1,500
Affordable Mortgage Total	$193,200	$201,701	$210,576	$219,841	$229,514	$239,613	$250,156
Home Purchase Price @ 80% LTV and 30yr fixed 6% interest mortgage	**$241,500**	**$252,126**	**$263,220**	**$274,802**	**$286,893**	**$299,516**	**$312,695**
Downpayment	$48,300	$50,425	$52,644	$54,960	$57,379	$59,903	$62,539
30 to 44: Married Renters Median Household Income - ALL PUMAs							
Annual	$16,425	$17,148	$17,902	$18,690	$19,512	$20,371	$21,267
Monthly Mortgage Payments @ 25% Monthly Income	$1,369	$1,429	$1,492	$1,557	$1,626	$1,698	$1,772
Affordable Mortgage Total	$228,296	$238,341	$248,828	$259,776	$271,207	$283,140	$295,598
Home Purchase Price @ 80% LTV and 30yr fixed 6% interest mortgage	**$285,370**	**$297,926**	**$311,035**	**$324,721**	**$339,008**	**$353,925**	**$369,497**
Downpayment	$57,074	$59,585	$62,207	$64,944	$67,802	$70,785	$73,899
30 to 44: Married Renters Median Household Income - Boston Only							
Annual	$16,750	$17,487	$18,256	$19,060	$19,898	$20,774	$21,688
Monthly Mortgage Payments @ 25% Monthly Income	$1,396	$1,457	$1,521	$1,588	$1,658	$1,731	$1,807
Affordable Mortgage Total	$232,813	$243,057	$253,752	$264,917	$276,573	$288,742	$301,447
Home Purchase Price @ 80% LTV and 30yr fixed 6% interest mortgage	**$291,017**	**$303,821**	**$317,189**	**$331,146**	**$345,716**	**$360,928**	**$376,809**
Downpayment	$58,203	$60,764	$63,438	$66,229	$69,143	$72,186	$75,362

Chapter 8: Conclusions and Policy Implications

In 2000, households with at least one full-time key worker comprised an estimated 8.8% of all households in Eastern Massachusetts with at least one full-time worker. Families have become increasingly reliant on the key worker income whether the key worker in the primary breadwinner or not. In the City of Boston, while 40% of all key workers both work and live in the city, residency rates drop precipitously once key workers marry and start families. This thesis combined with Margaret Fitzgerald Wagner's sister thesis entitled *Key Worker Housing: A Demographic Analysis of Working Families in Eastern Massachusetts* provide a fresh and more rigorous approach to investigation of middle-income housing demographics and housing demand through the lens of key worker households.

Instead of an unsophisticated analysis on the individual level that might only incorporate median individual incomes or a more simplistic analysis on the town level that might only include median household income and median home prices for existing residents, this thesis integrates both micro-level individual and micro-level household data by job location to provide a more accurate picture of affordability and demand. Outside of just individual and household income, this work layers additional pieces of critical individual and household data such as number of jobs, homeownership and rental rates, marriage rates, and commute times.[39] The data is then spatially mapped to show distinct area differences by location. This thorough multi-dimensional analysis offers a more realistic and more accurate state of localized key worker housing demographics and demand in 2000 and forward to today's 2005 red-hot housing market.

Across all 165 cities and towns, in aggregate all key workers do not fall into a previously hypothesized middle-income range of 80-120% of area median income (AMI) in Eastern Massachusetts. However, large area differences do exist from the lowest median household income of $67,000 in the far North Shore closest to New Hampshire (PUMA 900) to the highest

[39] School quality, although difficult to quantify, is one additional important factor that should be considered in future studies of key worker families with children.

median household income of $96,000 in the Melrose, Stoneham, Winchester, and Woburn area (PUMA 2800).[40] 30-44 age key worker renters numbered at approximately 4,100 households, those most likely to be first time homebuyers and of which almost 40% are married, do however fall in the 80-120% AMI middle-income range in 34 out of 35 PUMAs and fall right around or below 100% of AMI in 31 out of the 35 PUMA areas studied.

More indicative of household income alone of an affordability and housing demand problem for key workers is the combination with commute times based upon job location. In many of the traditionally more expensive western suburbs and Boston, commute times at 25-30 minutes are teetering at the 30 minute limit that most people are willing to endure. Rapid house price appreciation since the 2000 Census can only have exacerbated key worker commute times to these towns for the critical 30-44 first time homebuyer. Ceteris paribus, these long commute time point to the highest demand for key worker housing in these cities and towns. These towns also risk several negative long-term impacts; one is the difficulty of recruiting and retaining high caliber teachers, nurses, firefighters, and policemen without expensive wage increases that match house price appreciation, second is the impact of long commutes on the quality and reliability of key services and public safety, and last is a loss in the mix in incomes and occupations in the town.

With 24% of all key workers jobs (estimated 22,000 in 2000) and a residency requirement for certain classes of key worker occupations, the City of Boston requires particular attention when analyzing key worker households. Rapidly rising home prices and stagnant incomes are more problematic in the face of inflexible choice of home location limited to the boundaries of Boston. This thesis confirms previous conjecture that Boston has a difficult time retaining married key worker families who in turn are a good proxy for middle-income workforce families as a whole. Boston needs to seriously investigate other ways increase housing options that are amenable to key worker families if it desires to strengthen the residency requirement and

[40] $75,240 is the 120% AMI limit for 1999 household income

maintain the stabilizing and positive impact of middle-income households within the city boundaries. Using a wider definition of key workers similar to the UK program to include other occupations such as social workers, occupational therapists, and municipal jobs, Boston might be well heeded to both offer both additional equity loans and below market mortgages as well as incentive programs for real estate developers to assist key workers and increase the supply of new housing affordable and amenable to middle-income workforce households. Importantly, any new policy also needs to incorporate the household lifecycle, and how the composition and needs of working families change with age.

Hypothetical 2005 home purchase price points based upon inflation-adjusted 1999 incomes derived in chapter 8 further buttress the suggestion for serious consideration of targeted key worker programs in the City of Boston. It is questionable to the quality, size, and location of 2 bedroom plus homes or condominiums are available at the $369,000 price point for the average married 30-44 key worker renter household in all 165 cities and towns and even more so at the $376,000 price point for the average 30-44 married renter key worker household who both works and live in the City of Boston. When one limits the pool to 3 bedroom 2 bathroom homes which older key worker families have shown preference for, the price point problem intensifies placing further burden and difficult life and location choices upon 30-44 year old young families. Between 2003 and 2004, the State of Massachusetts was the only state in the nation that lost more people than it attracted netting a population loss.[41] The findings articulated above should only add to speculation this is due to the high cost of housing many families are leaving the State for less expensive places that offer the same or higher quality of life.

The author hopes that this thesis will spur additional and continued rigorous investigation coupled with better micro-level data availability to more fully understand the current position of key worker households and middle-income workforce families as a whole in Eastern

[41] *Housing Poll*, 1.

Massachusetts.[42] We can only hypothesis that affordability and pent-up demand for key worker housing has gotten much worse with the double digit house price appreciation since the 2000 Census. Key workers jobs are location specific and even residency specific in the case of Boston. Boston is in danger of losing the strengthening, safety, and community stability effects of key worker households. Without a continued supply of suitable housing for key workers and middle-income working families, the State of Massachusetts faces a serious long term competitive disadvantage against other states in the areas of education, public safety, and public health.

[42] For example, a town by town survey of existing stock within a realistic and attainable price range should be completed as a way to quantify the lack of supply of housing for the middle-income working family.

Appendices

Appendix A: Barriers to Workforce Housing

The following is a list of many of the current major barriers to the development of workforce housing in Eastern Massachusetts.

A) Land Use Restrictions

Large lot zoning and strict density requirements limit the ability to supply new financially feasible workforce housing. A recent MIT Center for Real Estate study found that the average median lot size across the Boston metro region for new single- family detached housing built from 1997 to 2001 was 0.9 acres.[43] Massachusetts remains one of the most difficult regulatory environments in the United States in the permitting of housing. In 2003, the region was permitting housing at a ratio of 40% of the national average while more than 60% of the region's communities are permitting fewer housing units now, on an average basis, than they were during the 1990s.[44] From 1999 to 2004, the number of single-family construction permits in the Boston metro area actually fell by 11%.[45]

B) Limited Land and High Land Costs

One of the primary factors behind the shortage of newly constructed workforce housing (80% to 120% of AMI) is the increasingly limited supply of zoned buildable lots in Eastern MA[46]. The shortage of land in turn drives up land prices and helps makes development of workforce housing financially unfeasible. Affordable housing for those making below 80% or less of AMI is only being produced as a result of many financial subsidies such as LIHTC and inclusionary zoning regulation such as 40B.

C) Mismatch between Potential Sites and Market Segment's Location Preferences

[43] MIT Center for Real Estate 1st Annual Housing Affordability Conference session, "How Are We Using our Undeveloped Land?"
[44] *The Greater Boston Housing Report Card 2003*, 14.
[45] Data: National Association of Home Builders
[46] *Boston Indicators Report 2002*

Some cities and locations contain abandoned and underutilized sites, but these are too often coupled with poor infrastructure, higher crime rates, and lower quality schools. Incentive mortgage programs and/or charter schools might be two mechanisms to increase the attractiveness of living in more marginal locations.

D) High Construction Costs

Massachusetts not only has extremely high land prices, and a strict regulatory environment, but it also is home to the some of the highest construction costs in the nation. As of 2002, Boston ranked third among large cities in per-unit construction costs.[47] In many locations, workforce housing will likely have to be commingled with market rate units to counter balance construction costs that make pure workforce housing financially unfeasible even if the land itself were at zero cost.

E) Infrastructure Costs

In older areas of the Boston region, upgrading or replacing physical infrastructure can be extremely costly and can also further increase the financial infeasibility of a project. In newer suburban areas, the cost of developing brand new infrastructure diminishes the attractive of workforce housing in comparison to less infrastructure intensive large lot large size single-family homes.

F) Regional Coordination vis-à-vis Home Rule Local Governance

Politically, it is often easier to permit and develop lower density and market rate housing due to many of the stigmas against higher density and affordable housing. Economically, under the state's home rule governance, local government usually funds essential services, notably schools. Home rule governance coupled with the fiscal constraints of proposition 2 ½ often work against regional growth needs and the ability to distribute growth rationally and equitably.[48]

[47] *Boston Indicators Report 2002*. The Boston Foundation.
[48] *The Greater Boston Housing Report Card 2003*, 15.

In short, there are few political, economic, or local fiscal incentives to spur workforce housing production in the state.

G) Urban Areas

Urban areas bring their own issues that often act as barriers against workforce housing. High land costs are equally or more prevalent in urban areas. Infrastructure is old and expensive to upgrade. More abutting neighborhoods and interests can often slow down the permitting process. There are several more urban specific barriers that are especially commonplace in places like Boston and Cambridge.

Parking Costs**:** Requirements of at least 1 parking space per unit often force parking underground or into above ground structures which mean extremely high parking costs. Structured parking space can often add development costs of upwards of $35,000 to over $50,000 per space.

Environmental Challenges: Urban sites are more likely to contaminated with old industrial uses and from infrastructure built before today's strict environmental guidelines. Environmental approvals and mitigations can result in severe delays and access challenges during the construction process.

Appendix B: Best Practices in Workforce Housing

There is no magic bullet to solving the serious problem of producing new housing that is affordable to those making 80% to 120% of area median income. Few federal or state programs are currently available to help subsidize land purchase, construction loans, or permanent financing. Even fewer alternatives exist to help reduce record construction costs in the Boston area. Still, several successful projects and programs provide some guidance on how the Boston area might better tackle a worsening workforce housing situation.

A) Density Incentive Bonuses

In the words of Thomas Gleason of MassHousing, "there is no better subsidy than higher density."[49] Higher density reduces construction costs per unit and more often promotes transit-oriented development that reduces car-traffic and sprawl. The onus is on planners, architects, and builders to create high quality attractive structures that will be amenable to residents and nearby neighborhood communities. Higher density also makes viable mixed-use development that includes retail and restaurants within walking distance.

B) Expedited Reviews

Cities can decrease the cost of building workforce housing by reducing impact fees, streamlining the building permit approval process, and creating overlay districts that incentive mixed-income housing development. Decreased permitting timelines, increased predictability, and priority to projects that include workforce housing can encourage workforce housing vis-à-vis other development projects. 40B has been instrumental in increasing the pool of housing for those earning under 80% of AMI in the Boston area but no similar programs or incentives exist for those earning 80% to 120%.

C) Parking Requirement Mitigation

[49] MIT CRE 1st Annual HAI Conference on May 25, 2005

In urban areas, especially those around mass transit, a reduction of parking requirements from 1.5 or even 1 space per unit is an effective cost savings mechanism and provides another incentive for a developer of workforce housing. Unbundling of parking costs from the development of a unit allows both developers to pass on savings from reduced parking requirements to homebuyers. The "separate market" for parking encourages residents to reduce average vehicle ownership, vehicle travel, and vehicle expenditure per household. In essence, workforce families end up paying less of their paychecks on vehicle costs while frequenting more at local retail and businesses The benefits of transit-oriented development (TOD) are well documented and include reducing the distance required for car trips.

D) Rebates/Fee Waivers

Several cities have successfully used rebates and/or fee waivers to spur workforce housing development. The New Homes for Chicago program for example offers a $10,000 subsidy for each home developed to be affordable to moderate-income (up to 120% of AMI) homebuyers. Now in its eleventh year, the City's New Homes for Chicago program has over 1,600 new affordable single-family or two-flat homes, which are either completed or in process throughout Chicago.[50] Portland, OR's Development Commission also has several fee waiver programs to offset the development and construction costs of affordable units for homebuyers earning up to 100% of AMI.[51]

E) Creative Use of City and Town-Owned Land

City land, community land trusts, and housing trust funds have also proved to be valuable tools in promoting workforce housing. In Vista Del Rio, California, the city of Bell Gardens subsidized the city owned land by about $2 million.[52] Washington, D.C. has established the District of Columbia Housing Production Trust Fund that provides capital to

[50] See http://www.chicagoareahousing.org/DOHLinks.asp?program=newhomes for more information on the program
[51] *Building Workforce Housing: Meeting San Francisco's Challenge*, 11.
[52] *Challenges to Developing Workforce Housing*, 4.

support the development and rehabilitation of affordable for-sale and rental housing. Non-profit land trusts have also been significant players in eastern Massachusetts towns in such towns as Concord and Andover.[53]

F) Financing

Low-Cost Pre-development and Construction Financing : Below market CBDG and LISC loan can help with land purchase, infrastructure costs, and construction loans. Existing city and state financing for existing affordable housing programs could be extended to Key Worker development projects.

Mortgage Programs: Low-income housing tax credit programs and other federal, state, and local programs address the housing needs of low-income households but few of these programs extend their income restrictions to include moderate-income households. Some state and local governments offer tax credits to first-time homebuyers who purchase units in specified areas. Mortgage interest subsidies for households or even equity loans have also proved successful primarily in the UK and the rest of the EU.[54]

[53] *Creating Balanced Communities: Lessons in Affordability from Five Affluent Boston Suburbs*, 4-10.
[54] *Housing for Moderate-Income Households in the European Union and the United States*, 11.

Appendix C-1: All Key Workers by Job Location PUMA – All Tenures Supporting Data

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Values:																		
Age	43	40	43	43	44	36	42	46	43	44	42	42	36	38	42	43	45	41
Income from Wages	41,750	42,000	40,000	36,000	40,000	31,550	38,000	48,000	38,000	45,000	43,700	42,500	35,000	40,000	44,600	41,150	44,000	43,000
Income from Wages	20	25	20	15	16	20	15	15	15	15	20	30	20	25	25	20	15	15
Travel Time to Manster	20	25	20	15	16	20	15	15	15	15	20	30	20	25	25	20	15	15
Household Income	80,650	72,585	74,400	77,650	67,850	89,200	67,400	84,600	74,100	75,500	85,750	77,000	80,000	77,340	82,510	82,000	96,000	81,900
Married	60%	60%	57%	53%	60%	52%	56%	51%	57%	61%	64%	62%	56%	59%	61%	56%	56%	57%
Not Married	40%	34%	43%	47%	34%	40%	44%	49%	43%	39%	36%	38%	44%	43%	39%	44%	44%	43%
As a Percent (%) of Total Households of Key Workers Working in PUMA																		
Owner	75%	72%	77%	84%	73%	73%	76%	76%	71%	72%	83%	78%	66%	76%	69%	75%	76%	74%
Renter	24%	27%	21%	16%	24%	26%	23%	23%	28%	28%	16%	22%	34%	24%	31%	25%	24%	26%
Other	0%	1%	2%	0%	3%	1%	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total Key Worker Jobs in PUMA																		
Teachers	35%	30%	42%	35%	45%	39%	38%	43%	31%	32%	39%	39%	50%	29%	44%	43%	39%	42%
Nurses	39%	33%	38%	45%	39%	50%	36%	37%	55%	40%	51%	32%	34%	41%	33%	38%	49%	25%
Firefighters	8%	2%	4%	8%	6%	3%	11%	3%	8%	10%	7%	9%	5%	7%	8%	11%	6%	16%
Policemen	15%	35%	17%	11%	10%	8%	15%	17%	6%	13%	12%	20%	5%	17%	15%	9%	7%	17%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs																		
Teachers	100%	3%	5%	2%	4%	2%	3%	3%	2%	2%	2%	4%	3%	2%	4%	5%	3%	2%
Nurses	100%	2%	3%	2%	3%	2%	2%	2%	3%	2%	2%	2%	1%	2%	2%	3%	2%	1%
Firefighters	100%	1%	2%	1%	3%	1%	4%	1%	3%	2%	1%	4%	1%	2%	3%	6%	2%	4%
Policemen	100%	7%	4%	1%	2%	1%	2%	2%	1%	2%	1%	4%	1%	4%	3%	2%	1%	2%
Total Key Worker Jobs	100%	3%	4%	2%	3%	2%	2%	2%	2%	2%	2%	3%	2%	2%	3%	4%	2%	2%
As a Percent (%) of Total Full Time Jobs in All 35 PUMAs:	1,338,500	= Total All Full Time Jobs in All 35 PUMAs																
Teachers	50,940	2.2%																
Nurses	40,080	3.0%																
Firefighters	6,460	0.5%																
Policemen	14,840	1.1%																
Total Key Worker Jobs	92,320	6.9%																
As a Percent (%) of Total Full Time Households in All 35 PUMAs	1,008,300	= Total All Households With At Least 1 Full Time Worke																
Total Key Worker Households	88,280	8.8%																

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	43	45	43	42	42	37	42	43	43	45	45	40	42	45
Income from Wages	45,800	47,300	41,750	48,400	42,600	40,000	36,000	40,000	44,850	48,000	43,000	42,100	40,000	40,000
Travel Time in Minutes	15	20	25	30	25	25	20	20	20	20	20	20	15	15
Household Income	84,400	86,740	83,900	80,650	89,182	79,000	87,700	81,500	82,635	85,430	74,450	73,150	73,000	73,180
Married	60%	55%	60%	51%	59%	63%	64%	68%	55%	62%	60%	66%	61%	61%
Not Married	40%	45%	40%	49%	41%	37%	36%	32%	45%	38%	40%	34%	39%	39%
As a Percent (%) of Total Households of Key Workers Working in PUMA														
Owners	80%	76%	68%	67%	72%	72%	78%	77%	75%	80%	79%	80%	79%	78%
Renters	18%	24%	32%	32%	28%	28%	20%	23%	24%	19%	21%	20%	21%	21%
Other	2%	0%	0%	0%	0%	0%	2%	0%	1%	1%	0%	1%	0%	1%
As a Percent (%) of Total Key Worker Jobs in PUMA														
Teachers	38%	27%	28%	20%	52%	34%	47%	38%	34%	34%	33%	34%	34%	34%
Nurses	32%	33%	43%	56%	36%	35%	34%	46%	39%	49%	50%	26%	42%	40%
Firefighters	11%	20%	9%	5%	8%	5%	7%	8%	10%	8%	7%	6%	12%	8%
Policemen	18%	20%	21%	19%	3%	27%	12%	8%	17%	8%	10%	33%	12%	19%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs														
Teachers	2%	1%	2%	14%	5%	3%	3%	4%	2%	3%	3%	3%	2%	3%
Nurses	1%	1%	3%	31%	3%	2%	2%	3%	2%	3%	3%	2%	2%	2%
Firefighters	2%	3%	4%	16%	4%	2%	2%	4%	3%	3%	3%	3%	3%	3%
Policemen	2%	1%	4%	28%	1%	5%	1%	1%	2%	1%	2%	7%	1%	3%
Total Key Worker Jobs	1%	1%	3%	24%	3%	3%	2%	3%	2%	3%	3%	3%	2%	3%

As a Percent (%) of Total Full Time Jobs in All 35 PUMAs:
Teachers
Nurses
Firefighters
Policemen

Total Key Worker Jobs

As a Percent (%) of Total Full Time Households in All 35 PUMAs:

Total Key Worker Households

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	138	162	93	148	85	106	92	113	100	86	135	83	106	126	165	99	80
Total Person Records	140	170	97	155	92	111	98	118	104	92	142	87	110	132	170	103	83
Married	92	97	51	102	48	62	50	67	63	59	88	49	60	80	95	58	47
Not Married	48	73	46	53	44	49	48	51	41	33	54	38	50	52	75	45	36
Owners with Mortgage	94	109	71	94	57	66	64	74	66	60	77	43	76	74	104	68	48
Owners no Mortgage	6	15	7	14	5	10	6	6	6	11	18	12	5	13	19	7	11
All Owners	100	124	78	108	62	76	70	80	72	71	95	55	81	87	123	75	59
Renters	37	34	15	36	22	29	19	32	28	14	36	28	25	39	42	24	21
Occupy without Pay	1	4	0	4	1	1	3	1	0	1	4	0	0	0	0	0	0
Teachers	42	72	34	69	36	42	42	37	33	28	56	49	27	58	73	40	35
Nurses	46	65	44	60	46	40	36	65	48	47	45	30	45	44	64	50	21
Firefighters	3	7	8	10	3	12	3	9	10	6	13	4	8	10	18	6	13
Policemen	49	26	11	16	7	17	17	7	13	11	28	4	30	20	15	7	14
Total Key Worker Jobs in PUMA	140	170	97	155	92	111	98	118	104	92	142	87	110	132	170	103	83

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	2,760	3,240	1,860	2,960	1,700	2,120	1,840	2,260	2,000	1,720	2,700	1,660	2,120	2,520	3,300	1,980	1,600
Total Person Records	2,800	3,400	1,940	3,100	1,840	2,220	1,960	2,360	2,080	1,840	2,840	1,740	2,200	2,640	3,400	2,060	1,660
Owners with Mortgage	1,880	2,180	1,420	1,880	1,140	1,320	1,280	1,480	1,320	1,200	1,540	860	1,520	1,480	2,080	1,360	960
Owners no Mortgage	120	300	140	280	100	200	120	120	120	220	360	240	100	260	380	140	220
All Owners	2,000	2,480	1,560	2,160	1,240	1,520	1,400	1,600	1,440	1,420	1,900	1,100	1,620	1,740	2,460	1,500	1,180
Renters	740	680	300	720	440	580	380	640	560	280	720	560	500	780	840	480	420
Occupy without Pay	20	80	0	80	20	20	60	20	0	20	80	0	0	0	0	0	0
Teachers	840	1,440	680	1,380	720	840	840	740	660	560	1,120	980	540	1,160	1,460	800	700
Nurses	920	1,300	880	1,200	920	800	720	1,300	960	940	900	600	900	880	1,280	1,000	420
Firefighters	60	140	160	200	60	240	60	180	200	120	260	80	160	200	360	120	260
Policemen	980	520	220	320	140	340	340	140	260	220	560	80	600	400	300	140	280
Total Key Worker Jobs in PUMA	2,800	3,400	1,940	3,100	1,840	2,220	1,960	2,360	2,080	1,840	2,840	1,740	2,200	2,640	3,400	2,060	1,660

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	60	51	134	1,055	144	127	92	139	100	120	124	148	91	112	4,414
Total Person Records	65	55	138	1,102	151	131	94	146	108	131	129	151	93	118	4,616
Married	39	30	83	562	89	83	60	99	59	81	77	99	57	72	2,658
Not Married	26	25	55	540	62	48	34	47	49	50	52	52	36	46	1,958
Owners with Mortgage	40	32	81	631	87	84	61	96	66	85	84	105	61	75	2,833
Owners no Mortgage	8	7	10	80	17	7	11	11	9	11	14	13	11	12	392
All Owners	48	39	91	711	104	91	72	107	75	96	98	118	72	87	3,225
Renters	11	12	43	340	40	36	18	32	24	23	26	29	19	24	1,158
Occupy without Pay	1	0	0	4	0	0	2	0	1	1	0	1	0	1	31
Teachers	25	15	38	224	79	44	44	56	37	45	43	52	32	40	1,547
Nurses	21	18	59	614	55	46	32	67	42	64	64	40	39	47	2,004
Firefighters	7	11	12	53	12	6	7	12	11	11	9	9	11	9	323
Policemen	12	11	29	211	5	35	11	11	18	11	13	50	11	22	742
Total Key Worker Jobs in PUMA	65	55	138	1,102	151	131	94	146	108	131	129	151	93	118	4,616

All Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	1,200	1,020	2,680	21,100	2,880	2,540	1,840	2,780	2,000	2,400	2,480	2,960	1,820	2,240	88,280
Total Person Records	1,300	1,100	2,760	22,040	3,020	2,620	1,880	2,920	2,160	2,620	2,580	3,020	1,860	2,360	92,320
Owners with Mortgage	800	640	1,620	12,620	1,740	1,680	1,220	1,920	1,320	1,700	1,680	2,100	1,220	1,500	56,660
Owners no Mortgage	160	140	200	1,600	340	140	220	220	180	220	280	260	220	240	7,840
All Owners	960	780	1,820	14,220	2,080	1,820	1,440	2,140	1,500	1,920	1,960	2,360	1,440	1,740	64,500
Renters	220	240	860	6,800	800	720	360	640	480	460	520	580	380	480	23,160
Occupy without Pay	20	0	0	80	0	0	40	0	20	20	0	20	0	20	620
Teachers	500	300	760	4,480	1,580	880	880	1,120	740	900	860	1,040	640	800	30,940
Nurses	420	360	1,180	12,280	1,100	920	640	1,340	840	1,280	1,280	800	780	940	40,080
Firefighters	140	220	240	1,060	240	120	140	240	220	220	180	180	220	180	6,460
Policemen	240	220	580	4,220	100	700	220	220	360	220	260	1,000	220	440	14,840
Total Key Worker Jobs in PUMA	1,300	1,100	2,760	22,040	3,020	2,620	1,880	2,920	2,160	2,620	2,580	3,020	1,860	2,360	92,320

Appendix C-2: All Key Workers by Job Location PUMA – Owners Supporting Data

All Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA		All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Value			42	45	44	45	40	44	47	43	46	43	44	42	40	46	46	46	44
Age			42,000	44,000	38,200	40,000	32,500	43,000	43,000	41,500	46,400	45,000	46,000	41,600	42,000	47,000	45,250	50,000	45,000
Income From Wages			20	20	15	20	18	15	15	15	15	20	30	18	20	20	20	15	15
Travel Time in Minutes			25	15	15	20	15	15	15	15	15	20	30	18	20	20	20	15	15
Household Income		91,000	79,005	82,510	81,250	78,950	95,770	82,800	98,225	84,950	84,350	87,440	86,000	96,500	93,800	93,460	96,300	101,240	93,000
Married		68%	77%	62%	59%	70%	59%	69%	62%	68%	70%	66%	70%	73%	63%	75%	67%	66%	67%
Not Married		32%	23%	38%	41%	22%	41%	31%	38%	32%	30%	34%	30%	27%	37%	25%	33%	34%	33%
As a Percent (%) of Total Households of Key Workers Working in PUMA																			
Owners			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
As a Percent (%) of Total Key Worker Jobs in PUMA																			
Teachers		37%	35%	45%	33%	40%	41%	39%	46%	29%	28%	35%	39%	55%	28%	42%	44%	41%	45%
Nurses		35%	29%	35%	46%	30%	45%	33%	35%	52%	45%	45%	32%	36%	42%	28%	33%	42%	33%
FireFighters		9%	2%	5%	9%	9%	3%	14%	4%	11%	12%	8%	12%	5%	7%	8%	11%	8%	10%
Policemen		15%	33%	15%	13%	12%	11%	15%	17%	8%	14%	12%	18%	5%	30%	21%	10%	9%	10%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs																			
Teachers		100%	3%	5%	2%	4%	2%	3%	3%	2%	2%	2%	3%	2%	2%	3%	5%	3%	2%
Nurses		100%	2%	3%	3%	3%	2%	2%	2%	3%	2%	3%	2%	1%	3%	2%	3%	2%	1%
FireFighters		100%	1%	3%	3%	4%	1%	4%	1%	3%	3%	2%	4%	1%	2%	3%	5%	2%	4%
Policemen		100%	6%	3%	2%	2%	1%	2%	2%	1%	2%	2%	3%	1%	4%	3%	2%	1%	2%
Total Key Worker Jobs		100%	3%	4%	2%	3%	2%	2%	2%	2%	2%	2%	3%	2%	3%	3%	4%	2%	2%
As a Percent (%) of Total Full Time Jobs in All 35 PUMAs																			
Teachers	22,560	1.7%																	
Nurses	27,640	2.1%																	
FireFighters	5,550	0.4%																	
Policemen	11,740	0.9%																	
Total Key Worker Jobs	67,440	5.0%																	
As a Percent (%) of Total Full Time Householder in All 35 PUMAs																			
Total Key Worker Households	64,440	6.4%																	
	1,338,500	= Total All Full Time Jobs in All 35 PUMAs																	
	1,003,300	= Total All Households With At Least 1 Full Time Worker																	

All Key Workers by Place of Work PUMA - Owners

Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	43	48	44	44	46	42	45	45	46	45	47	42	43	46
Income from Wages	46,900	50,500	46,000	53,000	48,000	45,900	38,500	47,700	48,850	50,000	48,000	45,000	42,200	43,500
Travel Time in Minutes	15	20	30	30	20	25	15	25	20	20	20	25	15	15
Household Income	93,250	98,100	92,800	91,000	101,050	86,000	92,000	91,800	93,300	89,500	80,100	76,750	74,360	84,900
Married	57%	60%	73%	61%	70%	78%	72%	75%	62%	67%	68%	72%	71%	68%
Not Married	43%	40%	27%	39%	30%	22%	28%	25%	38%	33%	32%	27%	29%	32%
As a Percent (%) of Total Households of Key Workers Working in PUMA														
Owners	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
As a Percent (%) of Total Key Worker Jobs in PUMA														
Teachers	40%	31%	24%	19%	51%	31%	50%	36%	33%	34%	33%	38%	37%	35%
Nurses	30%	29%	44%	54%	34%	32%	31%	47%	35%	47%	50%	22%	37%	36%
FireFighters	9%	19%	9%	6%	10%	5%	7%	9%	12%	10%	8%	6%	14%	10%
Policemen	21%	21%	24%	21%	5%	32%	12%	8%	20%	9%	10%	34%	12%	20%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs														
Teachers	2%	1%	2%	12%	5%	3%	3%	4%	2%	3%	3%	4%	2%	3%
Nurses	1%	1%	3%	29%	3%	2%	2%	4%	2%	4%	4%	2%	2%	2%
FireFighters	2%	3%	3%	16%	4%	2%	2%	4%	4%	4%	3%	3%	4%	3%
Policemen	2%	2%	4%	27%	1%	5%	2%	2%	3%	2%	2%	7%	2%	3%
Total Key Worker Jobs	2%	1%	3%	22%	3%	3%	2%	3%	2%	3%	3%	4%	2%	3%

As a Percent (%) of Total Full Time Jobs in All 35 PUMAs
Teachers
Nurses
FireFighters
Policemen

Total Key Worker Jobs

As a Percent (%) of Total Full Time Households in All 35 PUMAs

Total Key Worker Households

All Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	100	124	78	108	61	76	70	80	72	71	95	55	81	87	122	75	59
Total Person Records	102	130	80	114	66	80	76	84	76	77	101	56	83	92	126	76	60
Married	79	80	47	89	39	53	47	57	53	51	71	41	52	69	85	50	38
Not Married	23	50	33	25	27	25	29	27	23	26	30	15	31	23	41	26	22
Owners with Mortgage	94	109	71	94	56	66	64	74	66	60	77	43	76	74	103	68	48
Owners no Mortgage	6	15	7	14	5	10	6	6	6	11	18	12	5	13	19	7	11
All Owners	100	124	78	108	61	76	70	80	72	71	95	55	81	87	122	75	59
Teachers	36	58	26	46	27	31	35	24	22	27	39	31	17	39	55	31	27
Nurses	30	45	37	44	30	26	25	44	34	35	32	19	35	27	44	32	11
Firefighters	2	7	7	10	2	11	3	9	9	6	12	3	6	7	14	6	11
Policemen	34	20	10	14	7	12	13	7	11	9	18	3	25	19	13	7	11
Total Key Worker Jobs in PUMA	102	130	80	114	66	80	76	84	76	77	101	56	83	92	126	76	60

All Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	2,000	2,480	1,560	2,160	1,220	1,520	1,400	1,600	1,440	1,420	1,900	1,100	1,620	1,740	2,440	1,500	1,180
Total Person Records	2,040	2,600	1,600	2,280	1,320	1,600	1,520	1,680	1,520	1,540	2,020	1,120	1,660	1,840	2,520	1,520	1,200
Owners with Mortgage	1,880	2,180	1,420	1,880	1,120	1,320	1,280	1,480	1,320	1,200	1,540	860	1,520	1,480	2,060	1,360	960
Owners no Mortgage	120	300	140	280	100	200	120	120	120	220	360	240	100	260	380	140	220
All Owners	2,000	2,480	1,560	2,160	1,220	1,520	1,400	1,600	1,440	1,420	1,900	1,100	1,620	1,740	2,440	1,500	1,180
Teachers	720	1,160	520	920	540	620	700	480	440	540	780	620	340	780	1,100	620	540
Nurses	600	900	740	880	600	520	500	880	680	700	640	380	700	540	880	640	220
Firefighters	40	140	140	200	40	220	60	180	180	120	240	60	120	140	280	120	220
Policemen	680	400	200	280	140	240	260	140	220	180	360	60	500	380	260	140	220
Total Key Worker Jobs in PUMA	2,040	2,600	1,600	2,280	1,320	1,600	1,520	1,680	1,520	1,540	2,020	1,120	1,660	1,840	2,520	1,520	1,200

All Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	48	39	90	710	104	91	73	107	75	95	98	118	72	87	3,222
Total Person Records	53	42	93	742	105	94	74	114	82	105	103	121	73	92	3,372
Married	30	25	68	453	74	73	53	85	51	70	70	87	52	63	2,257
Not Married	23	17	25	289	31	21	22	29	31	35	33	33	21	29	1,115
Owners with Mortgage	40	32	80	630	87	84	61	96	66	85	84	104	63	75	2,830
Owners no Mortgage	8	7	10	80	17	7	12	11	9	11	14	14	9	12	392
All Owners	48	39	90	710	104	91	73	107	75	95	98	118	72	87	3,222
Teachers	21	13	22	138	54	29	37	41	27	36	34	46	27	32	1,128
Nurses	16	12	41	404	36	30	23	54	29	49	51	27	27	33	1,382
Firefighters	5	8	8	44	10	5	5	10	10	11	8	7	10	9	275
Policemen	11	9	22	156	5	30	9	9	16	9	10	41	9	18	587
Total Key Worker Jobs in PUMA	53	42	93	742	105	94	74	114	82	105	103	121	73	92	3,372

All Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	960	780	1,800	14,200	2,080	1,820	1,460	2,140	1,500	1,920	1,960	2,360	1,440	1,740	64,440
Total Person Records	1,060	840	1,860	14,840	2,100	1,880	1,480	2,280	1,640	2,100	2,060	2,420	1,460	1,840	67,440
Owners with Mortgage	800	640	1,600	12,600	1,740	1,680	1,220	1,920	1,320	1,700	1,680	2,080	1,260	1,500	56,600
Owners no Mortgage	160	140	200	1,600	340	140	240	220	180	220	280	280	180	240	7,840
All Owners	960	780	1,800	14,200	2,080	1,820	1,460	2,140	1,500	1,920	1,960	2,360	1,440	1,740	64,440
Teachers	420	260	440	2,760	1,080	580	740	820	540	720	680	920	540	640	22,560
Nurses	320	240	820	8,080	720	600	460	1,080	580	980	1,020	540	540	660	27,640
Firefighters	100	160	160	880	200	100	100	200	200	220	160	140	200	180	5,500
Policemen	220	180	440	3,120	100	600	180	180	320	180	200	820	180	360	11,740
Total Key Worker Jobs in PUMA	1,060	840	1,860	14,840	2,100	1,880	1,480	2,280	1,640	2,100	2,060	2,420	1,460	1,840	67,440

Appendix C-3: All Key Workers by Job Location PUMA – Renters Supporting Data

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA		All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Values																			
Age	35		33	34	38	38	31	37	31	42	38	38	33	29	31	36	36	43	37
Income from Wages	34,850		41,000	30,600	30,000	33,000	27,000	25,250	29,000	35,000	39,000	36,500	35,000	28,600	38,000	35,550	30,500	33,000	32,000
Travel Time in Minutes	20		25	18	20	15	30	15	15	20	15	23	25	20	30	30	20	20	20
Household Income	56,000		63,000	54,000	45,410	49,300	50,000	44,000	30,000	53,800	56,600	58,500	59,625	61,000	48,000	57,000	49,500	56,027	61,470
Married	32%		35%	39%	24%	30%	32%	28%	11%	30%	36%	58%	35%	26%	39%	28%	23%	30%	39%
Not Married	68%		65%	61%	76%	70%	68%	80%	89%	70%	64%	50%	65%	74%	70%	73%	77%	70%	61%
As a Percent (%) of Total Households of Key Workers Working in PUMA																			
Renters		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
As a Percent (%) of Total Key Worker Jobs in PUMA																			
Teachers	36%		16%	28%	47%	51%	32%	37%	32%	39%	39%	0%	46%	58%	37%	48%	41%	33%	39%
Nurses	46%		41%	56%	41%	43%	68%	47%	47%	61%	58%	86%	32%	35%	37%	43%	45%	67%	43%
Firefighters	4%		3%	8%	6%	0%	0%	3%	0%	0%	0%	0%	3%	3%	7%	8%	9%	0%	9%
Policemen	10%		41%	17%	6%	5%	0%	13%	21%	0%	7%	14%	19%	3%	19%	3%	5%	0%	13%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs																			
Teachers	100%	1%	2%	2%	5%	2%	3%	1%	3%	3%	3%	0%	4%	4%	2%	5%	4%	2%	2%
Nurses	100%	2%	3%	1%	3%	3%	1%	1%	3%	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%
Firefighters	100%	0%	0%	2%	0%	0%	2%	0%	0%	0%	2%	0%	2%	2%	4%	7%	9%	0%	4%
Policemen	100%	2%	4%	1%	1%	0%	2%	3%	3%	0%	1%	1%	5%	1%	3%	1%	1%	0%	2%
Total Key Worker Jobs:	100%	3%	3%	1%	3%	2%	2%	2%	2%	3%	2%	1%	3%	3%	2%	3%	4%	2%	2%
As a Percent (%) of Total Full Time Jobs in All 35 PUMAs:	1,338,500	= Total All Full Time Jobs in All 35 PUMAs																	
Teachers	8,080	0.6%																	
Nurses	12,260	0.9%																	
Firefighters	920	0.1%																	
Policemen	2,980	0.2%																	
Total Key Worker Jobs	24,240	1.8%																	
As a Percent (%) of Total Full Time Households in All 35 PUMAs:	1,868,300	= Total All Households With At Least 1 Full Time Worker																	
Total Key Worker Households	23,220	2.3%																	

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	42	37	36	35	33	32	35	34	33	36	31	34	35	40
Income from Wages	38,000	36,400	35,000	34,700	34,100	32,000	30,000	33,500	30,000	34,300	34,500	34,050	31,500	34,800
Travel Time in Minutes	15	20	25	30	30	30	30	20	15	20	18	20	10	25
Household Income	65,500	56,000	58,455	60,000	61,560	55,750	62,450	56,000	59,650	54,700	49,500	49,700	48,100	56,000
Married	73%	38%	33%	29%	33%	27%	41%	44%	28%	44%	27%	40%	25%	32%
Not Married	27%	62%	67%	71%	67%	73%	59%	56%	72%	56%	73%	60%	75%	68%
As a Percent (%) of Total Households of Key Workers Working in PUMA														
Renters	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
As a Percent (%) of Total Key Worker Jobs in PUMA														
Teachers	36%	15%	36%	24%	54%	41%	35%	47%	36%	36%	35%	20%	25%	28%
Nurses	45%	46%	40%	59%	41%	43%	53%	41%	52%	56%	50%	40%	60%	56%
FireFighters	9%	23%	9%	3%	4%	3%	6%	6%	4%	0%	4%	7%	5%	0%
Policemen	9%	15%	16%	15%	0%	14%	6%	6%	8%	8%	12%	33%	10%	16%
As a Percent (%) of Total Key Worker Jobs in All 35 PUMAs														
Teachers	1%	0%	4%	21%	6%	4%	1%	4%	2%	2%	2%	1%	1%	2%
Nurses	1%	1%	3%	34%	3%	3%	1%	2%	2%	2%	2%	2%	2%	2%
FireFighters	2%	7%	9%	28%	4%	2%	2%	4%	2%	0%	2%	4%	2%	0%
Policemen	1%	1%	5%	36%	0%	3%	1%	1%	1%	1%	2%	7%	1%	3%
Total Key Worker Jobs	1%	1%	4%	29%	4%	3%	1%	3%	2%	2%	2%	2%	2%	2%
As a Percent (%) of Total Full Time Jobs in All 35 PUMAs														
Teachers														
Nurses														
FireFighters														
Policemen														
Total Key Worker Jobs														
As a Percent (%) of Total Full Time Households in All 35 PUMAs														
Total Key Worker Households														

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	37	34	15	36	23	29	19	32	28	14	36	28	25	39	43	24	21
Total Person Records	37	36	17	37	25	30	19	33	28	14	37	31	27	40	44	27	23
Married	13	14	4	11	8	6	2	10	10	7	13	8	8	11	10	8	9
Not Married	24	22	13	26	17	24	17	23	18	7	24	23	19	29	34	19	14
Renters	37	34	15	36	23	29	19	32	28	14	36	28	25	39	43	24	21
Teachers	6	10	8	19	8	11	6	13	11	0	17	18	10	19	18	9	8
Nurses	15	20	7	16	16	14	9	20	14	12	12	11	10	17	20	18	10
Firefighters	1	0	1	0	1	1	0	0	1	0	1	1	2	3	4	0	2
Policemen	15	6	1	2	0	4	4	0	2	2	7	1	5	1	2	0	3
Total Key Worker Jobs in PUMA	37	36	17	37	25	30	19	33	28	14	37	31	27	40	44	27	23

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	740	680	300	720	460	580	380	640	560	280	720	560	500	780	860	480	420
Total Person Records	740	720	340	740	500	600	380	660	560	280	740	620	540	800	880	540	460
Renters	740	680	300	720	460	580	380	640	560	280	720	560	500	780	860	480	420
Teachers	120	200	160	380	160	220	120	260	220	0	340	360	200	380	360	180	160
Nurses	300	400	140	320	320	280	180	400	280	240	240	220	200	340	400	360	200
Firefighters	20	0	20	0	20	20	0	0	20	0	20	20	40	60	80	0	40
Policemen	300	120	20	40	0	80	80	0	40	40	140	20	100	20	40	0	60
Total Key Worker Jobs in PUMA	740	720	340	740	500	600	380	660	560	280	740	620	540	800	880	540	460

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	11	12	44	341	40	36	17	32	24	23	26	29	19	24	1,161
Total Person Records	11	13	45	355	46	37	17	32	25	25	26	30	20	25	1,212
Married	8	5	15	104	15	10	7	14	7	11	7	12	5	8	380
Not Married	3	8	30	251	31	27	10	18	18	14	19	18	15	17	832
Renters	11	12	44	341	40	36	17	32	24	23	26	29	19	24	1,161
Teachers	4	2	16	85	25	15	6	15	9	9	9	6	5	7	404
Nurses	5	6	18	208	19	16	9	13	13	14	13	12	12	14	613
Firefighters	1	3	4	9	2	1	1	2	1	0	1	2	1	0	46
Policemen	1	2	7	53	0	5	1	2	2	2	3	10	2	4	149
Total Key Worker Jobs in PUMA	11	13	45	355	46	37	17	32	25	25	26	30	20	25	1,212

All Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	TOTAL
Total Household Records	220	240	880	6,820	800	720	340	640	480	460	520	580	380	480	23,220
Total Person Records	220	260	900	7,100	920	740	340	640	500	500	520	600	400	500	24,240
Renters	220	240	880	6,820	800	720	340	640	480	460	520	580	380	480	23,220
Teachers	80	40	320	1,700	500	300	120	300	180	180	180	120	100	140	8,080
Nurses	100	120	360	4,160	380	320	180	260	260	280	260	240	240	280	12,260
Firefighters	20	60	80	180	40	20	20	40	20	0	20	40	20	0	920
Policemen	20	40	140	1,060	0	100	20	40	40	40	60	200	40	80	2,980
Total Key Worker Jobs in PUMA	220	260	900	7,100	920	740	340	640	500	500	520	600	400	500	24,240

Appendix D-1: 30-44 Age Key Workers by Job Location PUMA – All Tenures Supporting Data

30-44 Age Key Workers by Place of Work PUMA

Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Value																		
Age	38	35	38	37	38	36	38	38	39	38	37	37	35	35	38	38	41	37
Income from Wages	40,000	40,000	37,800	35,000	40,000	39,000	40,000	42,250	37,000	46,000	47,000	44,000	38,000	40,000	45,000	40,150	37,600	44,650
Travel Time in Minutes	20	30	20	15	15	20	15	20	20	15	15	30	20	28	25	17	20	13
Household Income	72,150	69,300	63,900	65,200	66,000	68,500	67,900	84,210	62,500	68,045	81,100	72,000	76,900	69,700	78,000	76,100	76,420	78,000
Married	63%	76%	65%	51%	64%	56%	62%	54%	55%	66%	67%	71%	57%	67%	72%	47%	45%	51%
Not Married	37%	24%	35%	49%	36%	44%	38%	46%	45%	34%	33%	29%	43%	33%	28%	53%	55%	42%
As a Percent (%) of Total 30-44 Households of Key Workers Working in PUMA																		
Owners	70%	72%	67%	77%	63%	60%	67%	78%	79%	63%	81%	65%	66%	77%	58%	70%	67%	69%
Renters	30%	28%	29%	23%	35%	34%	33%	19%	25%	38%	19%	35%	34%	23%	42%	30%	33%	31%
Other	0%	0%	4%	0%	2%	6%	0%	4%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Percent (%) by Housing Type of 30-44 Key Worker Family																		
Single Family House	68%	72%	78%	68%	69%	57%	74%	70%	63%	50%	81%	65%	71%	79%	69%	59%	67%	64%
2-4 Unit Building	20%	17%	12%	18%	19%	34%	18%	11%	23%	33%	16%	25%	23%	13%	20%	27%	22%	26%
5-19 Unit Building	6%	6%	8%	7%	4%	3%	5%	12%	8%	10%	0%	5%	6%	0%	6%	8%	8%	6%
20+ Unit Building	4%	3%	1%	7%	5%	5%	3%	4%	6%	5%	3%	4%	0%	6%	4%	5%	3%	3%
Other Type of Housing	0%	2%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA																		
Teachers	26%	18%	38%	31%	39%	25%	21%	43%	35%	20%	18%	36%	46%	13%	28%	42%	24%	24%
Nurses	42%	32%	58%	51%	43%	59%	36%	25%	45%	46%	54%	28%	37%	33%	42%	33%	63%	24%
Firefighters	9%	5%	2%	6%	7%	3%	14%	0%	10%	17%	10%	14%	9%	9%	13%	12%	9%	21%
Policemen	19%	45%	19%	13%	10%	13%	29%	32%	10%	17%	18%	22%	9%	44%	17%	12%	8%	32%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs																		
Teachers	100%	3%	4%	6%	2%	2%	3%	4%	2%	2%	2%	5%	4%	2%	3%	6%	2%	2%
Nurses	100%	3%	3%	4%	2%	2%	2%	1%	3%	2%	3%	2%	2%	2%	3%	3%	3%	1%
Firefighters	100%	2%	1%	1%	1%	1%	4%	0%	3%	2%	3%	5%	2%	0%	3%	2%	1%	5%
Policemen	100%	7%	2%	1%	2%	1%	3%	2%	1%	2%	2%	3%	1%	2%	2%	2%	1%	3%
Total Key Worker Jobs	100%	4%	3%	2%	4%	2%	2%	2%	3%	2%	2%	3%	2%	3%	3%	4%	2%	2%
As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs	604,440	= Total All Full Time Jobs in All 35 PUMAs																
Teachers	8,920	1.5%																
Nurses	15,220	2.5%																
Firefighters	3,080	0.5%																
Policemen	8,590	1.4%																
Total Key Worker Jobs	36,680	6.0%																
As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs	467,740	= Total All Households With At Least 1 Full Time Worker																
Total Key Worker Households	35,200	7.5%																

30-44 Age Key Workers by Place of Work PUMA

Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	39	39	37	38	38	36	39	38	36	37	38	37	38	39
Income from Wages	48,000	43,400	40,050	50,000	40,000	40,500	36,000	40,000	40,000	44,000	40,000	42,000	38,750	40,000
Travel Time in Minutes	15	23	23	30	30	26	20	23	20	20	15	20	10	15
Household Income	93,300	72,280	84,900	79,000	72,000	78,300	87,000	75,750	76,000	82,900	64,700	69,375	70,000	64,250
Married	67%	50%	59%	55%	50%	67%	64%	72%	56%	63%	43%	64%	72%	63%
Not Married	33%	50%	41%	45%	50%	33%	36%	28%	44%	37%	53%	36%	28%	37%
As a Percent (%) of 30-44 Households of Key Workers Working in PUMA														
Owners	81%	74%	65%	66%	69%	72%	64%	76%	70%	78%	70%	84%	80%	75%
Renters	19%	26%	35%	33%	31%	28%	32%	24%	30%	22%	30%	16%	20%	25%
Other	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Percent (%) by Housing Type of 30-44 Key Worker Family														
Single Family Home	62%	68%	54%	55%	61%	70%	61%	76%	70%	74%	70%	88%	66%	72%
2-4 Unit Building	19%	16%	33%	32%	31%	10%	27%	12%	15%	11%	22%	9%	23%	8%
5-19 Unit Building	5%	5%	2%	7%	4%	12%	5%	8%	6%	7%	5%	1%	9%	17%
20+ Unit Building	14%	11%	12%	7%	4%	4%	0%	4%	9%	7%	3%	1%	3%	3%
Other Type of Housing	0%	0%	0%	0%	0%	4%	0%	0%	0%	2%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA														
Teachers	33%	20%	26%	14%	34%	23%	36%	28%	28%	23%	20%	26%	22%	21%
Nurses	24%	20%	39%	57%	48%	35%	36%	50%	47%	56%	50%	21%	39%	45%
Firefighters	14%	25%	7%	5%	16%	4%	14%	13%	3%	10%	8%	6%	19%	5%
Policemen	29%	35%	28%	25%	2%	38%	14%	9%	22%	12%	23%	47%	19%	29%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs														
Teachers	2%	1%	3%	14%	4%	3%	3%	3%	2%	3%	2%	4%	2%	2%
Nurses	1%	0%	3%	32%	3%	2%	2%	3%	2%	4%	2%	2%	2%	2%
Firefighters	2%	3%	3%	14%	5%	1%	4%	5%	1%	3%	2%	3%	5%	1%
Policemen	1%	2%	4%	28%	0%	5%	1%	1%	2%	1%	2%	8%	2%	3%
Total Key Worker Jobs	1%	1%	3%	25%	3%	3%	2%	3%	2%	3%	2%	4%	2%	2%
As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs														
Teachers														
Nurses														
Firefighters														
Policemen														
Total Key Worker Jobs														
As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs														
Total Key Worker Households														

30-44 Age Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	64	51	44	63	32	39	27	48	40	37	55	35	52	50	63	36	35
Total Person Records	65	54	45	67	32	42	28	49	41	39	58	35	54	53	66	38	38
Married	48	35	23	43	18	26	15	27	27	26	41	20	36	38	31	17	22
Not Married	17	19	22	24	14	16	13	22	14	13	17	15	18	15	35	21	16
Owns with Mortgage	45	32	31	38	21	26	19	34	22	29	31	20	39	28	37	21	22
Owns no Mortgage	1	2	3	2	0	0	2	1	3	1	5	3	1	1	7	3	2
All Owners	46	34	34	40	21	26	21	35	25	30	36	23	40	29	44	24	24
Renters	18	15	10	22	11	13	5	12	15	7	18	12	12	21	19	12	11
Occupy without Pay	0	2	0	1	0	0	1	1	0	0	1	0	0	0	0	0	0
Teachers	12	16	14	26	8	9	12	17	8	7	21	16	7	15	28	9	9
Nurses	21	27	23	29	19	15	7	22	19	21	16	13	18	22	22	24	9
Firefighters	3	1	2	5	1	6	0	5	7	4	8	3	5	7	8	2	8
Policemen	29	10	6	7	4	12	9	5	7	7	13	3	24	9	8	3	12
Total Key Worker Jobs in PUMA	65	54	45	67	32	42	28	49	41	39	58	35	54	53	66	38	38
Single Family Home	46	39	30	38	17	29	19	30	20	30	36	25	38	30	37	24	23
2-4 Unit Building	11	6	8	18	11	4	3	11	13	6	14	8	8	10	17	8	9
5-19 Unit Building	4	4	3	4	1	4	4	4	4	0	3	2	3	7	6	3	2
20+ Unit Building	2	2	3	3	3	1	1	3	2	1	2	0	3	3	3	1	1
Other Type of Housing	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	1,280	1,020	880	1,260	640	780	540	960	800	740	1,100	700	1,040	1,000	1,260	720	700
Total Person Records	1,300	1,080	900	1,340	640	840	560	980	820	780	1,160	700	1,080	1,060	1,320	760	760
Married	960	700	460	860	360	520	300	540	540	520	820	400	720	760	620	340	440
Not Married	340	380	440	480	280	320	260	440	280	260	340	300	360	300	700	420	320
Owns with Mortgage	900	640	620	760	420	520	380	680	440	580	620	400	780	560	740	420	440
Owns no Mortgage	20	40	60	40	0	0	40	20	60	20	100	60	20	20	140	60	40
All Owners	920	680	680	800	420	520	420	700	500	600	720	460	800	580	880	480	480
Renters	360	300	200	440	220	260	100	240	300	140	360	240	240	420	380	240	220
Occupy without Pay	0	40	0	20	0	0	20	20	0	0	20	0	0	0	0	0	0
Teachers	240	320	280	520	160	180	240	340	160	140	420	320	140	300	560	180	180
Nurses	420	540	460	580	380	300	140	440	380	420	320	260	360	440	440	480	180
Firefighters	60	20	40	100	20	120	0	100	140	80	160	60	100	140	160	40	160
Policemen	580	200	120	140	80	240	180	100	140	140	260	60	480	180	160	60	240
Total Key Worker Jobs in PUMA	1,300	1,080	900	1,340	640	840	560	980	820	780	1,160	700	1,080	1,060	1,320	760	760
Single Family Home	900	780	600	760	340	580	380	600	400	600	720	500	760	600	740	480	460
2-4 Unit Building	220	120	160	360	220	80	60	220	260	120	200	160	160	200	340	160	180
5-19 Unit Building	80	80	60	80	20	80	80	80	80	0	60	40	60	140	120	60	40
20+ Unit Building	40	40	60	60	60	20	20	60	40	20	40	0	60	60	60	20	20
Other Type of Housing	20	0	0	0	0	20	0	0	20	0	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 351
COUNTS 5% SAMPLE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	21	19	52	451	49	50	41	51	33	46	37	68	35	36	1,760
Total Person Records	21	20	54	465	50	52	42	54	36	52	40	70	36	38	1,834
Married	14	10	32	256	25	35	27	39	20	33	19	45	26	24	1,098
Not Married	7	10	22	209	25	17	15	15	16	19	21	25	10	14	736
Owns with Mortgage	16	11	30	282	38	34	22	38	21	32	23	53	28	26	1,141
Owns no Mortgage	1	3	4	17	4	2	5	1	2	4	3	4	0	1	88
All Owners	17	14	34	299	34	36	27	39	23	36	26	57	28	27	1,229
Renters	4	5	18	151	15	14	13	12	10	10	11	11	7	9	523
Occupy without Pay	0	0	0	1	0	0	1	0	0	0	0	0	0	0	8
Teachers	7	4	14	64	17	12	15	15	10	12	8	18	8	8	446
Nurses	5	4	21	263	24	18	15	27	17	29	20	15	14	17	816
Firefighters	3	5	4	22	8	2	6	7	1	5	3	4	7	2	154
Policemen	6	7	15	116	1	20	6	5	8	6	9	33	7	11	418
Total Key Worker Jobs in PUMA	21	20	54	465	50	52	42	54	36	52	40	70	36	38	1,834
Single Family Home	13	13	28	246	30	35	28	39	23	34	26	60	23	26	1,135
2-4 Unit Building	4	3	17	143	15	5	11	6	5	5	8	6	8	3	404
5-19 Unit Building	1	1	1	30	2	6	2	4	2	3	2	1	3	6	122
20+ Unit Building	3	2	6	32	2	2	0	2	3	3	1	1	1	1	93
Other Type of Housing	0	0	0	0	0	2	0	0	0	1	0	0	0	0	6

30-44 Age Key Workers by Place of Work PUMA
Employed in Eastern Massachusetts - 165 Cities and Towns / 351
COUNTS 100% ESTIMATE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	420	380	1,040	9,020	980	1,000	820	1,020	660	920	740	1,360	700	720	35,200
Total Person Records	400	400	1,080	9,300	1,000	1,040	840	1,080	720	1,040	800	1,400	720	760	36,680
Married	280	200	640	5,120	500	700	540	780	400	660	380	900	520	480	21,960
Not Married	140	200	440	4,180	500	340	300	300	320	380	420	500	200	280	14,720
Owns with Mortgage	320	220	600	5,640	600	680	440	760	420	640	460	1,060	560	520	22,820
Owns no Mortgage	20	60	80	340	80	40	100	20	40	80	60	80	0	20	1,760
All Owners	340	280	680	5,980	680	720	540	780	460	720	520	1,140	560	540	24,580
Renters	80	100	360	3,020	300	280	260	240	200	200	220	220	140	180	10,460
Occupy without Pay	0	0	0	20	0	0	20	0	0	0	0	0	0	0	160
Teachers	140	80	280	1,280	340	240	300	300	200	240	160	360	160	160	8,920
Nurses	100	80	420	5,260	480	360	300	540	340	580	400	300	280	340	16,320
Firefighters	60	100	80	440	160	40	120	140	20	100	60	80	140	40	3,080
Policemen	120	140	300	2,320	20	400	120	100	160	120	180	660	140	220	8,360
Total Key Worker Jobs in PUMA	420	400	1,080	9,300	1,000	1,040	840	1,080	720	1,040	800	1,400	720	760	36,680
Single Family Home	260	260	560	4,920	600	700	560	780	460	680	520	1,200	460	520	22,700
2-4 Unit Building	80	60	340	2,860	300	100	220	120	100	100	160	120	160	60	8,080
5-19 Unit Building	20	20	20	600	40	120	40	80	40	60	40	20	60	120	2,440
20+ Unit Building	60	40	120	640	40	40	0	40	60	60	20	20	20	20	1,860
Other Type of Housing	0	0	0	0	0	40	0	0	0	20	0	0	0	0	120

Appendix D-2: 30-44 Age Key Workers by Job Location PUMA – Owners Supporting Data

30-44 Age Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA:	All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Value																		
Age	38	37	39	37	38	39	38	37	38	38	38	37	37	37	39	39	40	38
Income from Wages	44,500	40,000	39,000	35,000	40,000	42,000	45,000	43,000	41,000	48,750	47,356	46,000	47,100	41,000	46,359	45,000	45,000	45,000
Travel Time in Minutes	20	30	20	15	15	20	15	20	15	15	15	30	20	30	26	20	15	10
Household Income	81,670	69,800	70,400	73,900	79,100	80,300	81,670	90,524	71,100	87,000	83,000	83,890	89,000	78,000	88,000	82,859	93,300	82,750
Married	69%	83%	67%	59%	79%	67%	72%	68%	66%	81%	69%	74%	70%	71%	91%	59%	60%	68%
Not Married	31%	17%	33%	41%	21%	33%	28%	32%	34%	19%	31%	26%	30%	29%	9%	41%	40%	32%
As a Percent (%) of 30-44 Households of Key Workers Working in PUMA																		
Owners	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent (%) by Housing Type of 30-44 Key Worker Family																		
Single Family Home	87%	91%	89%	85%	80%	76%	94%	90%	83%	76%	87%	86%	100%	97%	86%	75%	88%	83%
2-4 Unit Building	10%	2%	12%	6%	15%	24%	6%	5%	11%	16%	13%	8%	0%	3%	10%	14%	13%	17%
5-19 Unit Building	2%	2%	3%	6%	3%	0%	0%	5%	3%	4%	0%	3%	0%	3%	3%	7%	0%	0%
20+ Unit Building	0%	2%	0%	3%	3%	0%	4%	0%	3%	0%	0%	3%	0%	0%	0%	5%	0%	0%
Other Type of Housing	0%	2%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA																		
Teachers	28%	17%	31%	26%	33%	29%	17%	41%	34%	12%	22%	33%	43%	10%	22%	39%	28%	16%
Nurses	39%	32%	44%	58%	42%	52%	28%	23%	37%	42%	58%	21%	35%	49%	41%	30%	52%	16%
FireFighters	12%	4%	3%	6%	12%	6%	21%	0%	16%	22%	13%	18%	9%	7%	13%	13%	8%	28%
Policemen	23%	4%	3%	6%	12%	6%	21%	0%	16%	22%	13%	18%	9%	7%	13%	13%	8%	28%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs																		
Teachers	100%	3%	4%	5%	2%	2%	3%	4%	1%	2%	5%	3%	1%	2%	2%	6%	2%	1%
Nurses	100%	3%	3%	3%	3%	2%	2%	1%	2%	2%	3%	2%	2%	3%	3%	3%	2%	1%
FireFighters	100%	2%	1%	2%	4%	0%	5%	0%	4%	5%	3%	6%	2%	2%	3%	5%	2%	6%
Policemen	100%	7%	2%	2%	2%	1%	3%	2%	1%	2%	1%	3%	1%	6%	2%	2%	1%	3%
Total Key Worker Jobs:	100%	4%	3%	3%	3%	2%	2%	2%	3%	2%	2%	3%	2%	3%	2%	4%	2%	2%
As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs:	604,400	5,740	0.9%	Total Full Time Jobs														
Teachers		10,600	1.7%															
Nurses		2,540	0.4%															
FireFighters		6,760	0.4%															
Policemen																		
Total Key Worker Jobs		25,640	3.5%															
As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs	467,740	Total Household's With At Least 1 Full Time Worker																
Total Key Worker Households	24,580	5.3%																

30-44 Age Key Workers by Place of Work PUMA - Owners

Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	37	39	39	39	38	37	39	39	36	38	39	37	40	38
Income from Wages	50,000	49,000	40,050	54,000	40,000	44,250	41,000	44,500	44,700	45,000	43,000	44,900	38,250	43,000
Travel Time in Minutes	15	23	23	30	30	26	15	25	20	20	15	23	13	15
Household Income	96,750	77,500	92,400	88,500	75,700	81,000	92,000	78,000	85,100	94,150	68,600	71,894	69,500	68,000
Married	59%	50%	72%	64%	62%	79%	79%	81%	68%	68%	55%	69%	82%	72%
Not Married	41%	50%	28%	36%	38%	21%	21%	19%	32%	32%	45%	31%	18%	28%
As a Percent (%) of 30-44 Households of Key Workers Working in PUMA														
Owners	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent (%) by Housing Type of 30-44 Key Worker Family														
Single Family Home	76%	93%	74%	77%	76%	92%	93%	95%	96%	92%	88%	96%	82%	93%
2-4 Unit Building	18%	0%	26%	19%	15%	3%	7%	3%	0%	3%	12%	4%	14%	7%
5-19 Unit Building	0%	0%	0%	2%	3%	3%	0%	3%	0%	3%	0%	0%	4%	0%
20+ Unit Building	6%	7%	0%	2%	0%	6%	0%	0%	0%	3%	0%	0%	0%	0%
Other Type of Housing	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA														
Teachers	35%	29%	19%	11%	35%	18%	39%	26%	28%	20%	17%	28%	18%	28%
Nurses	18%	14%	39%	55%	44%	32%	29%	48%	40%	59%	52%	22%	43%	31%
FireFighters	12%	21%	8%	7%	18%	5%	14%	14%	4%	12%	10%	3%	21%	7%
Policemen	35%	36%	33%	28%	3%	45%	18%	12%	28%	10%	21%	47%	18%	34%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs														
Teachers	2%	1%	2%	11%	4%	2%	4%	4%	2%	3%	2%	6%	2%	3%
Nurses	1%	0%	3%	32%	3%	2%	2%	4%	2%	5%	3%	2%	2%	2%
FireFighters	2%	2%	2%	16%	5%	2%	3%	5%	1%	4%	2%	2%	5%	2%
Policemen	2%	1%	4%	25%	0%	5%	1%	1%	2%	1%	2%	8%	1%	3%
Total Key Worker Jobs	1%	1%	3%	24%	3%	3%	2%	3%	2%	3%	2%	5%	2%	2%
As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs														
Teachers														
Nurses														
FireFighters														
Policemen														
Total Key Worker Jobs														
As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs														
Total Key Worker Households														

30-44 Age Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800
Total Household Records	46	34	34	40	21	26	21	35	25	30	36	23	40	29	44	24
Total Person Records	47	36	34	43	21	29	22	35	26	32	39	23	41	32	46	25
Married	39	24	20	34	14	21	15	23	21	22	29	16	29	29	27	15
Not Married	8	12	14	9	7	8	7	12	5	10	10	7	12	3	19	10
Owners with Mortgage	45	32	31	38	21	26	19	34	22	29	31	20	39	28	37	21
Owners no Mortgage	1	2	3	2	0	0	2	1	3	1	5	3	1	1	7	3
All Owners	46	34	34	40	21	26	21	35	25	30	36	23	40	29	44	24
Teachers	8	11	9	14	6	5	9	12	3	7	13	10	4	7	18	7
Nurses	15	16	17	18	11	8	5	13	11	16	8	8	14	13	14	13
Firefighters	2	1	2	5	0	6	0	5	6	4	7	2	3	4	6	2
Policemen	22	8	6	6	4	10	8	5	6	5	11	3	20	8	8	3
Total Key Worker Jobs in PUMA	47	36	34	43	21	29	22	35	26	32	39	23	41	32	46	25
Single Family Home	42	29	29	32	16	25	19	29	19	26	31	23	37	25	33	21
2-4 Unit Building	1	4	2	6	5	0	1	4	4	4	3	0	2	3	6	3
5-19 Unit Building	1	1	2	1	0	0	1	1	1	0	1	0	1	1	3	0
20+ Unit Building	1	0	1	1	0	1	0	1	0	0	1	0	0	0	2	0
Other Type of Housing	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800
Total Household Records	920	680	680	800	420	520	420	700	500	600	720	460	800	580	880	480
Total Person Records	940	720	680	860	420	580	440	700	520	640	780	460	820	640	920	500
Married	780	480	400	680	280	420	300	460	420	440	580	320	580	580	540	300
Not Married	160	240	280	180	140	160	140	240	100	200	200	140	240	60	380	200
Owners with Mortgage	900	640	620	760	420	520	380	680	440	580	620	400	780	560	740	420
Owners no Mortgage	20	40	60	40	0	0	40	20	60	20	100	60	20	20	140	60
All Owners	920	680	680	800	420	520	420	700	500	600	720	460	800	580	880	480
Teachers	160	220	180	280	120	100	180	240	60	140	260	200	80	140	360	140
Nurses	300	320	340	360	220	160	100	260	220	320	160	160	280	260	280	260
Firefighters	40	20	40	100	0	120	0	100	120	80	140	40	60	80	120	40
Policemen	440	160	120	120	80	200	160	100	120	100	220	60	400	160	160	60
Total Key Worker Jobs in PUMA	940	720	680	860	420	580	440	700	520	640	780	460	820	640	920	500
Single Family Home	840	580	580	640	320	500	380	580	380	520	620	460	740	500	660	420
2-4 Unit Building	20	80	40	120	100	0	20	80	80	80	60	0	40	60	120	60
5-19 Unit Building	20	20	40	20	0	0	20	20	20	0	20	0	20	20	60	0
20+ Unit Building	20	0	20	20	0	20	0	20	0	0	20	0	0	0	40	0
Other Type of Housing	20	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	2900	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	24	17	14	34	299	34	36	27	39	23	36	26	57	28	27	1,229
Total Person Records	25	17	14	36	307	34	38	28	42	25	41	29	58	28	29	1,282
Married	17	10	7	26	195	21	30	22	34	17	28	16	40	23	21	885
Not Married	8	7	7	10	112	13	8	6	8	8	13	13	18	5	8	397
Owners with Mortgage	22	16	11	30	282	30	34	22	38	21	32	23	53	28	26	1,141
Owners no Mortgage	2	1	3	4	17	4	2	5	1	2	4	3	4	0	1	88
All Owners	24	17	14	34	299	34	36	27	39	23	36	26	57	28	27	1,229
Teachers	4	6	4	7	33	12	7	11	11	7	8	5	16	5	8	287
Nurses	4	3	2	14	169	15	12	8	20	10	24	15	13	12	9	530
Firefighters	7	2	3	3	20	6	2	4	6	1	5	3	2	6	2	127
Policemen	10	6	5	12	85	1	17	5	5	7	4	6	27	5	10	338
Total Key Worker Jobs in PUMA	25	17	14	36	307	34	38	28	42	25	41	29	58	28	29	1,282
Single Family Home	20	13	13	25	231	26	33	25	37	22	33	23	55	23	25	1,040
2-4 Unit Building	4	3	0	9	58	5	1	2	1	0	1	3	2	4	2	143
5-19 Unit Building	0	0	0	0	5	1	1	0	1	0	1	0	0	1	0	24
20+ Unit Building	0	1	1	0	5	0	2	0	0	0	1	0	0	0	0	18
Other Type of Housing	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4

30-44 Age Key Workers by Place of Work PUMA - Owners
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE

Place of Work PUMA	2900	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	480	340	280	680	5,980	680	720	540	780	460	720	520	1,140	560	540	24,580
Total Person Records	500	340	280	720	6,140	680	760	560	840	500	820	580	1,160	560	580	25,640
Married	340	200	140	520	3,900	420	600	440	680	340	560	320	800	460	420	17,700
Not Married	160	140	140	200	2,240	260	160	120	160	160	260	260	360	100	160	7,940
Owners with Mortgage	440	320	220	600	5,640	600	680	440	760	420	640	460	1,060	560	520	22,820
Owners no Mortgage	40	20	60	80	340	80	40	100	20	40	80	60	80	0	20	1,760
All Owners	480	340	280	680	5,980	680	720	540	780	460	720	520	1,140	560	540	24,580
Teachers	80	120	80	140	660	240	140	220	220	140	160	100	320	100	160	5,740
Nurses	80	60	40	280	3,380	300	240	160	400	200	480	300	260	240	180	10,600
Firefighters	140	40	60	60	400	120	40	80	120	20	100	60	40	120	40	2,540
Policemen	200	120	100	240	1,700	20	340	100	100	140	80	120	540	100	200	6,760
Total Key Worker Jobs in PUMA	500	340	280	720	6,140	680	760	560	840	500	820	580	1,160	560	580	25,640
Single Family Home	400	260	260	500	4,620	520	660	500	740	440	660	460	1,100	460	500	20,800
2-4 Unit Building	80	60	0	180	1,160	100	20	40	20	0	20	60	40	80	40	2,860
5-19 Unit Building	0	0	0	0	100	20	20	0	20	0	20	0	0	20	0	480
20+ Unit Building	0	20	20	0	100	0	40	0	0	0	20	0	0	0	0	360
Other Type of Housing	0	0	0	0	20	0	20	0	0	0	0	0	0	0	0	80

Appendix D-3: 30-44 Age Key Workers by Job Location PUMA – Renters Supporting Data

30-44 Age Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	All PUMAs	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Median Value																		
Age	37	33	37	38	38	32	36	39	39	39	37	34	33	33	37	37	43	37
Income from Wages	33,900	42,000	33,200	25,000	29,000	36,000	28,000	40,000	29,000	41,000	32,000	33,900	31,500	40,000	38,000	30,000	32,000	40,000
Travel Time in Minutes	23	30	18	30	15	20	15	35	25	10	25	30	20	25	25	15	30	20
Household Income	51,700	65,750	56,500	46,500	51,700	50,000	54,200	41,450	49,750	50,000	51,170	48,000	65,500	45,800	58,400	50,420	44,500	61,470
Married	38%	50%	58%	27%	35%	36%	33%	0%	31%	40%	57%	61%	33%	54%	43%	20%	15%	38%
Not Married	62%	50%	44%	73%	65%	64%	67%	100%	69%	60%	43%	39%	67%	46%	57%	80%	85%	62%
As a Percent (%) of Total 30-44 Households of Key Workers Working in PUMA																		
Renters	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent (%) by Housing Type of 30-44 Key Worker Family																		
Single Family Home	17%	22%	13%	18%	23%	9%	31%	0%	0%	7%	57%	22%	17%	8%	24%	21%	25%	27%
2-4 Unit Building	50%	56%	13%	68%	55%	55%	31%	40%	58%	60%	29%	61%	67%	58%	33%	58%	42%	45%
5-19 Unit Building	18%	17%	38%	18%	14%	9%	31%	40%	25%	20%	0%	11%	17%	17%	29%	16%	25%	18%
20+ Unit Building	14%	6%	13%	28%	9%	27%	8%	20%	17%	13%	14%	6%	0%	25%	14%	5%	8%	9%
Other Type of Housing	0%	0%	0%	0%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA																		
Teachers	29%	22%	19%	45%	48%	18%	31%	40%	38%	33%	0%	44%	50%	23%	38%	58%	15%	38%
Nurses	50%	33%	69%	55%	48%	73%	54%	40%	62%	53%	71%	44%	42%	31%	43%	40%	85%	38%
Firefighters	7%	6%	0%	0%	0%	9%	0%	0%	0%	7%	0%	6%	8%	15%	14%	10%	0%	8%
Policemen	14%	39%	13%	0%	4%	0%	15%	20%	0%	7%	29%	6%	0%	31%	5%	0%	0%	15%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs																		
Teachers	100%	3%	2%	3%	7%	1%	3%	1%	3%	3%	0%	5%	4%	2%	5%	6%	1%	3%
Nurses	100%	2%	4%	2%	4%	3%	2%	1%	3%	3%	2%	3%	2%	1%	3%	3%	4%	2%
Firefighters	100%	4%	0%	0%	0%	4%	0%	0%	0%	4%	0%	4%	4%	5%	12%	8%	0%	4%
Policemen	100%	9%	3%	0%	1%	0%	3%	1%	0%	1%	3%	1%	0%	5%	1%	0%	0%	3%
Total Key Worker Jobs	100%	3%	2%	4%	2%	2%	1%	2%	3%	1%	3%	2%	2%	2%	4%	4%	2%	2%

As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs		Total Full Time Jobs
Teachers	4,080	0.9%
Nurses	5,680	0.9%
Firefighters	520	0.1%
Policemen	1,580	0.1%
Total Key Worker Jobs	10,860	1.6%

As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs		Total Households With At Least 1 Full Time Worker
Total Key Worker Households	10,460	2.2%

30-44 Age Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600
Median Values														
Age	41	40	35	36	39	34	35	33	35	35	38	36	35	40
Income from Wages	25,750	32,200	41,000	37,000	38,400	30,650	31,000	35,950	23,000	43,000	30,000	38,500	39,500	35,000
Travel Time in Minutes	13	25	23	30	30	25	30	20	15	20	15	18	10	30
Household Income	60,850	45,000	62,850	64,000	54,900	58,000	62,450	43,860	36,850	52,850	47,000	67,000	82,400	48,500
Married	100%	50%	33%	38%	25%	36%	38%	42%	27%	45%	27%	42%	38%	33%
Not Married	0%	50%	67%	62%	75%	64%	62%	58%	73%	55%	73%	58%	63%	67%
As a Percent (%) of 30-44 Households of Key Workers Working in PUMA														
Renters	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Percent (%) by Housing Type of 30-44 Key Worker Family														
Single Family Home	0%	0%	17%	10%	27%	14%	15%	17%	10%	10%	27%	45%	0%	11%
2-4 Unit Building	25%	60%	44%	56%	67%	29%	69%	42%	50%	40%	45%	36%	57%	11%
5-19 Unit Building	25%	20%	6%	17%	7%	36%	15%	25%	20%	20%	18%	9%	29%	67%
20+ Unit Building	50%	20%	33%	18%	0%	14%	0%	17%	20%	30%	9%	9%	14%	11%
Other Type of Housing	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%
As a Percent (%) of Total 30-44 Key Worker Jobs in PUMA														
Teachers	25%	0%	39%	19%	31%	36%	31%	33%	27%	36%	27%	17%	38%	0%
Nurses	50%	33%	39%	60%	56%	43%	54%	58%	64%	45%	45%	17%	25%	89%
Firefighters	25%	33%	6%	1%	13%	0%	8%	8%	0%	0%	0%	17%	13%	0%
Policemen	0%	33%	17%	20%	0%	21%	8%	0%	9%	18%	27%	50%	25%	11%
As a Percent (%) of Total 30-44 Key Worker Jobs in All 35 PUMAs														
Teachers	1%	0%	5%	19%	3%	3%	3%	3%	2%	3%	2%	1%	2%	0%
Nurses	1%	1%	2%	33%	3%	2%	2%	2%	2%	2%	2%	1%	1%	3%
Firefighters	4%	8%	4%	8%	8%	0%	4%	4%	0%	0%	0%	8%	4%	0%
Policemen	0%	3%	4%	39%	0%	4%	1%	0%	1%	3%	4%	8%	3%	1%
Total Key Worker Jobs	1%	1%	3%	29%	3%	3%	2%	2%	2%	2%	2%	2%	1%	2%

As a Percent (%) of Total 30 to 44 Full Time Jobs in All 35 PUMAs
Teachers
Nurses
Firefighters
Policemen

Total Key Worker Jobs

As a Percent (%) of Total 30 to 44 Full Time Households in All 35 PUMAs

Total Key Worker Households

30-44 Age Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 5% SAMPLE

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	18	15	10	22	11	13	5	12	15	7	18	12	12	21	19	12	11
Total Person Records	18	16	11	23	11	13	5	13	15	7	18	12	13	21	20	13	13
Married	9	9	3	8	4	5	0	4	6	4	11	4	7	9	4	2	5
Not Married	9	7	8	15	7	8	5	9	9	3	7	8	6	12	16	11	8
Renters	18	15	10	22	11	13	5	12	15	7	18	12	12	21	19	12	11
Teachers	4	3	5	11	2	4	2	5	5	0	8	6	3	8	10	2	5
Nurses	6	11	6	11	8	7	2	8	8	5	8	5	4	9	8	11	5
Firefighters	1	0	0	0	1	0	0	0	1	0	1	1	2	3	2	0	1
Policemen	7	2	0	1	0	2	1	0	1	2	1	0	4	1	0	0	2
Total Key Worker Jobs in PUMA	18	16	11	23	11	13	5	13	15	7	18	12	13	21	20	13	13
Single Family Home	4	8	1	5	1	4	0	0	1	4	4	2	1	5	4	3	3
2-4 Unit Building	10	2	6	12	6	4	2	7	9	2	11	8	6	7	11	5	5
5-19 Unit Building	3	3	1	3	1	4	2	3	3	0	2	2	2	6	3	3	2
20+ Unit Building	1	2	2	2	3	0	1	2	2	1	1	0	3	3	1	1	1
Other Type of Housing	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA - Renters
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PUMAs
COUNTS 100% ESTIMATE 20

Place of Work PUMA	400	500	600	700	800	900	1000	1100	1200	1300	1400	2400	2500	2600	2700	2800	2900
Total Household Records	360	300	200	440	220	260	100	240	300	140	360	240	240	420	380	240	220
Total Person Records	360	320	220	460	220	260	100	260	300	140	360	240	260	420	400	260	260
Married	180	180	60	160	80	100	0	80	120	80	220	80	140	180	80	40	100
Not Married	180	140	160	300	140	160	100	180	180	60	140	160	120	240	320	220	160
All Renters	360	300	200	440	220	260	100	240	300	140	360	240	240	420	380	240	220
Teachers	80	60	100	220	40	80	40	100	100	0	160	120	60	160	200	40	100
Nurses	120	220	120	220	160	140	40	160	160	100	160	100	80	180	160	220	100
Firefighters	20	0	0	0	20	0	0	0	20	0	20	20	40	60	40	0	20
Policemen	140	40	0	20	0	40	20	0	20	40	20	0	80	20	0	0	40
Total Key Worker Jobs in PUMA	360	320	220	460	220	260	100	260	300	140	360	240	260	420	400	260	260
Single Family Home	80	160	20	100	20	80	0	0	20	80	80	40	20	100	80	60	60
2-4 Unit Building	200	40	120	240	120	80	40	140	180	40	220	160	120	140	220	100	100
5-19 Unit Building	60	60	20	60	20	80	40	60	60	0	40	40	40	120	60	60	40
20+ Unit Building	20	40	40	40	60	0	20	40	40	20	20	0	60	60	20	20	20
Other Type of Housing	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0

30-44 Age Key Workers by Place of Work PUMA - F
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PU
COUNTS 5% SAMPLE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	4	5	18	151	15	14	13	12	10	10	11	11	7	9	523
Total Person Records	4	6	18	156	16	14	13	12	11	11	11	12	8	9	543
Married	4	3	6	59	4	5	5	5	3	5	3	5	3	3	207
Not Married	0	3	12	97	12	9	8	7	8	6	8	7	5	6	336
Renters	4	5	18	151	15	14	13	12	10	10	11	11	7	9	523
Teachers	1	0	7	30	5	5	4	4	3	4	3	2	3	0	154
Nurses	2	2	7	93	9	6	7	7	7	5	5	2	2	8	284
Firefighters	1	2	1	2	2	0	1	1	0	0	0	2	1	0	26
Policemen	0	2	3	31	0	3	1	0	1	2	3	6	2	1	79
Total Key Worker Jobs in PUMA	4	6	18	156	16	14	13	12	11	11	11	12	8	9	543
Single Family Home	0	0	3	15	4	2	2	2	1	1	3	5	0	1	89
2-4 Unit Building	1	3	8	84	10	4	9	5	5	4	5	4	4	1	260
5-19 Unit Building	1	1	1	25	1	5	2	3	2	2	2	1	2	6	97
20+ Unit Building	2	1	6	27	0	2	0	2	2	3	1	1	1	1	75
Other Type of Housing	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2

30-44 Age Key Workers by Place of Work PUMA - F
Employed in Eastern Massachusetts - 165 Cities and Towns / 35 PU
COUNTS 100% ESTIMATE

Place of Work PUMA	3000	3100	3200	3300/Boston	3400	3500	3600	3700	3800	3900	4000	4100	4200	4600	**TOTAL**
Total Household Records	80	100	360	3,020	300	280	260	240	200	200	220	220	140	180	10,460
Total Person Records	80	120	360	3,120	320	280	260	240	220	220	220	240	160	180	10,860
Married	80	60	120	1,180	80	100	100	100	60	100	60	100	60	60	4,140
Not Married	0	60	240	1,940	240	180	160	140	160	120	160	140	100	120	6,720
All Renters	80	100	360	3,020	300	280	260	240	200	200	220	220	140	180	10,460
Teachers	20	0	140	600	100	100	80	80	60	80	60	40	60	0	3,080
Nurses	40	40	140	1,860	180	120	140	140	140	100	100	40	40	160	5,680
Firefighters	20	40	20	40	40	0	20	20	0	0	0	40	20	0	520
Policemen	0	40	60	620	0	60	20	0	20	40	60	120	40	20	1,580
Total Key Worker Jobs in PUMA	80	120	360	3,120	320	280	260	240	220	220	220	240	160	180	10,860
Single Family Home	0	0	60	300	80	40	40	40	20	20	60	100	0	20	1,780
2-4 Unit Building	20	60	160	1,680	200	80	180	100	100	80	100	80	80	20	5,200
5-19 Unit Building	20	20	20	500	20	100	40	60	40	40	40	20	40	120	1,940
20+ Unit Building	40	20	120	540	0	40	0	40	40	60	20	20	20	20	1,500
Other Type of Housing	0	0	0	0	0	20	0	0	0	0	0	0	0	0	40

Appendix E: Work and Live in Boston Key Workers by Place of Residence – All Tenures Supporting Data

Descriptive Statistics - Key Worker - Work and Live in Boston
COUNTS 5% SAMPLE

Place of Residence PUMA	3301	3302	3303	3304	3305	TOTAL
Total Household Records	31	44	102	103	137	417
Total Person Records	31	46	106	110	143	436
Married	7	22	39	45	67	180
Not Married	24	24	67	65	76	256
Owners with Mortgage	5	18	30	39	86	178
Owners no Mortgage	1	5	6	6	13	31
All Owners	6	23	36	45	99	209
Renters	25	20	65	58	37	205
Occupy without Pay	0	1	1	0	1	3
Teachers	12	15	23	22	33	105
Nurses	14	23	70	49	67	223
Firefighters	0	2	4	10	7	23
Policemen	5	6	9	29	36	85
Total Key Worker Jobs in PUMA	31	46	106	110	143	436
Single Family Home	5	5	20	24	78	132
2-4 Unit Building	12	18	62	67	41	200
5-19 Unit Building	5	13	13	7	8	46
20+ Unit Building	9	8	7	5	10	39
Other Type of Housing	0	0	0	0	0	0

Descriptive Statistics - Key Worker - Work and Live in Boston
COUNTS 100% ESTIMATE 20

Place of Residence PUMA	3301	3302	3303	3304	3305	TOTAL
Total Household Records	620	880	2,040	2,060	2,740	8,340
Total Person Records	620	920	2,120	2,200	2,860	8,720
Owners with Mortgage	100	360	600	780	1,720	3,560
Owners no Mortgage	20	100	120	120	260	620
All Owners	120	460	720	900	1,980	4,180
Renters	500	400	1,300	1,160	740	4,100
Occupy without Pay	0	20	20	0	20	60
Teachers	240	300	460	440	660	2,100
Nurses	280	460	1,400	980	1,340	4,460
Firefighters	0	40	80	200	140	460
Policemen	100	120	180	580	720	1,700
Total Key Worker Jobs in PUMA	620	920	2,120	2,200	2,860	8,720
Single Family Home	100	100	400	480	1,560	2,640
2-4 Unit Building	240	360	1,240	1,340	820	4,000
5-19 Unit Building	100	260	260	140	160	920
20+ Unit Building	180	160	140	100	200	780
Other Type of Housing	0	0	0	0	0	0

BIBLIOGRAPHY AND REFERENES

Books

Pollakowski, Henry O. *Urban Housing Markets and Residential Location*. Lexington, MA: Lexington Books, 1982.

Rogers, Richard. *Cities for a Small Planet*. London, UK: Faber and Faber, 1997.

Warren, Elizabeth. *The Two Income Trap: Why Middle-Class Mothers and Fathers are Going Broke.* New York, NY: Basic Books, 2003.

Journal Articles and Theses

Bogdon, Amy S. and Ayse Can. "Indicators of Local Housing Affordability: Comparative and Spatial Approaches." *Real Estate Economics* 25.1 (Spring 1997): 43-80.

Crane, Jonathan. "The Epidemic Theory of Ghettos and Neighborhood Effects on Dropping Out and Teenage Childbearing." *The American Journal of Sociology* 96.5 (March 1991(: 1226-1259.

Jakabovics, Andrew. *Building Equity: the Evolution and Efficacy of Montgomery County's Moderately Priced Dwelling Unit Legislation*. Master of City Planning Thesis, Massachusetts Institute of Technology. 2004.

Shafer, Dee Naquin. "No Longer Caught in the Middle. " *Journal of Housing and Community Development* 59.6 (November/December 2002): 30-34.

Sirmans, G. Stacy and David A. Macpherson. "The State of Affordable Housing." *Journal of Real Estate Literature* 11.2 (2003): 133-155.

Varady, David P. "Middle-income Housing Programmes in American Cities." *Urban Studies* 31.8 (1994): 1345-1366.

Wagner, Margaret Fitzgerald. *Key Worker Housing: A Demographic Analysis of Working Families in Eastern Massachusetts*. Master of Real Estate Thesis, Massachusetts Institute of Technology. 2005.

Wheaton, William C. "Income and Urban Residence: An Analysis of Consumer Demand for Location. " *The American Economic Review* 67.4 (September 1977): 620-631.

Reports

Bell, Carol A. "Workforce Housing: The New Economic Imperative?" *Housing Facts and Findings* 4.2. Washington, DC: Fannie Mae Foundation, 2005.

Boston Redevelopment Authority, "Report 566: Boston Population 2000: 11 – SELECTED HOUSING CHARACTERISTICS: Housing structures, Utilities, and Housing Costs in Boston Neighborhoods." Boston, MA: April 2003.

Bujold, May, Thomas G. O'Neil and Brent Wittenberg. *Workforce Housing: The Key to Ongoing Regional Prosperity (A Study of Housing's Economic Impact on the Twin Cities).* Minneapolis, MN: Maxfield Research Inc. and GVA Marquette Advisors, September 2001.

Crowe, David, David Ledford, Paul Emrath, Elliot Eisenberg and Yingchun Liu. *Where is Workforce Housing Located?: A Study of the Geography of Housing Affordability.* Washington, DC: National Association of Home Builders, December 2004.

Goodman, Michael D. and James Palma. *Winners and Losers in the Massachusetts Housing Market: Recent Changes in Housing Demand, Supply and Affordability.* Boston, MA: Citizens' Housing and Planning Association, Inc and Massachusetts Housing Partnership, 2004.

Haughey, Richard M. *Challenges to Developing Workforce Housing*. Washington, DC: The ULI Workforce Housing Forum, December 5-6, 2001.

_____. *Workforce Housing: Barriers, Solutions, and Model Programs*. Washington, DC: The ULI Workforce Housing Forum, June 25-26, 2002.

Heudorfer, Bonnie, Barry Bluestone and Stein Helmrich. *The Greater Boston Housing Report Card 2003: An Assessment of Progress on Housing in the Greater Boston Area.* Boston, MA: The Boston Foundation, 2004.

Joint Center for Housing Studies of Harvard University. *The State of the Nation's Housing 2004.* Cambridge, MA: Joint Center for Housing Studies of Harvard University, 2004.

Joint Center for Housing Studies of Harvard University. *The State of the Nation's Housing 2005.* Cambridge, MA: Joint Center for Housing Studies of Harvard University, 2005.

Lipman, Barbara J. "The Housing Landscape for America's Working Families." *New Century Housing* 5.1. Washington, DC: The Center for Housing Policy, April 2005.

Lipman, Barbara J. *Paycheck to Paycheck: Wages and the Cost of Housing in the Counties, 2004.* Washington, DC.: The Center for Housing Policy, 2004.

Lipman, Barbara J. "Something's Gotta Give: Working Families and the Cost of Housing." *New Century Housing* 5.2. Washington, DC: The Center for Housing Policy, April 2005.

Marschner, Kim Ilana. *Building Workforce Housing: Meeting San Francisco's Challenge.* San Francisco, CA: San Francisco Chamber of Commerce, March 2003.

Myerson, Deborah L. "Hard at Work for Workforce Housing." *Urban Land* (September 2003):

110-115.

_____. *Mixed-Income Housing: Myth and Fact*, Washington, D.C: ULI-Urban Land Institute, 2003.

Stegman, Michael A., Roberto G. Quercia, and George McCarthy. "Housing America's Working Families." *New Century Housing* 1.1. Washington, DC: The Center for Housing Policy, June 2000.

Sum, Andrew, Paul Harrington, Neeta Fogg, Ishwar Khatiwada, Mykhaylo Trub'skyy, and Sheila Palma. *The State of the American Dream in Massachusetts, 2002*. Boston, MA: Center for Labor Market Studies and Massachusetts Institute for a New Commonwealth, 2002.

U. S. Census Bureau Census 2000. *Public Use Microdata Sample Technical Documentation*. Washington DC: 2003.

University of Massachusetts Donahue Institute. *Housing Poll.* Boston, MA: Citizens' Housing and Planning Association, Inc. March 2005.

Urban Land Institute. *Encouraging Workforce Housing in the Chicago Region, Atlanta, and the District of Columbia*. Washington, DC: ULI Land Use Policy Project Report, June 2003.

Newspaper Articles

Estes, Andrea. "Most workers free from city rule" *Boston Globe*. April 19, 2004. Third Edition. A1.

_____. "Residency Rule Draws Criticism; Emerges as Issue in City Elections" *Boston Globe*. May 23, 2005. Third Edition. B1.

Madison Park Globe Correspondent. "Union, City Start Worker Housing Fund" *Boston Globe*. April 20, 2005. Third Edition. B4.

Internet and GIS

Genesis Workforce Housing Fund. *$100M (Estimated) Workforce Housing Equity Fund*
http://www.genesisla.org/lev3_LA_workforce_fund.htm

MassGIS. *Community Boundaries (Towns) from Survey Points.*
http://www.mass.gov/mgis/townssurvey.htm

National Housing Conference. *Paycheck to Paycheck Interactive Database.*
www.nhc.org/chp/p2p

New Home for Chicago Program. *Moderate Income Workforce Housing Program.*
www.chicagoareahousing.org/DOHLinks.asp?program=newhomes

US Census Bureau. *Public Use Microdata Samples (PUMS).*
http://www.census.gov/main/www/pums.html

US Census GIS Tiger Site.
***T**opologically **I**ntegrated **G**eographic **E**ncoding and **R**eferencing system. Census Boundaries.*
http://www.census.gov/geo/www/tiger/index.html
http://www.census.gov/geo/www/cob/pu5_2000.html

US Department of Housing and Urban Development (HUD). *Officer Next Door Program*.
www.hud.gov/offices/hsg/sfh/reo/ond/ond.cfm

US Department of Housing and Urban Development (HUD). *Teacher Next Door Program*.
www.hud.gov/offices/hsg/sfh/reo/tnd/tnd.cfm