Key Worker Housing:
A Demographic Analysis of Working Families in Eastern Massachusetts

by

Margaret Fitzgerald Wagner

Bachelor of Arts, Spanish Literature & Language
Yale University, 1997

Submitted to the Department of Architecture in
Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE IN REAL ESTATE DEVELOPMENT

at the

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Signature of Author _____
Department of Architecture
August 5, 2005

Certified by_____
Henry O. Pollakowski
Research Associate, Center for Real Estate
Thesis Supervisor

Accepted by_____
David M. Geltner
Chairman, Interdepartmental Degree Program in
Real Estate Development

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Abstract

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 housing advocates have speculated that working families have had to move far from their jobs enduring long commutes, less time at home and increased traffic congestion. More specifically, housing advocates worry that key community workers who build and sustain strong communities, like teachers, nurses, firefighters and police officers, cannot live in the communities they serve.

This thesis intends to substantiate these claims as they relate to Eastern Massachusetts' "key workers" through a rigorous demographic profiling of a sample of key worker households of those key workers employed in 165 communities. We analyze the key worker household rather than the key worker as an individual through the use of microdata from the 2000 Census. This approach results in an analysis of total household income rather than individual wages when studying housing affordability for key workers employed in Eastern Massachusetts. Our unique analysis produces results and conclusions that vary significantly from previous workforce housing studies. We also are trying to better understand micro demographic details of these key worker households that cannot be understood from the traditional Census data. For example, what differences are seen in housing trends between all workers and key workers? Do key workers tend to rent or to own? How long do these key workers have to commute? Are these key workers the primary wage earners? Into what income bracket do these families fall? Do these key workers live and work in the communities they serve? The hope is that this demographic profiling will aid in quantifying the demand for key worker housing in the Boston area, as well as contribute to the local workforce housing policy debate.

Thesis Supervisor: Henry O. Pollakowski

Title: Research Associate, MIT Center for Real Estate

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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 show 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 a demand for more housing that the area's workforce can afford in the Boston Metropolitan Area.

This thesis intends to substantiate or debunk some of the above claims as they relate to Eastern Massachusetts' "key workers" (teachers, nurses, firefighters and police officers) through a rigorous demographic profiling of a sample of key worker households in 165 communities. Although we present findings from previous studies analyzing workforce housing both nationally and locally, this thesis approaches the analysis in a different manner. First, we classify Eastern Massachusetts' key workers as those who work in Eastern Massachusetts not those who reside in Eastern Massachusetts. By looking at place of work rather than place of residence, we capture key workers living outside of Massachusetts. Second, and most importantly, we analyze the key worker household rather than the key worker as an individual through the use of

microdata from the 2000 Census. Therefore, when discussing housing affordability for key workers employed in Eastern Massachusetts, we use the total household income rather than the individual income garnered from wages. Upon this basis, we conclude that the key worker housing crisis does not appear to be as dire as is presented in previous studies.

We are not just analyzing key worker household income. We also are trying to better understand micro demographic details of these key worker households that cannot be understood from the traditional Census data. For example, what differences are seen in housing trends between all workers and key workers? Do key workers tend to rent or to own? How long do these key workers have to commute? What are the median incomes for key workers? Are these key workers the primary wage earners? Into what income bracket do these families fall? Do these key workers live and work in the communities they serve? Once we answer these questions, we will understand not only what these households are demanding, but also in what income bracket they fall. The hope is that this demographic profiling will aid in quantifying the demand for key worker housing in the Boston area, as well as contribute to the local workforce housing policy debate.

This thesis attempts to answer these important and timely questions. 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 unique from other studies analyzing “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.

This demographic analysis is needed in order to perform the demand and affordability analysis. My colleague Sean Sacks and I have written brother-sister theses in which Mr. Sacks uses the demographic analysis and findings in this thesis as the background for his demand and affordability analysis. Some of his findings and conclusions are quoted in this thesis, but for more detail please see his thesis entitled *Key Worker Housing: A Demand Analysis of Middle-Income Workforce Housing in Eastern Massachusetts.*

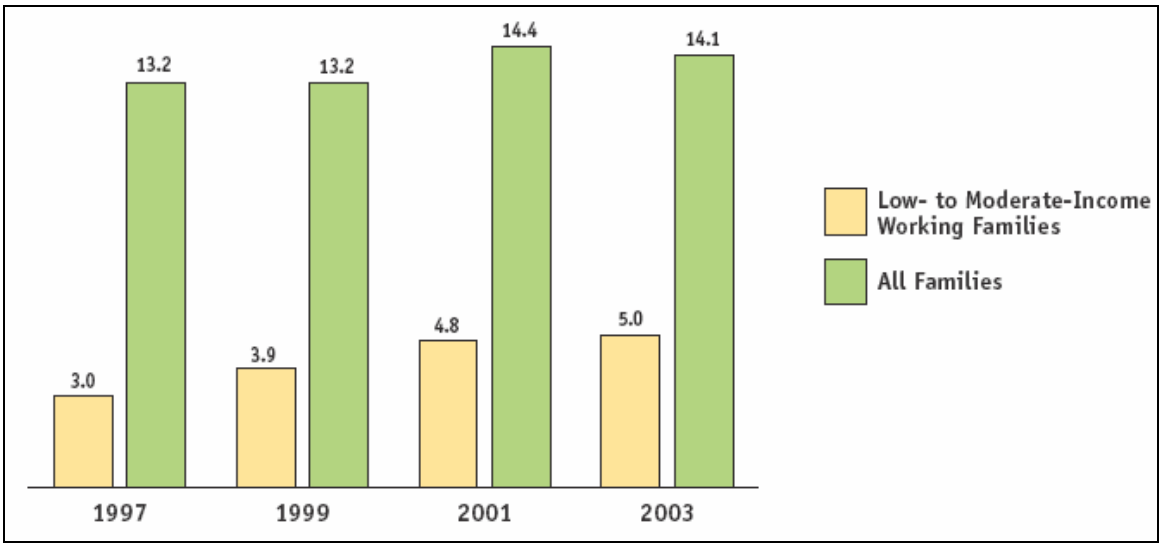
Chapter 1: Housing Needs for Working Families in the United States

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]

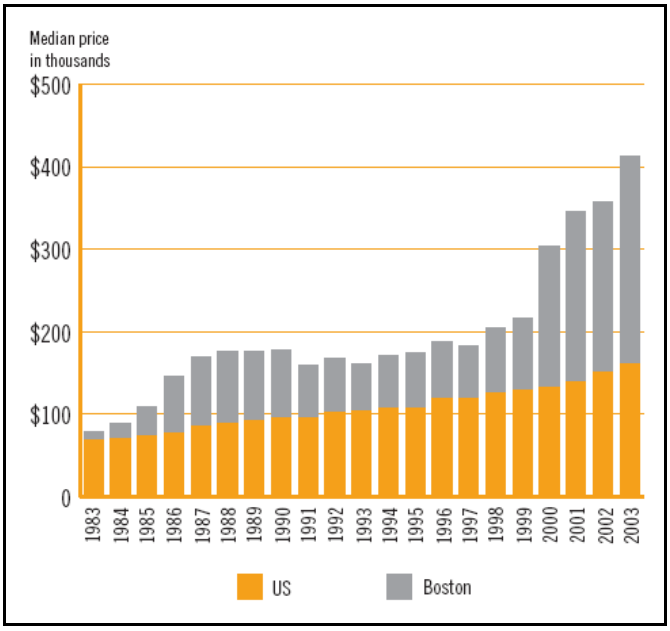
[7] *Housing Landscape,* 24.
[8] *Something's Gotta Give*, 8.

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.

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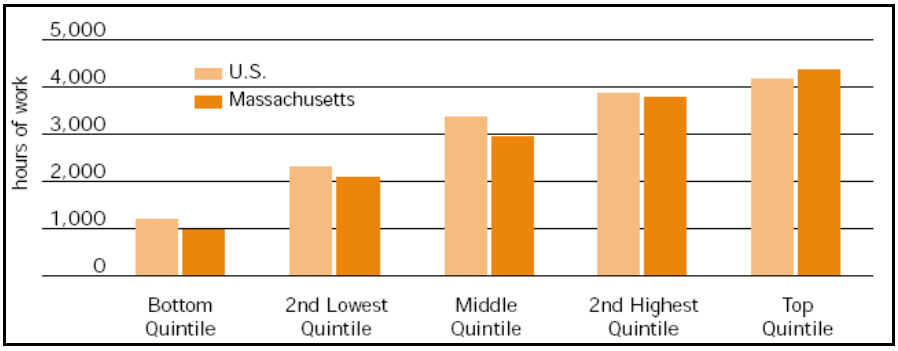
[9] *The Greater Boston Housing Report Card 2003*, 5.
[10] First-time homebuyer is defined as a household earning 80% of median household income, assumed to be purchasing a home priced at 80% of median home price.
[11] *The Greater Boston Housing Report Card 2003*, 5.
[12] *The Greater Boston Housing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

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 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

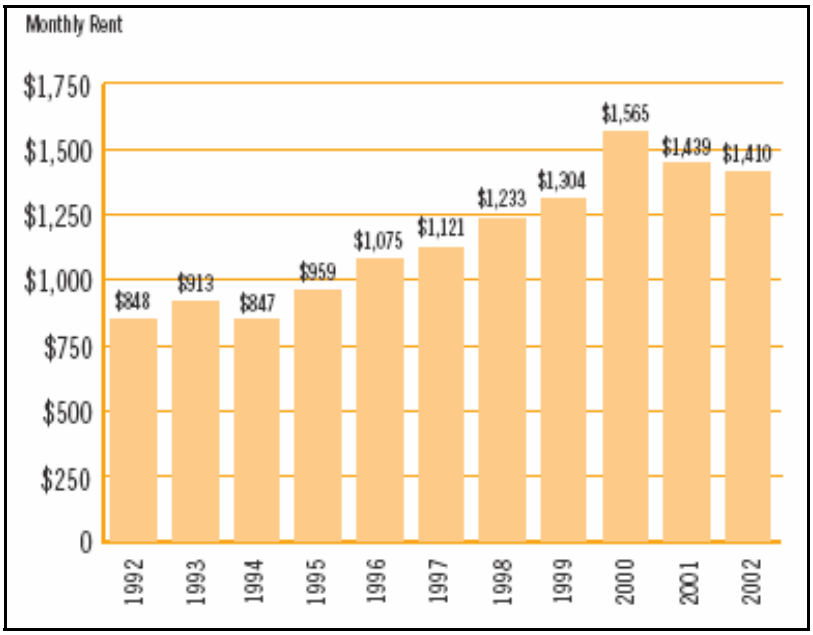
Source: *The State of American Dream in Massachusetts, 2002,* 117.

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.

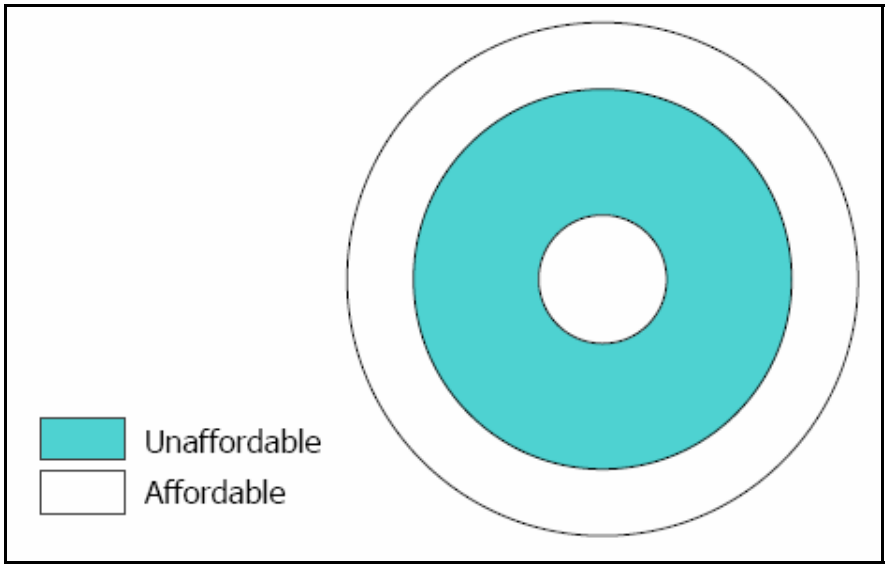
Figure 7: Housing Opportunity Index for Census Tracts in the Top 25 Metro Areas

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.

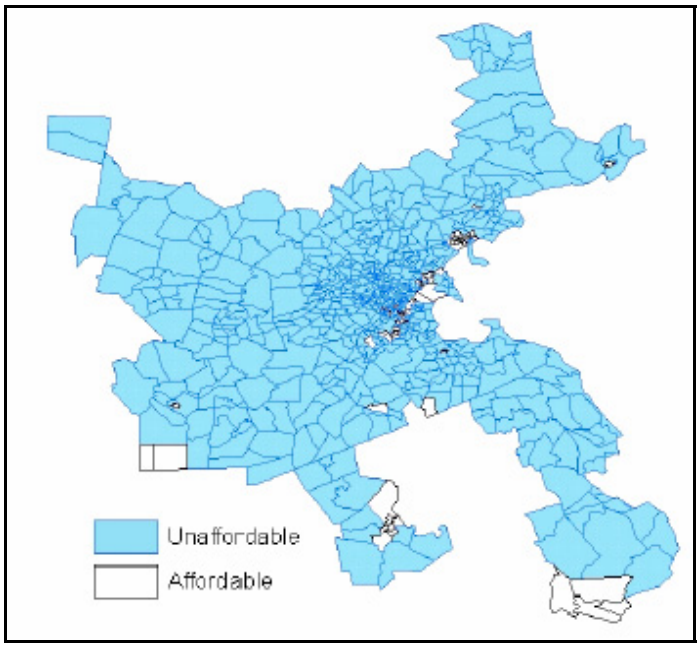
Figure 9: Share of Tracts Affordable to Workers in Various Occupations

	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.

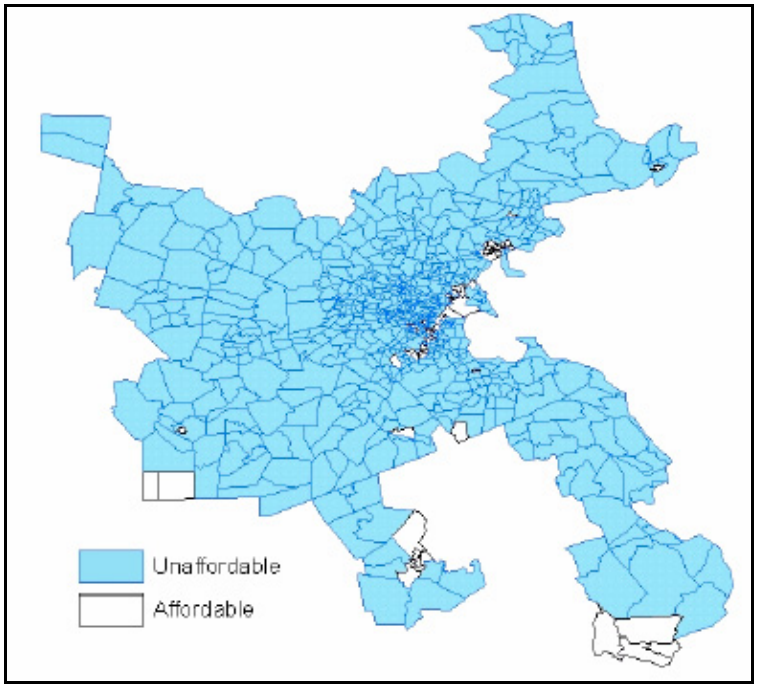
Below are the maps depicting affordability for the four occupations in the Boston metropolitan area:

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



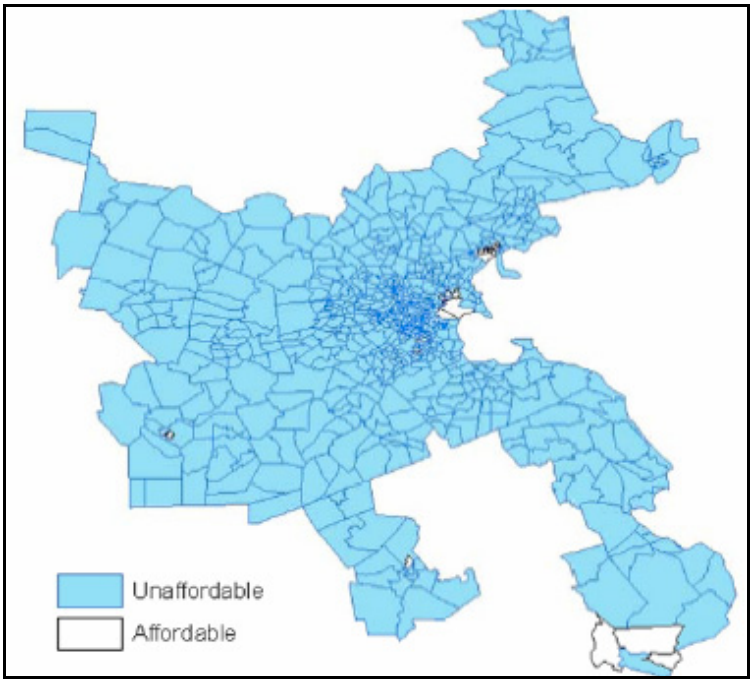
Source: *Where is Workforce Housing Located?*, 14

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



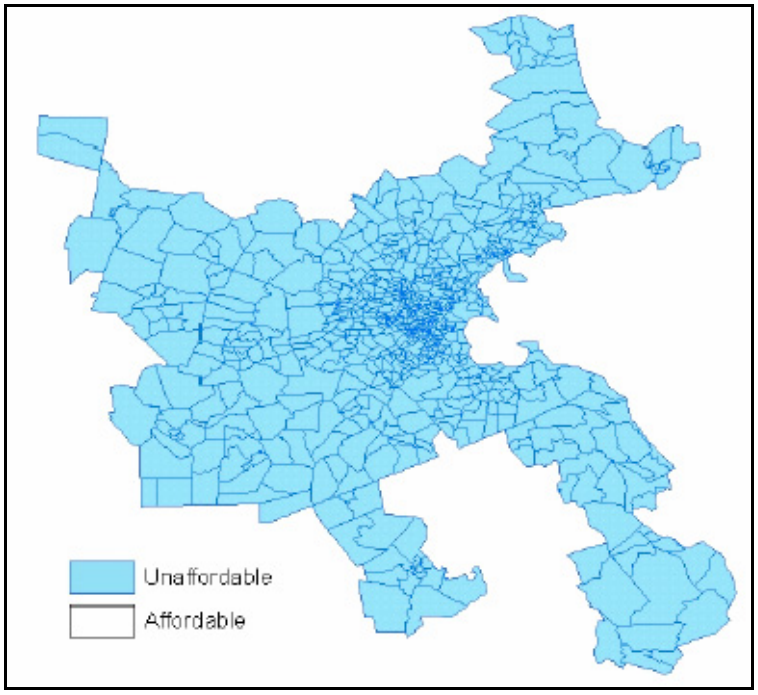
Source: *Where is Workforce Housing Located?*, 30.

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



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

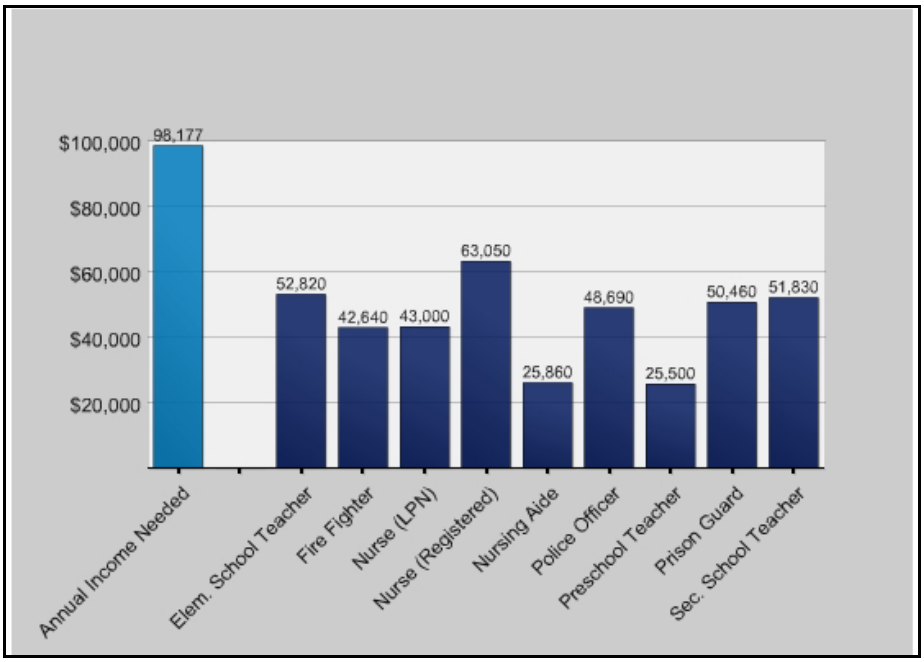
Figure 13: Tracts Affordable to Sales Persons in the Boston, MA



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

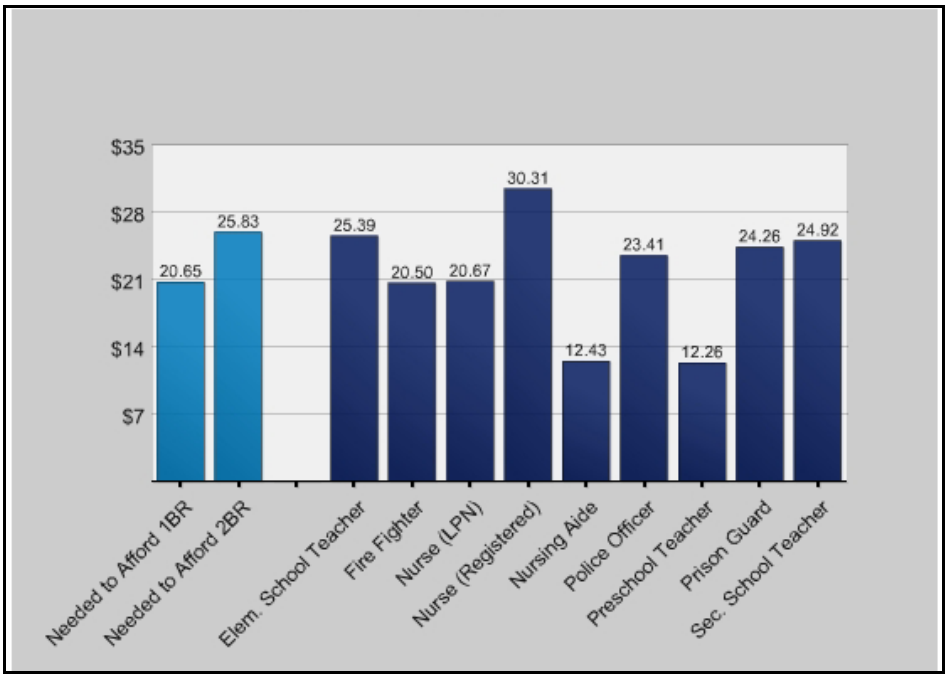
Similarly, The National Housing Conference website has an interactive database which graphs median individual incomes for various occupations as compared to the income needed to afford the median home price or rent in a specified geographic region. The following two figures depict the median salaries, 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, 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 financial 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. 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 targets 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

[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

- Whole-time junior fire officers and retained fire fighters (all grades) in some fire and rescue services (currently only in Hertfordshire).

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" [22] of up to £50,000 (US $91,429) [23] to help key workers buy a home on the open market or a new property built by a registered social landlord.
- 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

[22] 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.
[23] 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.
[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.

ownership schemes and properties for rent at affordable prices for those who require more flexibility or do not wish to rush into home ownership.

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 retention 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 once the program has additional time to be in existence.

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

[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.

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% 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 required 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, county, or municipal law." Your employer must certify that you 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 single family homes located only in HUD designated Revitalization Areas.[29] Bids are awarded once each week and the bid must equal the value 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 location 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 the 165 cities and towns that we have classified as Eastern Massachusetts. Within Brockton itself, the Revitalization Area is only a about a 4 block area abutting state highway 24. It is questionable if this would be the first choice location for a young teacher or police married household.[30] Although the Teacher Next Door and Officer Next Door programs are noble in

[27] Please visit http://www.hud.gov/offices/hsg/sfh/reo/tnd/tnd.cfm for program specifics.
[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 July 28, 2005, no properties were even available for purchase in the Brockton Revitalization Area.

their goals of wanting to make American communities stronger and safer, the programs are unlikely to have much impact in Massachusetts without a broader geographic scope outside of the designated Revitalization Areas.

Chapter 5: Key Worker Definition

We have chosen to focus on full-time teachers, nurses, police officers and firefighters, or "key workers" who work in 165 Eastern Massachusetts communities. We 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 for we believe that the depth of the housing problem in the State of Massachusetts is great if full-time working families are facing housing affordability issues. Therefore, the worker households that we analyzed had at least one full-time key worker.

Although many cities in the United States are developing workforce housing programs, the target group generally is identified by the local area median income not by occupation. However, we focus 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 analysis of Census microdata. 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 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

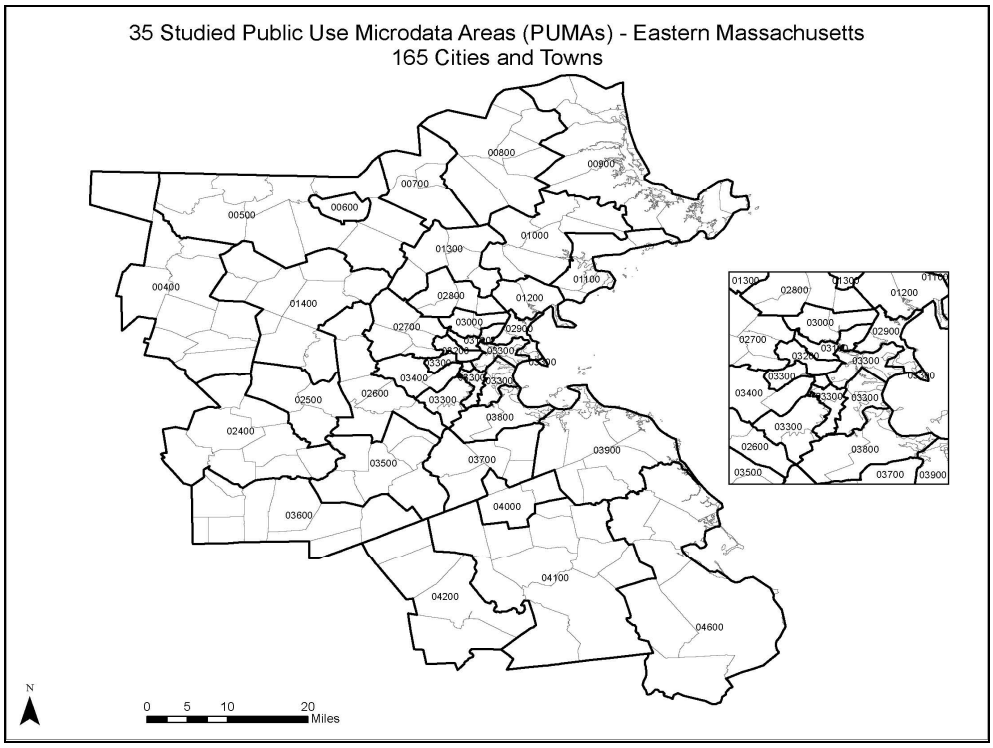
In order to assess the household and personal characteristics of key workers, we analyzed the Public Use Microdata Sample (PUMS) from the 2000 Census of Population and Housing for the States of Massachusetts, Rhode Island and New Hampshire. The stats of Rhode Island and New Hampshire were included in order to capture those key workers who work in the 165 Eastern Massachusetts communities but live outside the State. 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 unweighted 5% sample size for population is 318,565, whereas the Census' total population is 6,353,449. In the case of Massachusetts households, the unweighted 5% sample size for households is 142,183, whereas the Census' total households are 2,623,069. Please see the section entitles "Sample Counts and Estimates" in Chapter 7 for more detail.

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

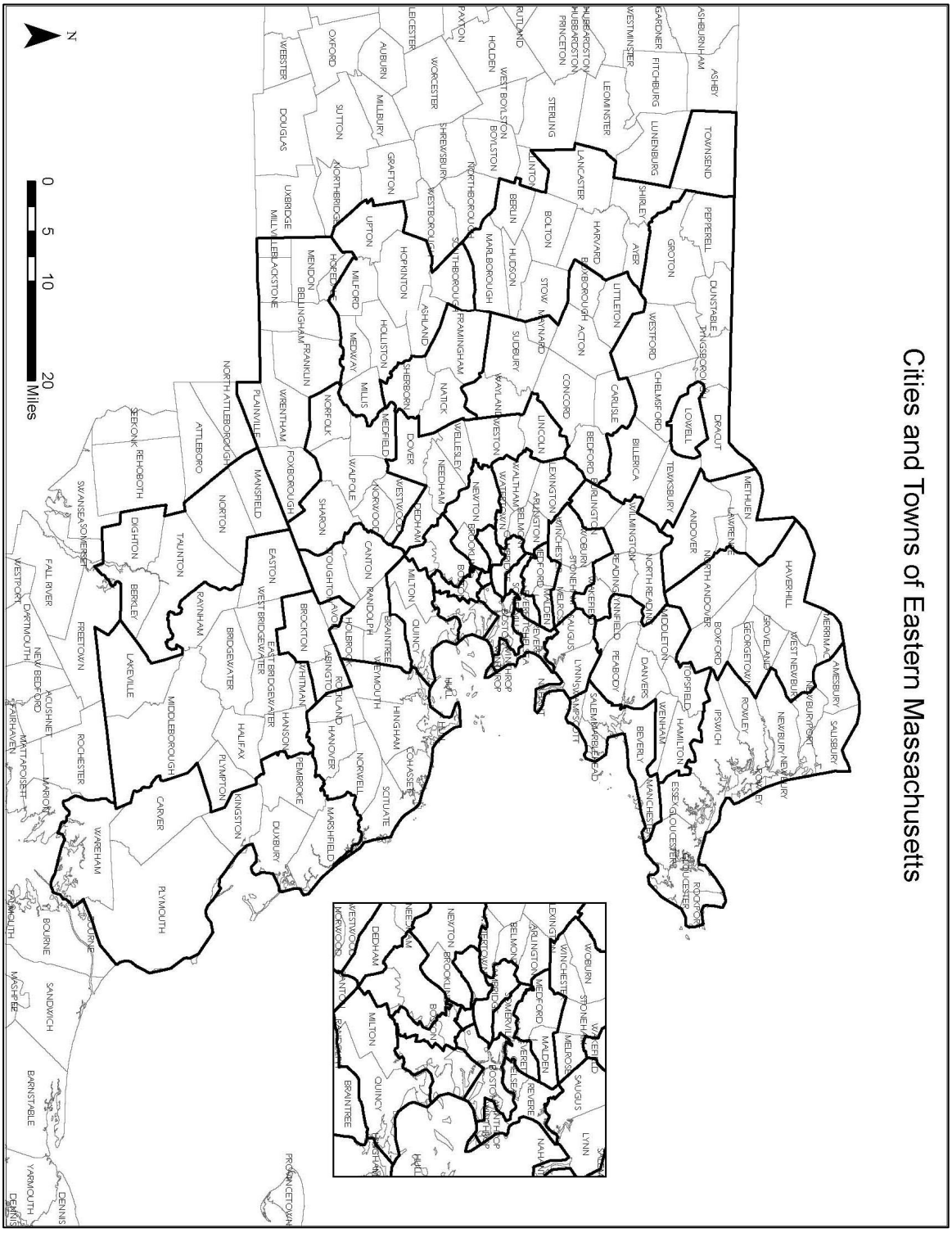
grouped by unique geographic units Public Use Microdata Areas (PUMAs), which contain a minimum population of 100,000.[32] PUMAs are based generally on city boundaries or census tracts, allowing for whole places to be included in a PUMA in most cases. Therefore, the PUMA level is the smallest geographic 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 the figures below for a map of the 165 towns included in our analysis as well as a map of the corresponding PUMAs. Please see Appendices U and V for two detailed lists, one sorted by town alphabetically with the corresponding PUMAs and one sorted by PUMA numerically with the corresponding towns.

Figure 16: Map of 35 Studied Public Use Microdata Areas (PUMAs) in Eastern Massachusetts



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

Figure 17: Map of 165 Studied Cities and Towns in Eastern Massachusetts



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% confidence intervals and low standard errors based up on the guidelines set forth in the U. S. Census Bureau's *Public Use Microdata Sample Technical Documentation*. Please refer to the technical documentation for more information regarding the calculation of confidence intervals and standard errors.[33]

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

[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

[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 http://www.census.gov/prdo/cen2000/doc/pums.pdf

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

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 variable
- 12 key worker occupation codes discussed above
- Age less than 65 years of age
- No group housing persons due to incomplete records
- Income from wages greater than $1
- Weeks worked per year greater than or equal to 50
- Hours worked per week greater or equal to 35[35]

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.

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

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

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.

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. It is also 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.

We present our research findings in the chapter that follows. Appendices A through T contain the supporting data analysis for the charts and findings that are discussed in the body of this thesis. Throughout this thesis, 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).
- Key Worker Household: Any household in which a key worker is residing.
- All Worker Household: Any household in which an all worker is residing.
- Eastern Massachusetts: This term includes the following 165 cities and towns (a list of the towns with the corresponding PUMA can be found Appendices U and V):

- 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

Chapter 7: Key Findings and Analysis

Our rigorous demographic analysis shows that despite previous studies, key workers employed in Eastern Massachusetts have similar characteristics to all workers employed in Eastern Massachusetts. More specifically, on the one hand, it appears that key workers actually are better off than all workers for the key worker average commute time is less, and the individual income from wages and household incomes[36] are more than the averages for all workers. However, on the other hand, more key worker households with married couples working full-time than all worker households. Our key findings are:

- On average, key workers and key worker households look like and behave almost identically to all workers and all worker households in terms of the following: number of rooms, number of bedrooms, number of workers in family, people in household, number of hours worked, number of weeks worked, place of residence and monthly housing costs as a percentage of household income.
- There are slight variations in individual wages, household income, age, marital status, age of children, place of birth, tenure and building size between the two groups. On average, key workers have higher individual incomes from wages, higher household incomes, are more like to be older, to be married, to be homeowners, to live in single-family homes, to have older children and to be born in Massachusetts than all workers.
    - Many of these slight discrepancies can be attributed to the age difference between all workers and key workers.
    - The majority of key workers earn more than 50% of their household's incomes.

[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."

    - Firefighters are most likely to be owners and live in single-family homes than other key workers, which can be explained in part by the difference in household incomes between the occupation groups.
- Average commute times for key workers is less than for all workers.
    - Average commute time for firefighters is the shortest among all key workers. Firefighters do not sacrifice tenure or building amenities for this shorter commute time, which is due to the location of firefighter jobs and the level of the average firefighter salary.
- Key workers are more likely to be female than all workers. This is due to the number of female jobs like teachers and nurses as opposed to the predominantly male jobs like police officers and firefighters in Eastern Massachusetts.
- Although it appears on the surface that there is a large discrepancy between the percentage of key workers who are married to another full-time worker than the percentage of all workers, we believe that this is exaggerated in part by the "teacher and nurse effect."
- Most importantly, the majority of key worker households earn more than 120% of the area median income. Per the 2000 Census data, there are more key worker households earning greater than 120% of the area median income than all working families in Eastern Massachusetts.

In the sections that follow, we present specific analysis to support the major key findings outlined above. We explore in greater depth the four categories in which all workers and key workers vary the most – travel time, gender, married full-time workers and income bracket.

Sample Counts and Estimates

Figure 18: Sample Counts and Estimates

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

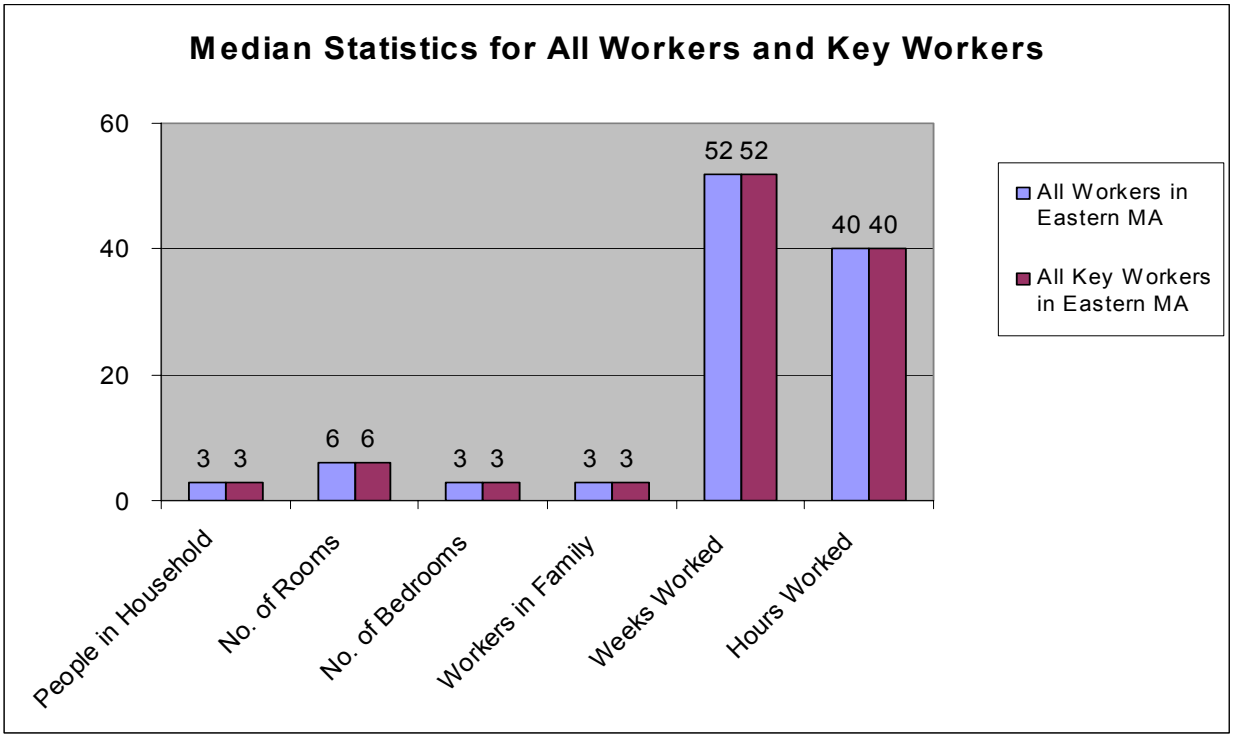
It is important to reiterate again before presenting our findings that our analysis is based upon 5 percent sample data and should not be used as true counts of key worker individuals or key worker households. Our findings are estimates only and should be utilized accordingly.

Similarities

Median Statistics

As previously mentioned, a surprising key finding is that both on an individual level and on a household level, key workers act similarly to all workers employed in Eastern Massachusetts. As can be seen from the chart below, key worker households consume the same average number of rooms and bedrooms as all workers. Both types of households have the same average number of people and number of workers[37]. Most importantly, full-time key workers and all workers report working the same average number of hours per week and weeks per year.

Figure 19: Median Statistics for All Workers and Key Workers

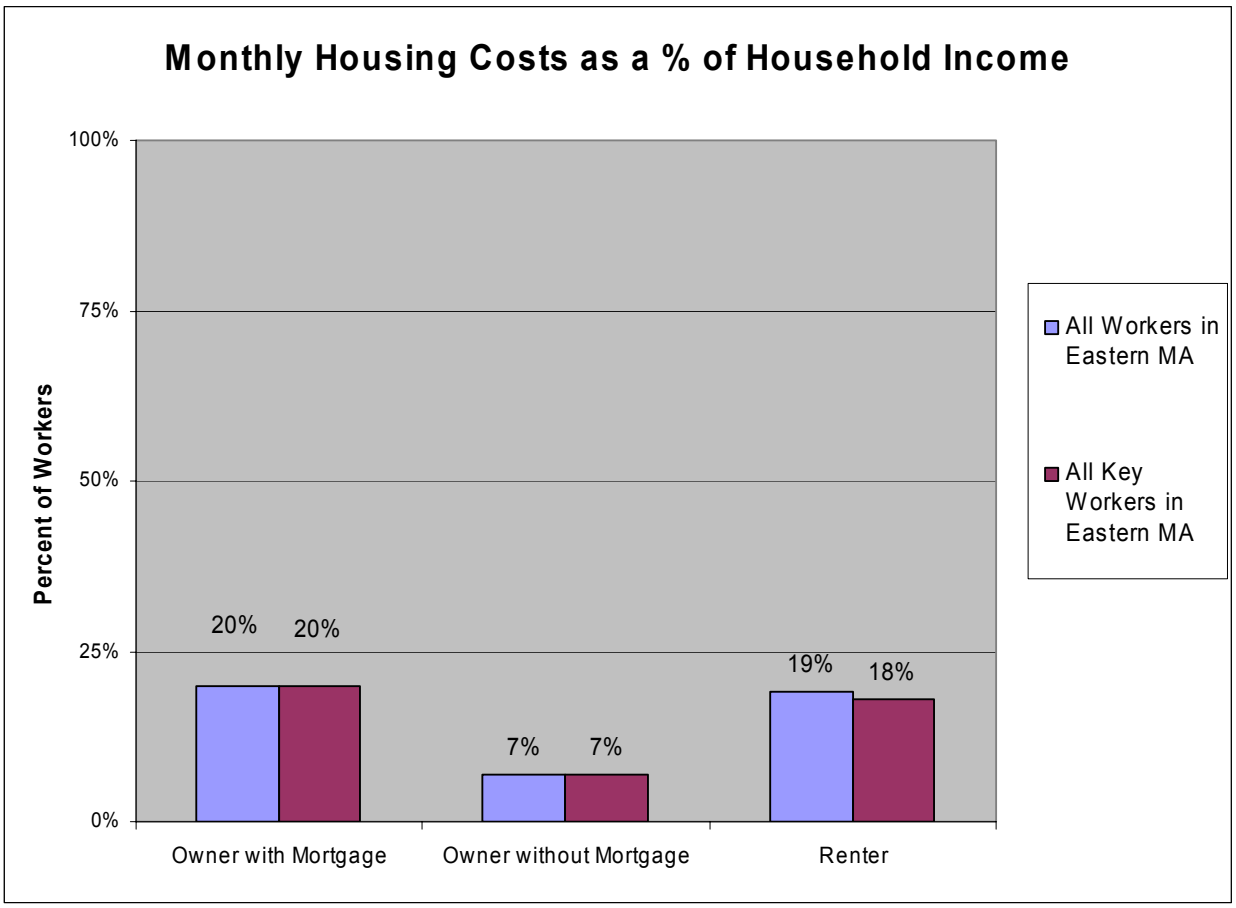


[37] Per the U.S. Census Bureau, a worker is defined as "People 16 years old and over who did any work for pay or profit (including paid vacation, paid sick leave, and military service) or worked without pay on a family farm or in a family business at any time from January to December…"

Monthly Housing Costs

Key worker and all worker households on average pay the same percent of their household incomes towards housing expenses.[38] All renters and owners with a mortgage pay approximately 20% of their incomes toward housing costs, and owners without a mortgage pay about 7% based on Census 2000 data for both worker groups, as is illustrated in the chart below.

Figure 20: Monthly Housing Costs as a Percent (%) of Household Income

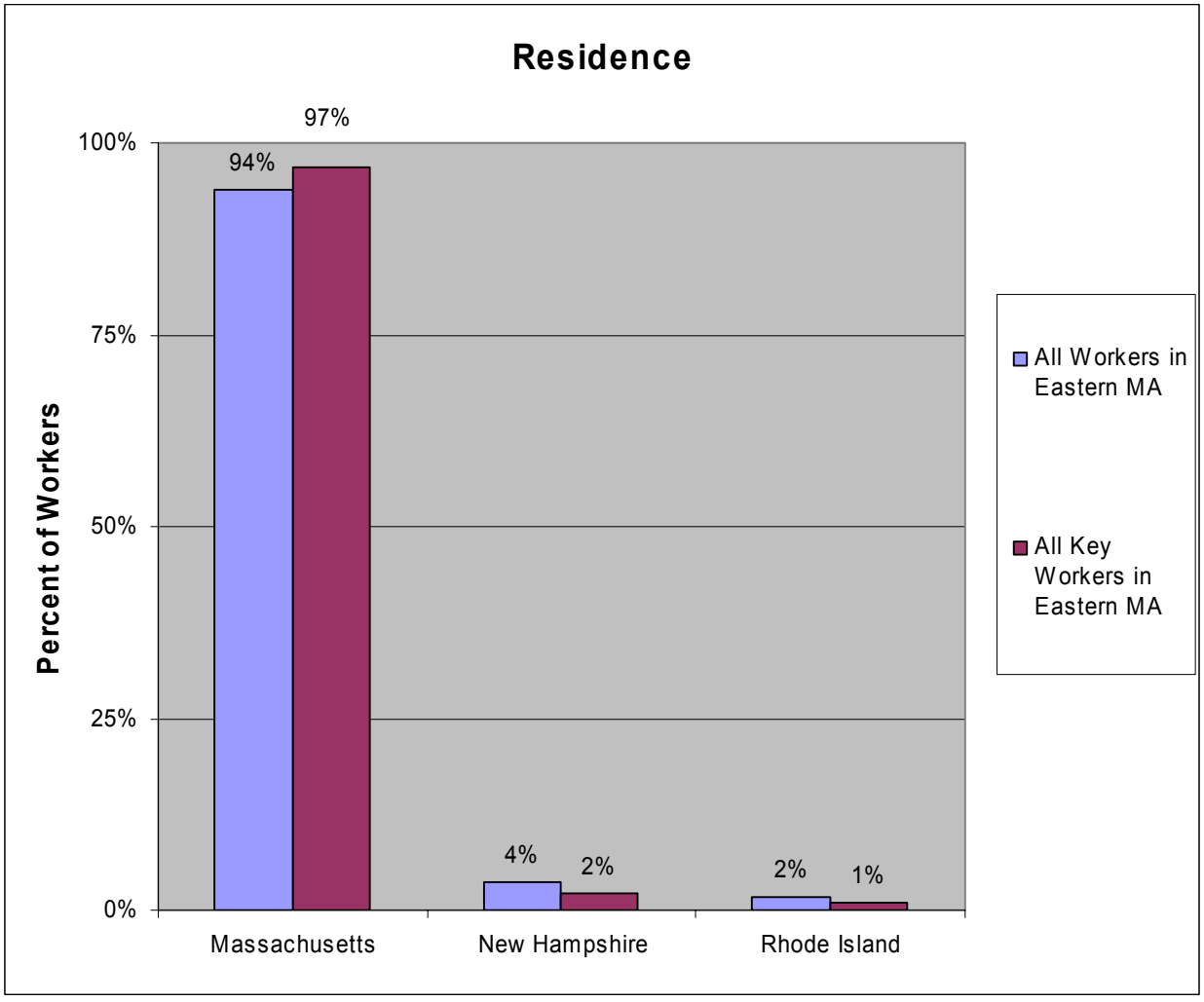


[38] Per the U. S. Census Bureau, owners' monthly housing costs include all payments toward debt on the property, taxes, insurance, utilities and condominium fees where applicable. Similarly, renters' housing costs include rental payments as well as utilities.

Residence

On average, the overwhelming majority of all workers and key workers that work in Eastern Massachusetts live in the State of Massachusetts. The percentage of key workers living in Massachusetts is greater than all workers. This figure may be skewed due to residency requirements that some key workers face that do not apply to all workers. However, in general the place of residence for key workers is similar to that of all workers as can be seen in the chart below.

Figure 21: Place of Residence



Slight Differences

Although key workers and all workers behave similarly in many ways, there are some categories in which they vary slightly. On average, key workers earn more money individually and as a household than all workers. Also, key workers are older than all workers. The age difference explains other variations between the two worker classes like marital status, age of children, tenure and type of house.

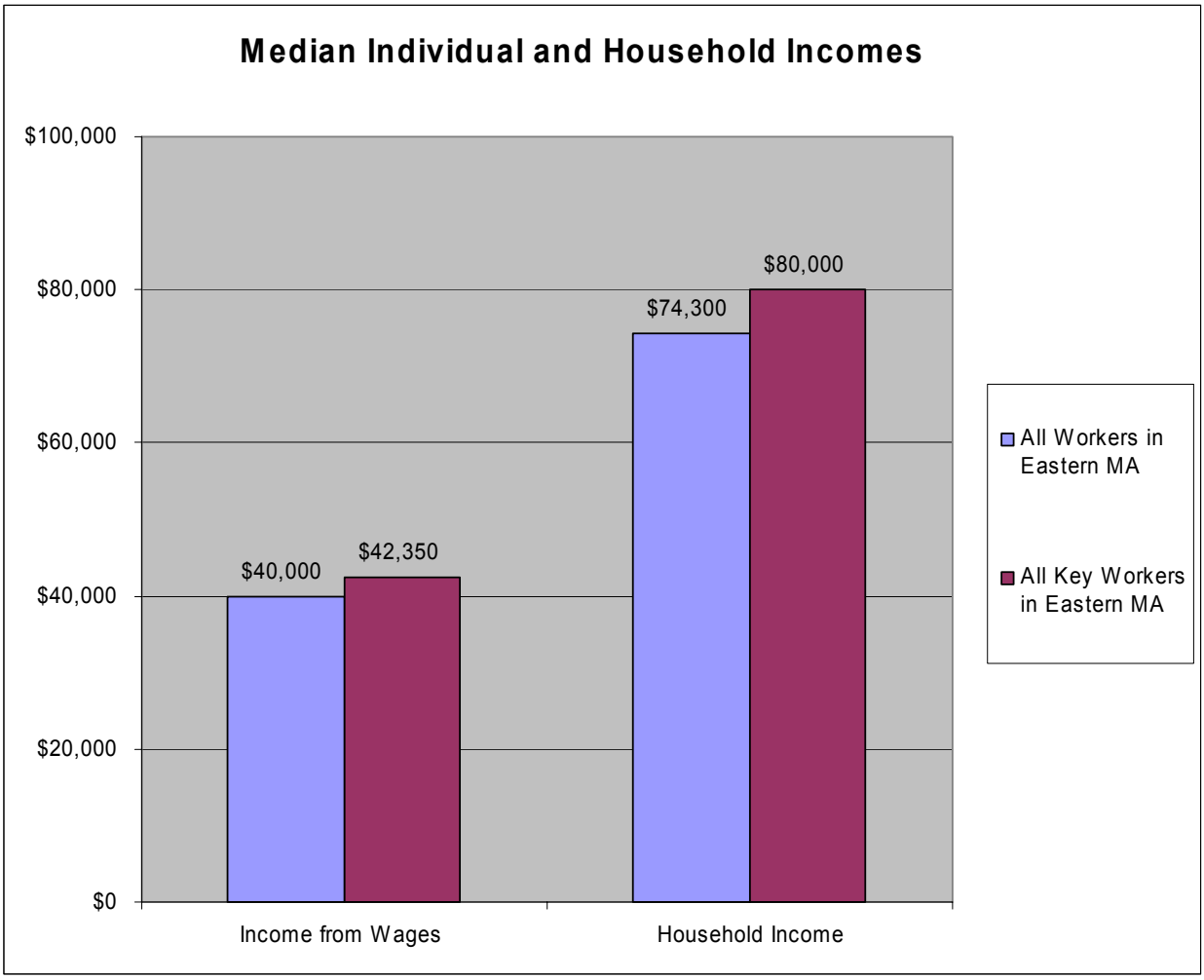
Income from Wages and Household Income

Per the 2000 Census data[39], on average key workers earn more money individually and as a household than all workers in Eastern Massachusetts. 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." Therefore, income from wages and household income should include any overtime pay that workers receive throughout the year.

As can be seen from the following chart, individually key workers earn about $42,350 while all workers earn a bit less at $40,000. Key worker households earn about $80,000 while all worker households earn less at $74,300.

[39] Census 2000 information reflects 1999 information. Therefore, income and wage information included in this thesis is actually 1999 dollars, not 2000 dollars.

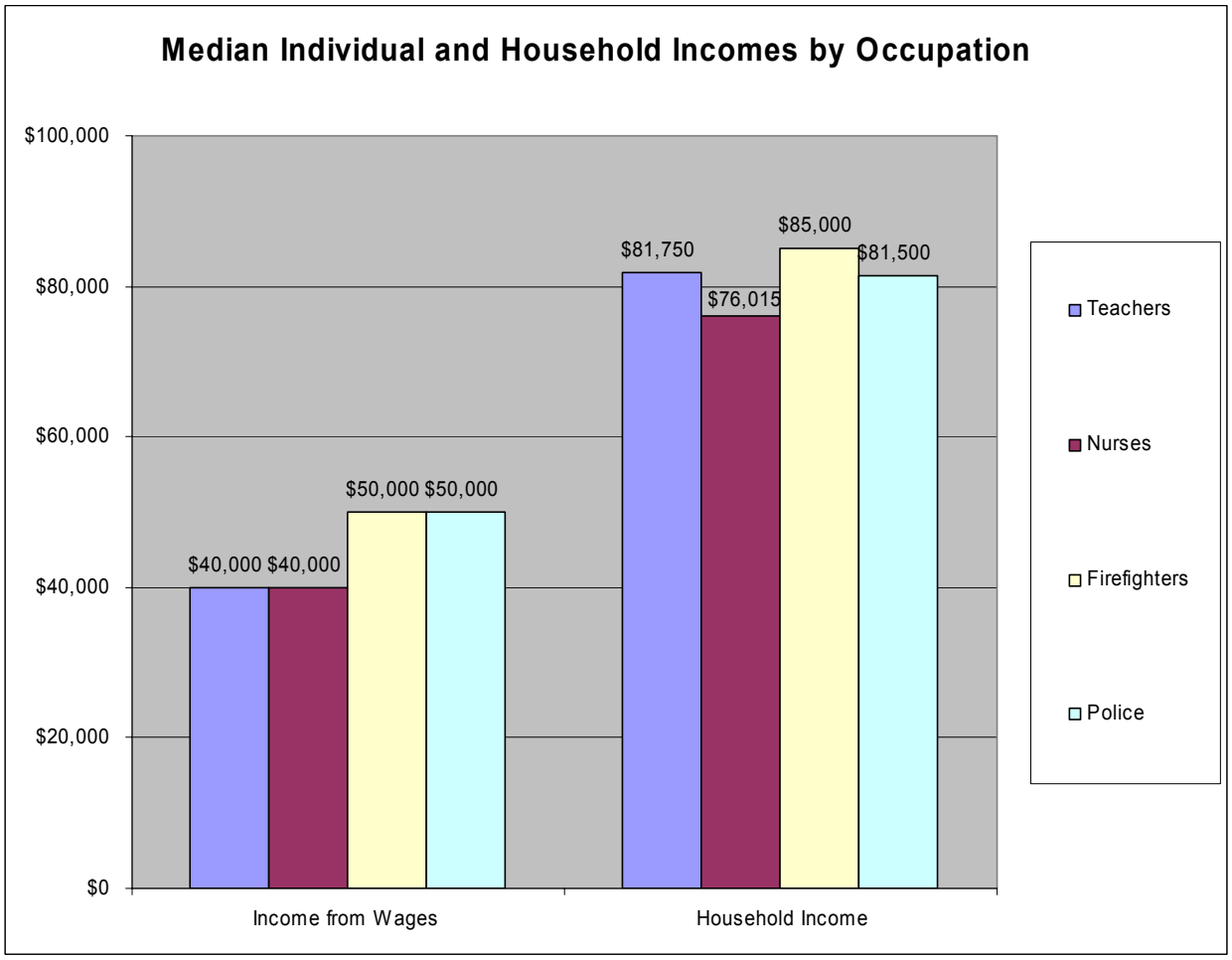
Figure 22: Median Individual and Household Incomes



Income from Wages and Household Income by Occupation

By occupation, individually nurses and teachers earn $40,000 while firefighters and police earn $50,000. On the household level, firefighter households earn the most at $85,000, while nurse households earn the least at $76,015.

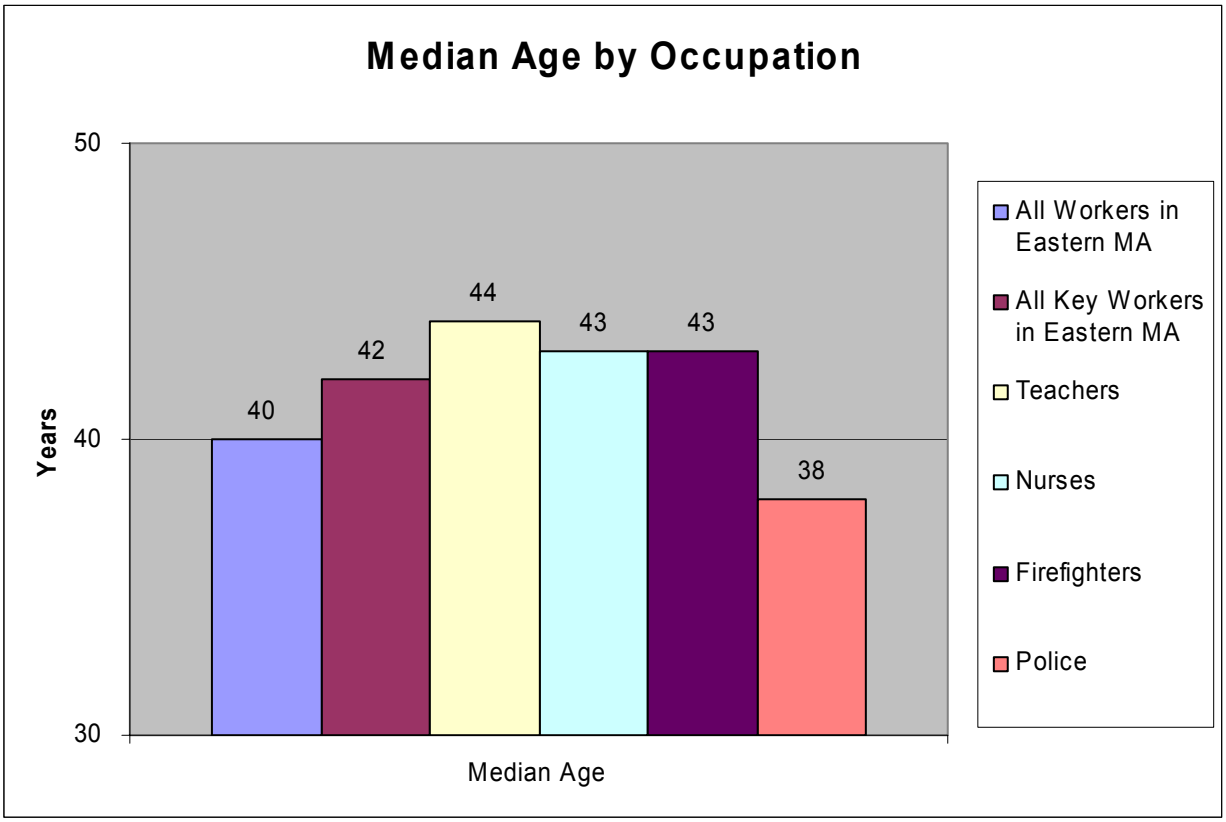
Figure 23: Median Individual and Household Incomes by Occupation



Age

As can be seen from the chart below, the median age for key workers is 42, two years greater than the median age for all workers in Eastern Massachusetts. On average, teachers are the oldest with a median age of 44, followed by nurses and firefighters at 43. Police are the youngest key workers, with a median age of 38 which is less than the median age of 40 for all workers.

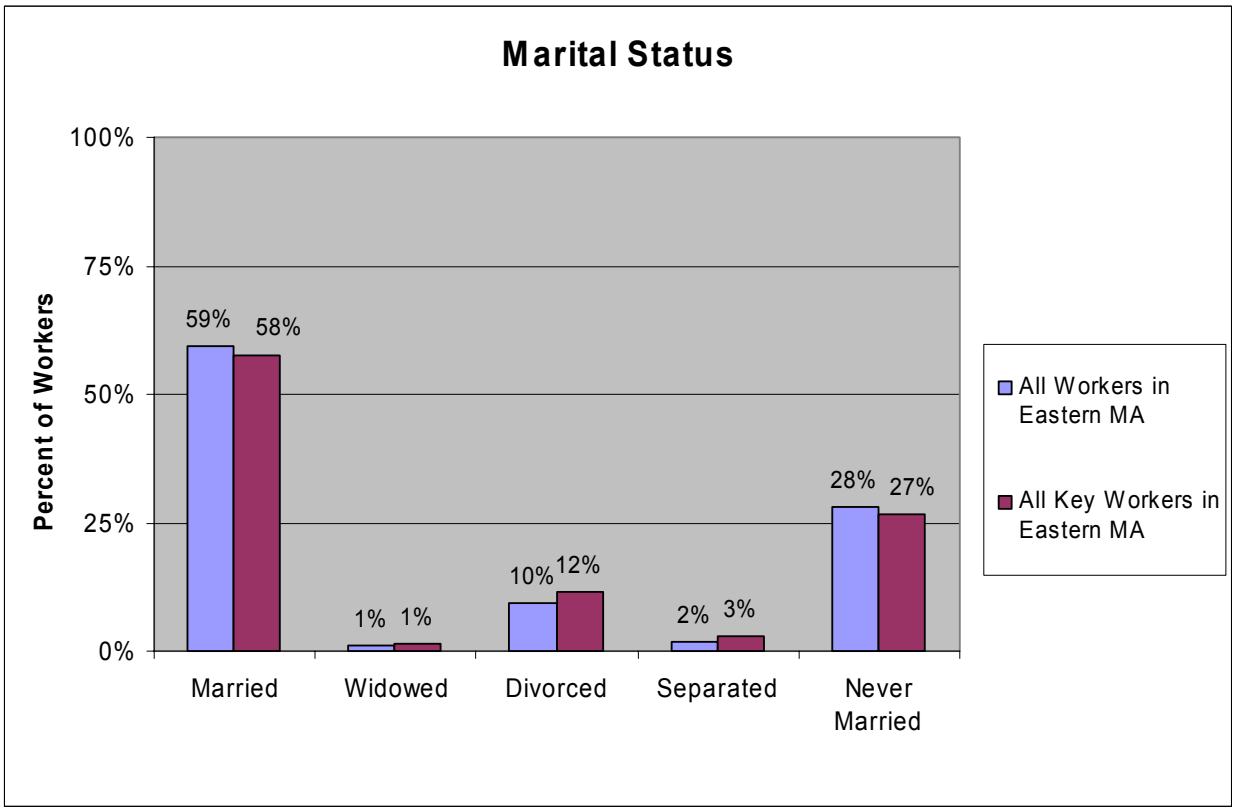
Figure 24: Median Age by Occupation



Marital Status

The older median age for key workers may explain the other slight variations between key workers and all workers. Approximately 12% of all key workers are divorced or separated, which is slightly more than the 10% of all workers. Similarly, about 27% of key workers have never been married versus 28% of all workers, which can be attributed to the age difference between the two worker groups. It is logical that the divorce rate increases with age. Similarly, the younger one is the more likely they are to not have been married.

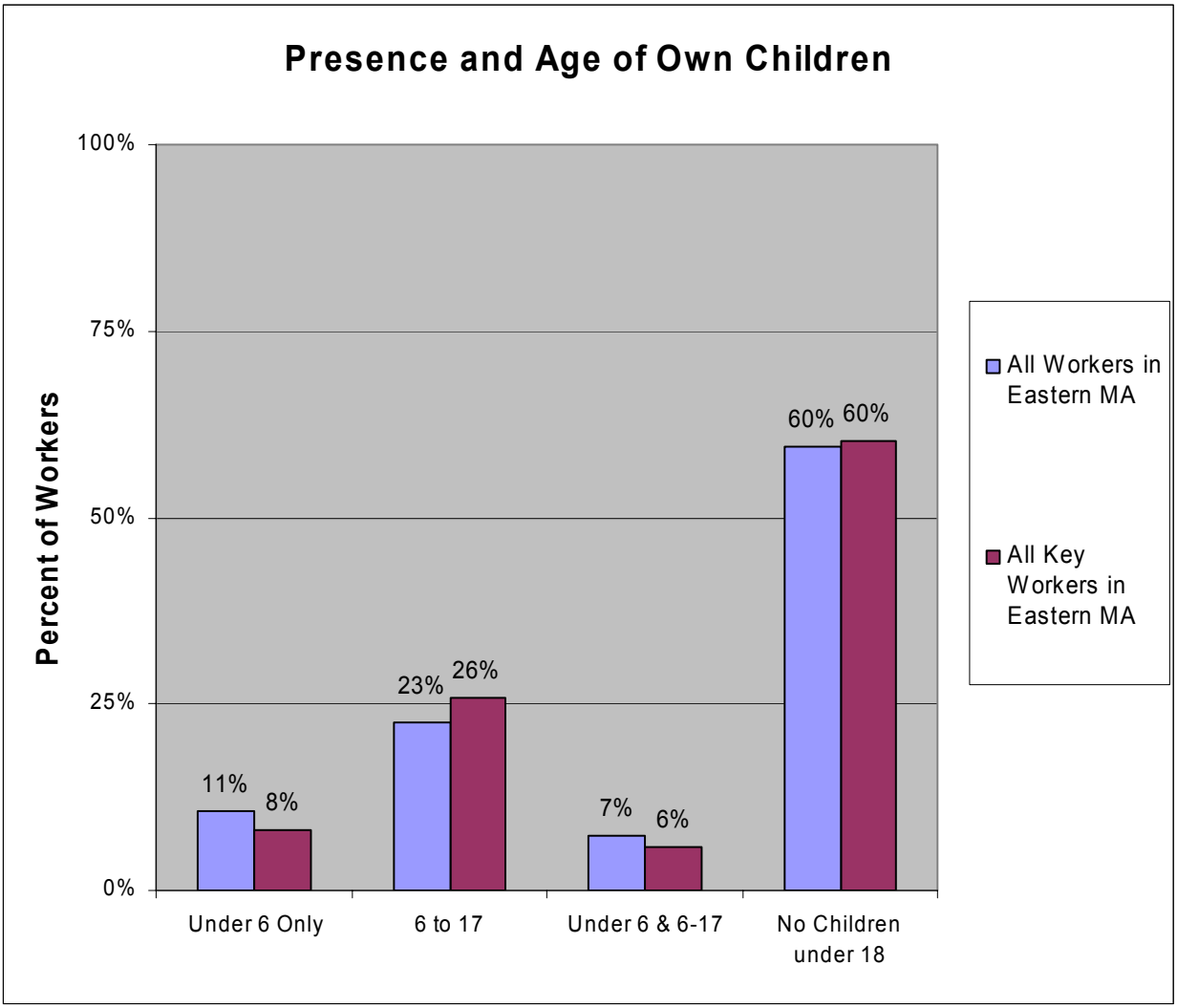
Figure 25: Marital Status



Age of Children

The age difference between key workers and all workers may contribute to the variation in the age of children in the households. On average key workers have fewer children under the age of six and more children between the ages of 6 and 17. Again, it follows that key workers would have older aged children than all workers because key workers are older on average. The chart below presents in more detail the age groups the children of key workers and all workers.

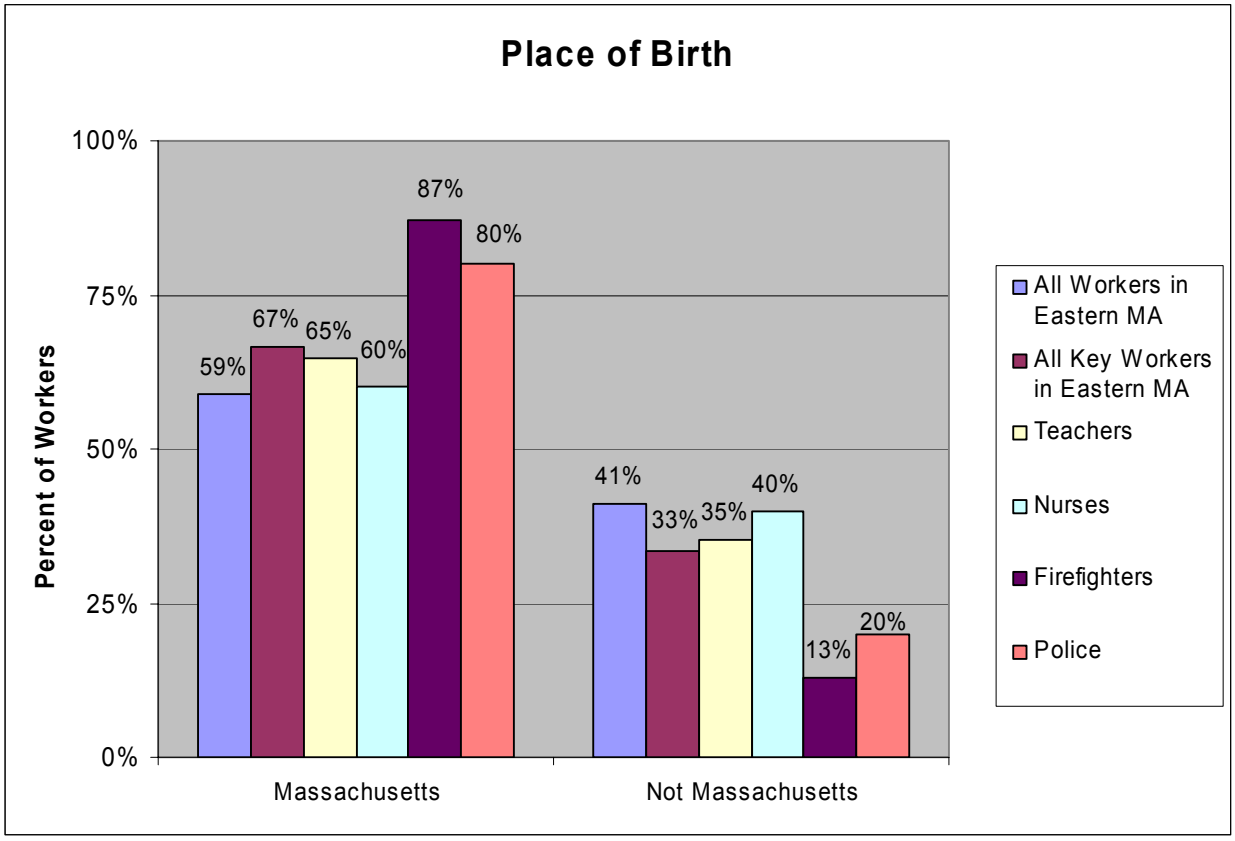
Figure 26: Age of Own Children



Place of Birth

Another difference between all workers and key workers is place of birth. On average, key workers working in Eastern Massachusetts are more likely to have been born in Massachusetts. Approximately 67% of key workers in Eastern Massachusetts were born in Massachusetts as compared to 59% of all workers. Upon further analysis, it appears that this percentage for key workers is high due to the firefighters and police officers in the sample. Approximately 65% of teachers and 60% of nurses in the sample were born in Massachusetts, which is comparable to all workers. The percents of firefighters and police born in Massachusetts, however, far exceed the percents for all workers, teachers and nurses, as is depicted in the following chart.

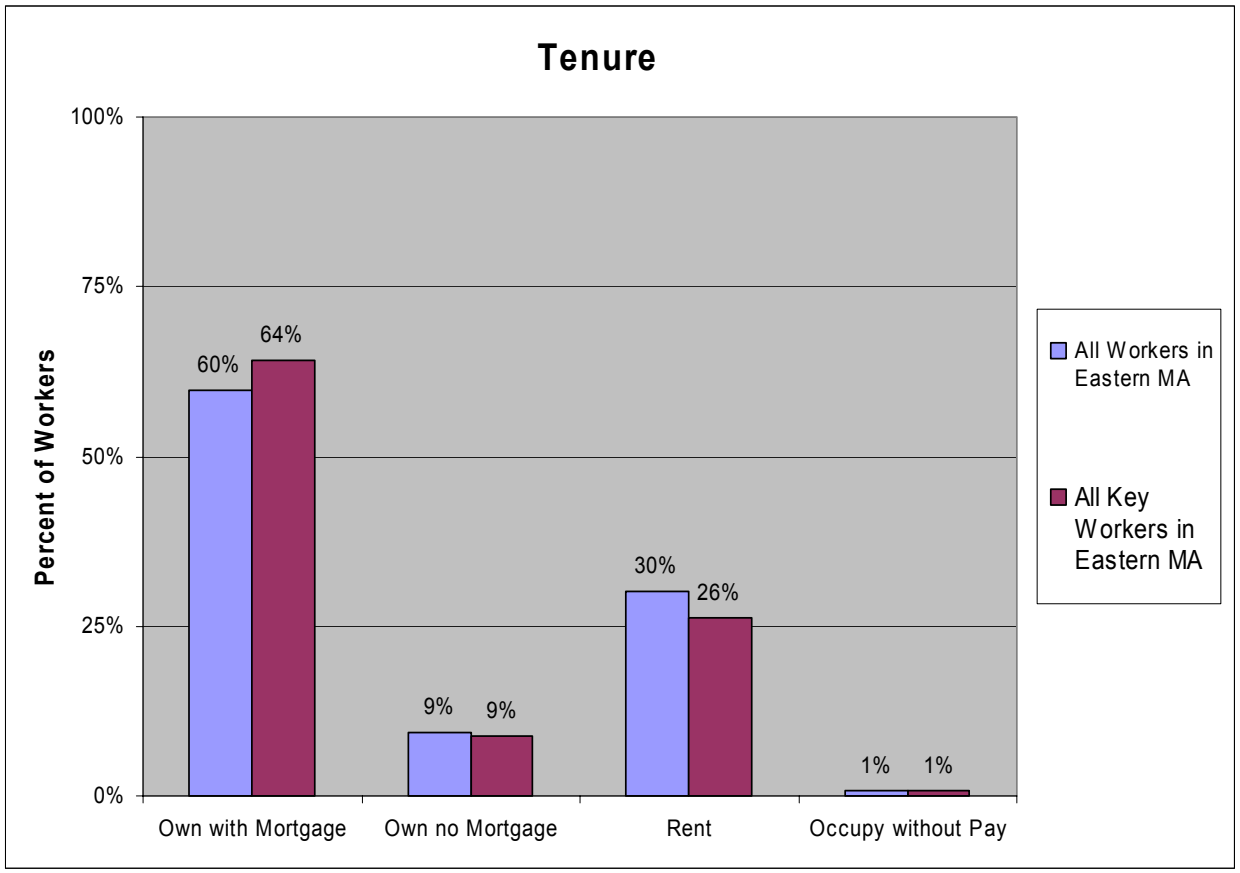
Figure 27: Place of Birth



Tenure

The age difference between key workers and all workers may also play a part in the variation in tenure and building size between the two worker groups. Approximately 73% of key workers are homeowners versus only 69% of all workers. Generally, renters tend to be younger than homeowners. Therefore, because the median age for key workers is greater than the median age for all workers, it follows that more key workers tend to be homeowners than all workers. The difference in tenure between key workers and all workers is illustrated in the chart below.

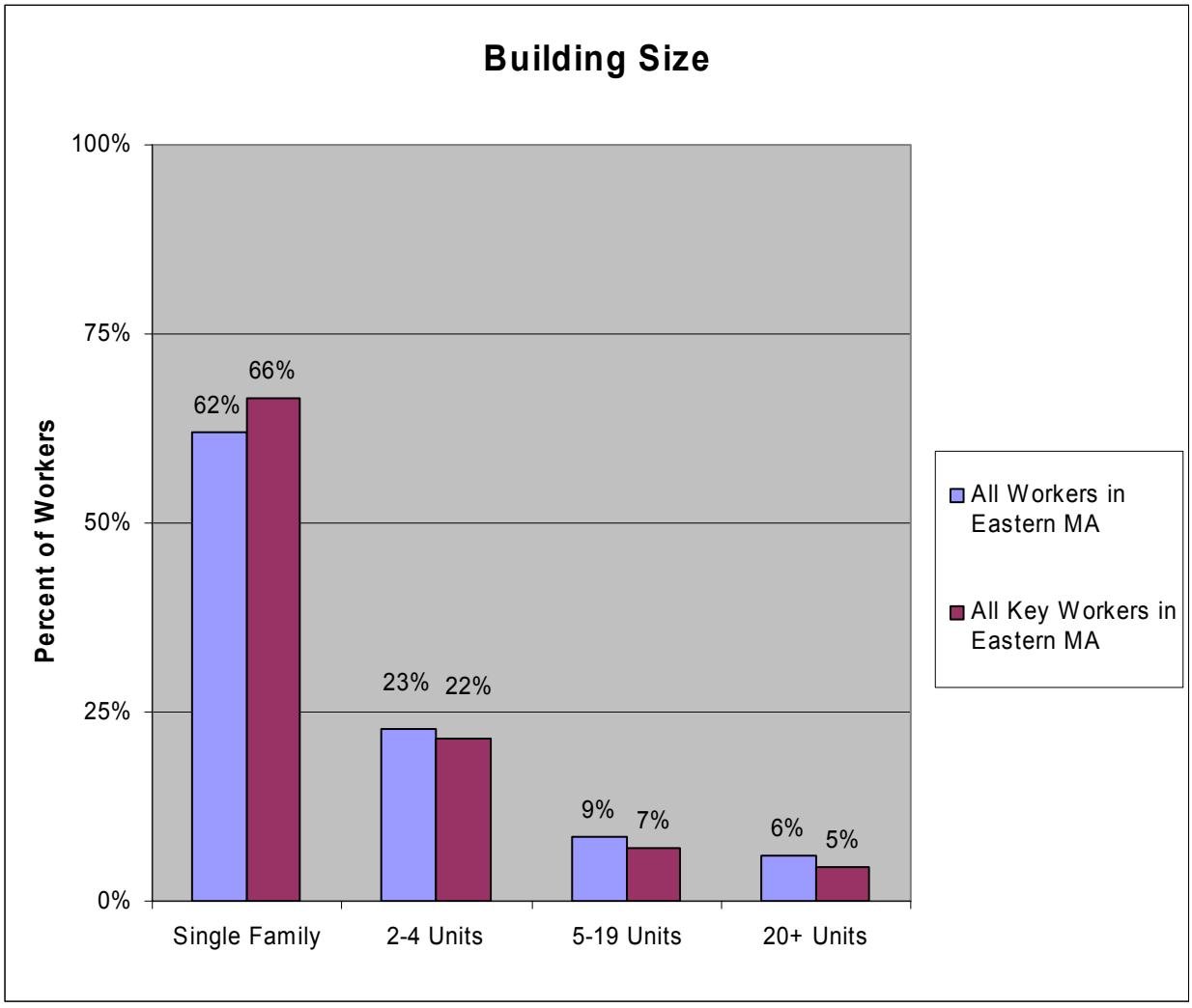
Figure 28: Tenure



Building Size

Similarly, older families require more space due to children, and they have the ability to purchase more space due to increased wages. About 66% of key workers live in a single-family home versus only 62% of all workers, again which makes sense given the age difference between key workers and all workers. More detail regarding building size/type is depicted the chart below.

Figure 29: Building Size



Tenure and Building Size by Occupation

Building size and homeownership vary slightly across the four key worker occupations, with firefighters being most likely to be homeowners and most likely to live in single-family homes. The two charts below show tenure and building size across the four key worker occupation groups.

Figure 30: Tenure by Occupation

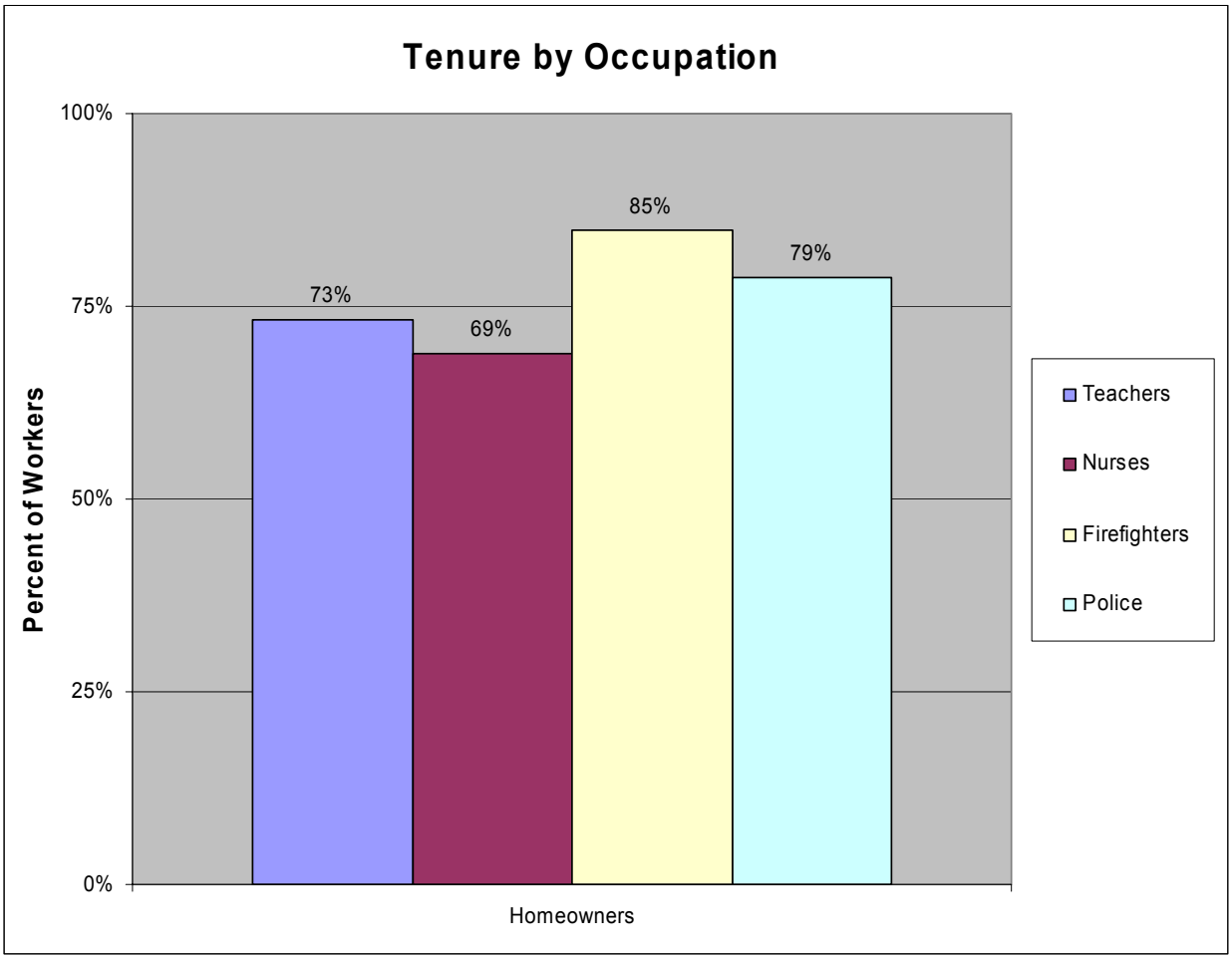
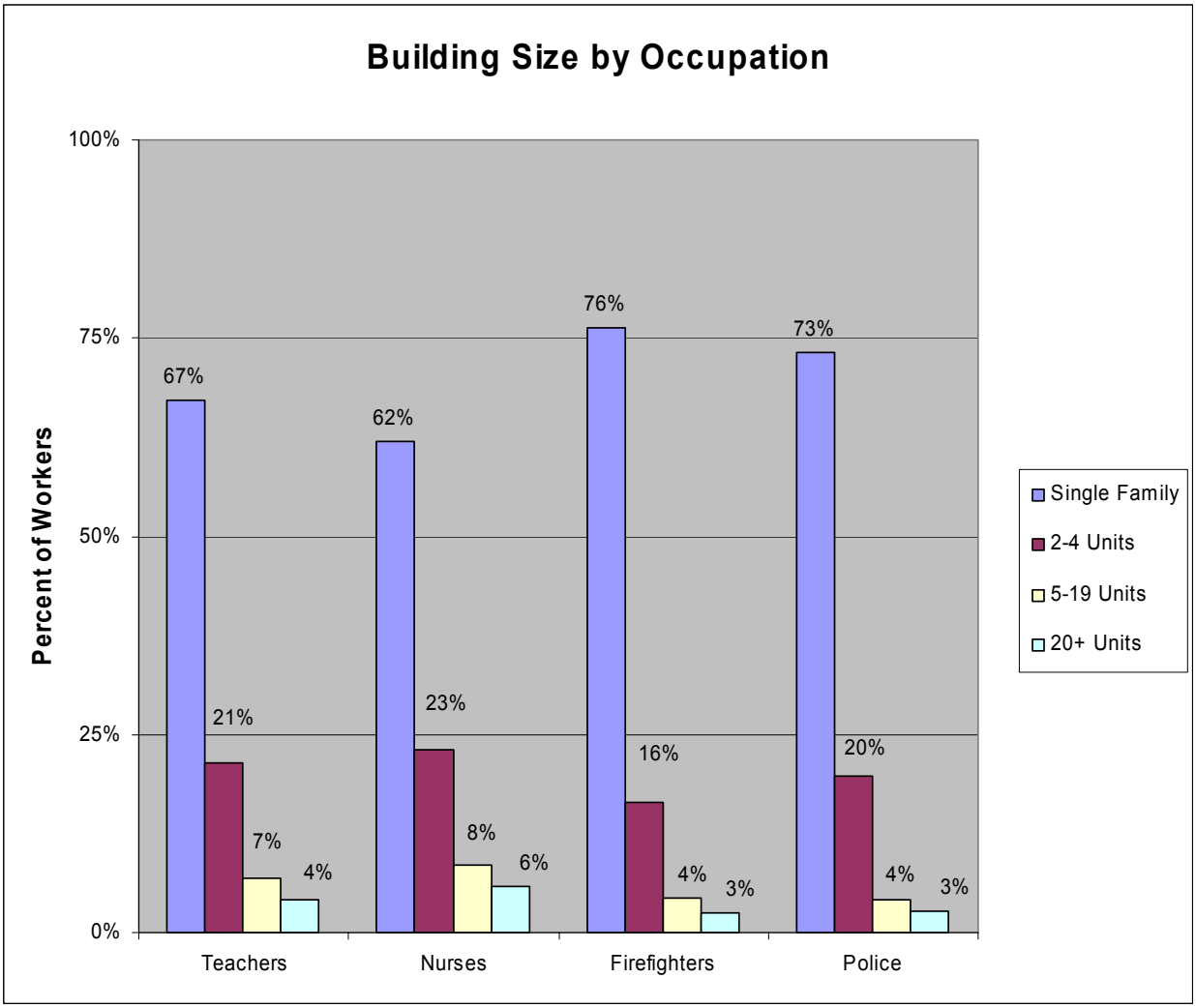


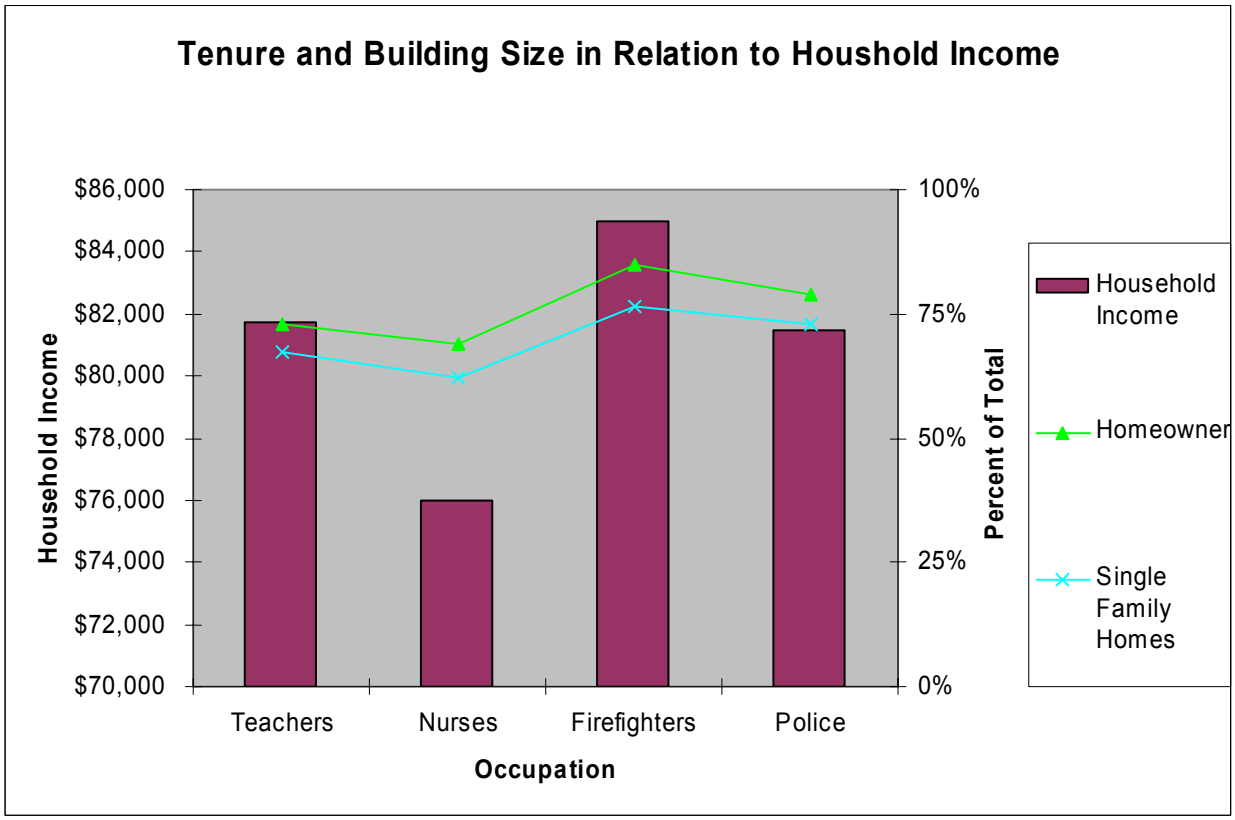
Figure 31: Building Size by Occupation



In order to understand this pattern of behavior in more detail, we examined the building size and homeownership across the occupations in comparison to household income. The trend between the four occupation groups for tenure and building size follow the same pattern as household incomes for the four occupations. Firefighter households earn the most money, followed by police, teachers and then nurses. The households with more money - the firefighters - may have more flexibility when making housing decisions. It is interesting to note that when we compared building size and tenure against the median ages for these occupations, it did not result in any significant pattern or finding. The chart below illustrates how

the patterns for building size, tenure and household income are the same across occupation groups.

Figure 32: Tenure and Building Size in Relation to Household Income

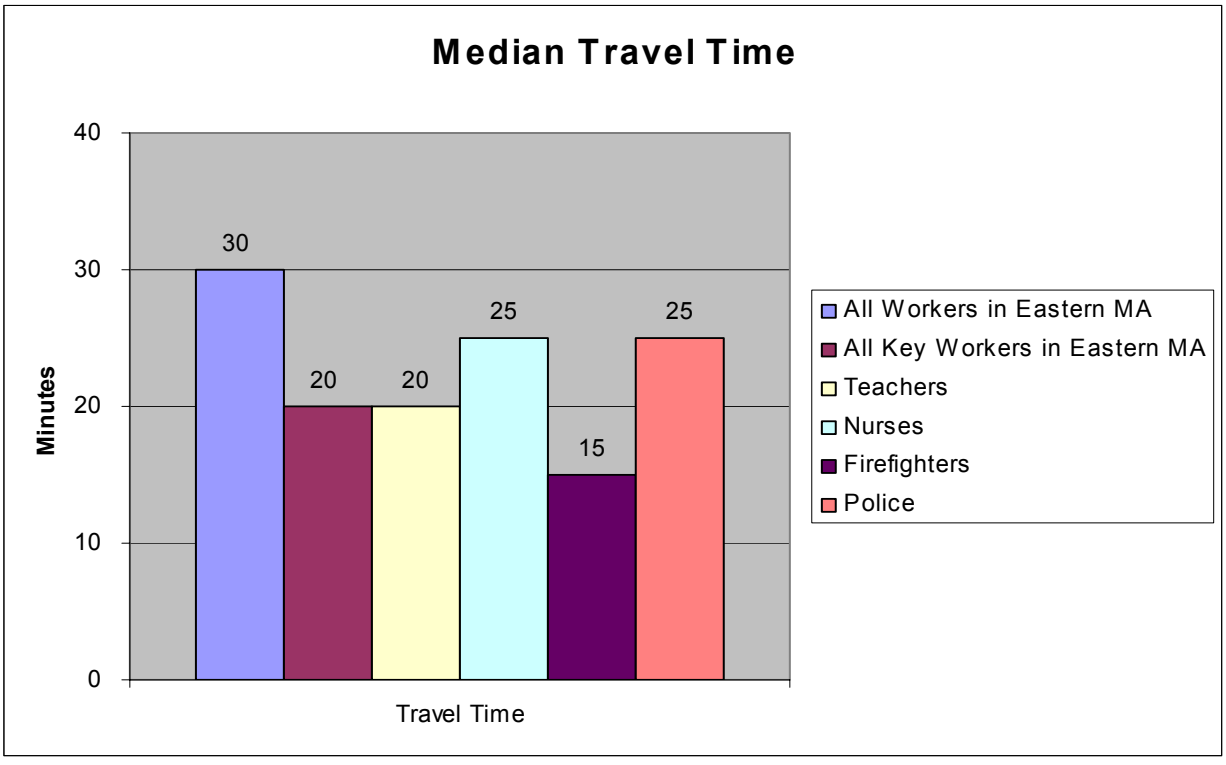


Firefighters' household income is greatest, which also may contribute to their commute time being the shortest. We discuss this topic in more detail in the section that follows.

Commuting Travel Time

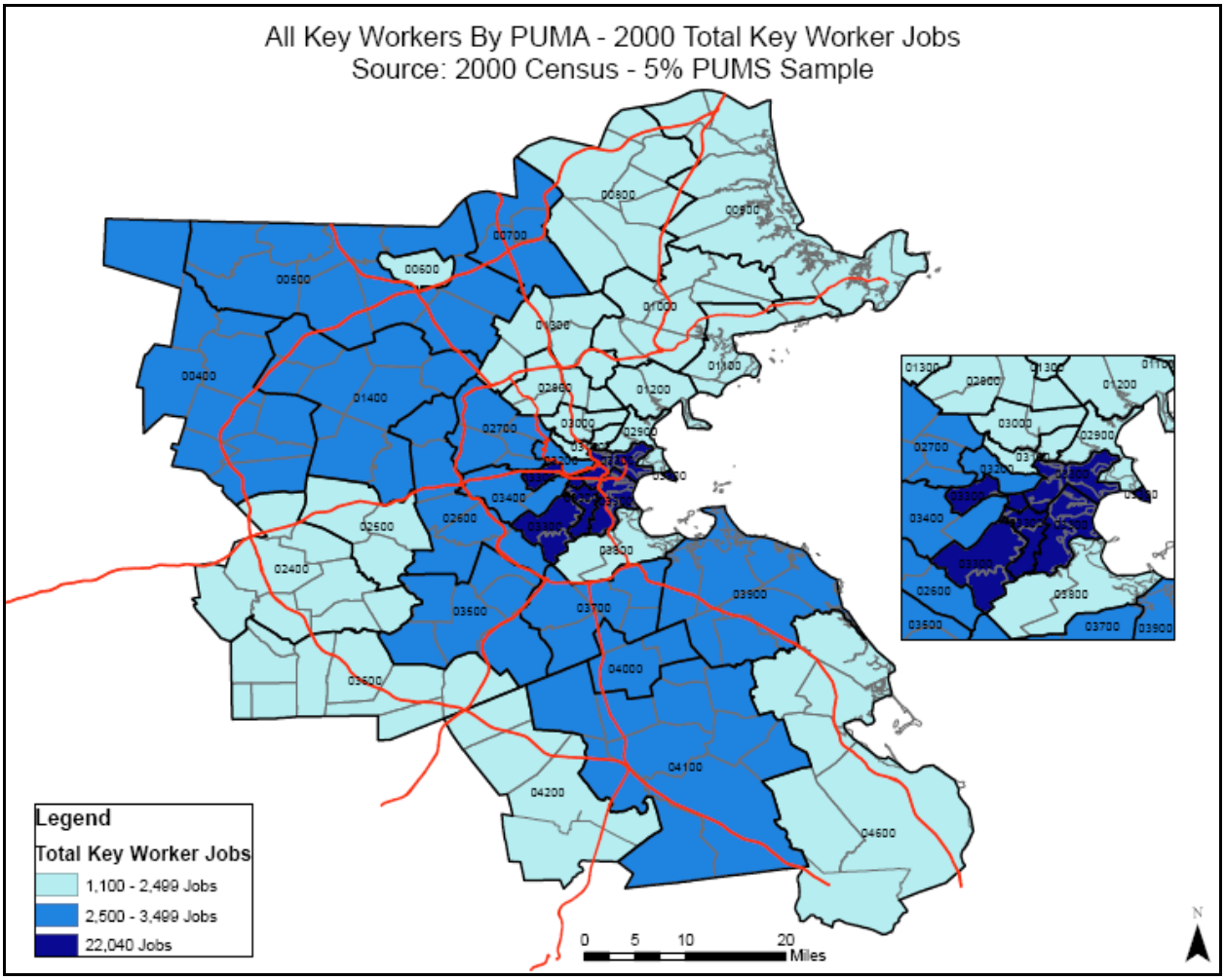
Many housing advocates have speculated that key community workers can no longer live and work in the communities they serve due to the rapid house price appreciation. Moreover, many of the studies referenced above show that all workers are enduring longer commutes. Surprisingly, average commute time for key workers in Eastern Massachusetts is 20 minutes as compared to the average commute time for all workers of 30 minutes. This suggests that key workers are living closer to their workplaces than all workers which in part may be due to the equally distributed location of key worker jobs. When analyzing travel time to work by occupation group, it shows that firefighters have the shortest commute time of 15 minutes, followed by teachers with a commute time of 20 minutes, and then nurses and police at 25 minutes, as is depicted in the chart below.

Figure 33: Median Travel Time



When analyzing all workers, we know that there are a few job centers in Eastern Massachusetts where most of the jobs are located. Approximately 24% of all jobs are located in the City of Boston, and many others are located along the Route 128 corridor. In contrast, in general, although the majority of key worker jobs are located in the City of Boston, as can be seen from the map below, the remaining key worker jobs are relatively equally distributed in the remaining 164 cities and towns of Eastern Massachusetts.

Figure 34: Map of Eastern Massachusetts Key Worker Job Locations by Place of Work PUMA

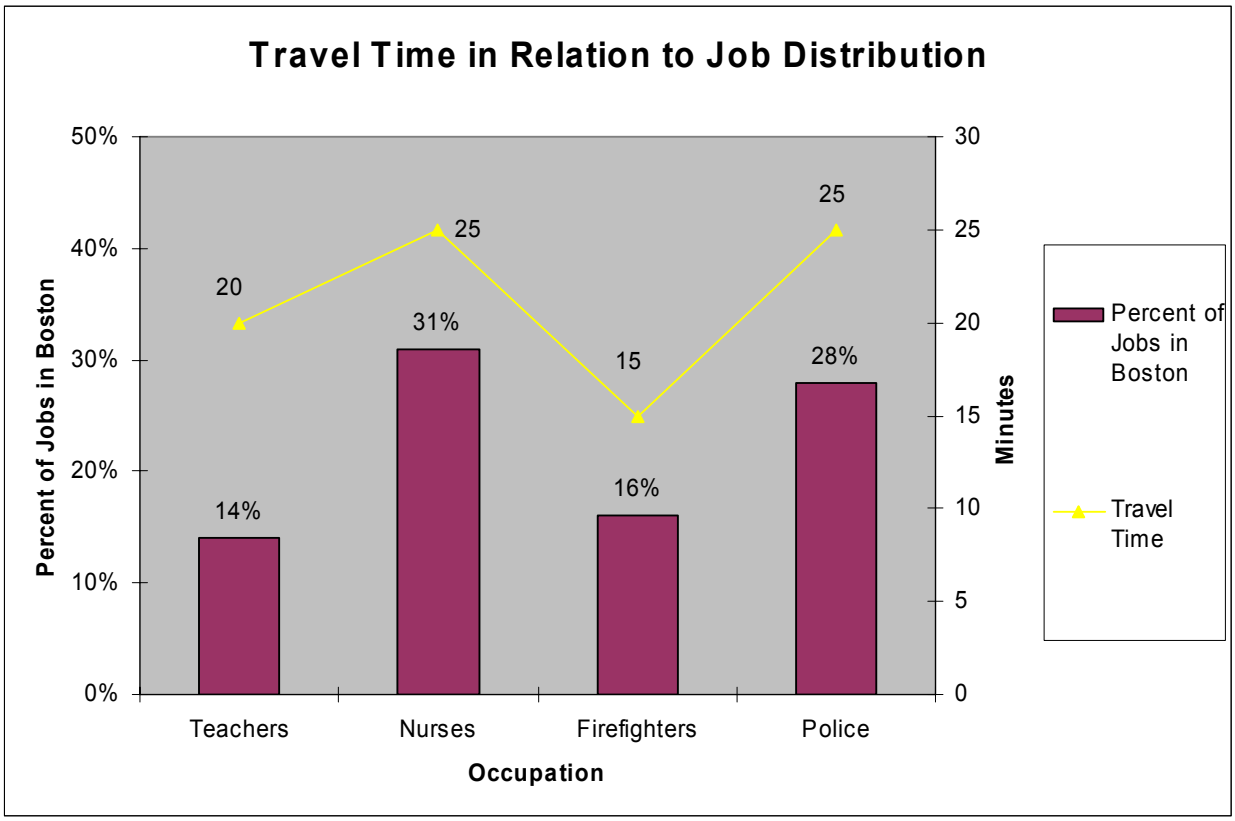


Commuting Travel Time by Occupation

One explanation for varying commute time between the occupation groups is the location of the specific key worker jobs. Although all key worker jobs appear to be relatively equally distributed outside of Boston, analyzing the specific occupation groups shows that a larger percentage of total nurse and police jobs in Eastern Massachusetts are located in Boston than all teacher and firefighter jobs. This implies that on average more nurses and police have to travel to the City of Boston because that is where the jobs are. Unless the police and nurses are living in Boston, their travel time will be longer since they cannot live and work outside of the City. Simply stated, it takes a longer amount of time to travel into and around Downtown due to traffic congestion. In contrast, teacher and firefighter jobs are more equally distributed throughout Eastern Massachusetts. Therefore, these two occupation groups have more ability to live closer to the jobs, and thus have a shorter commute time to work.

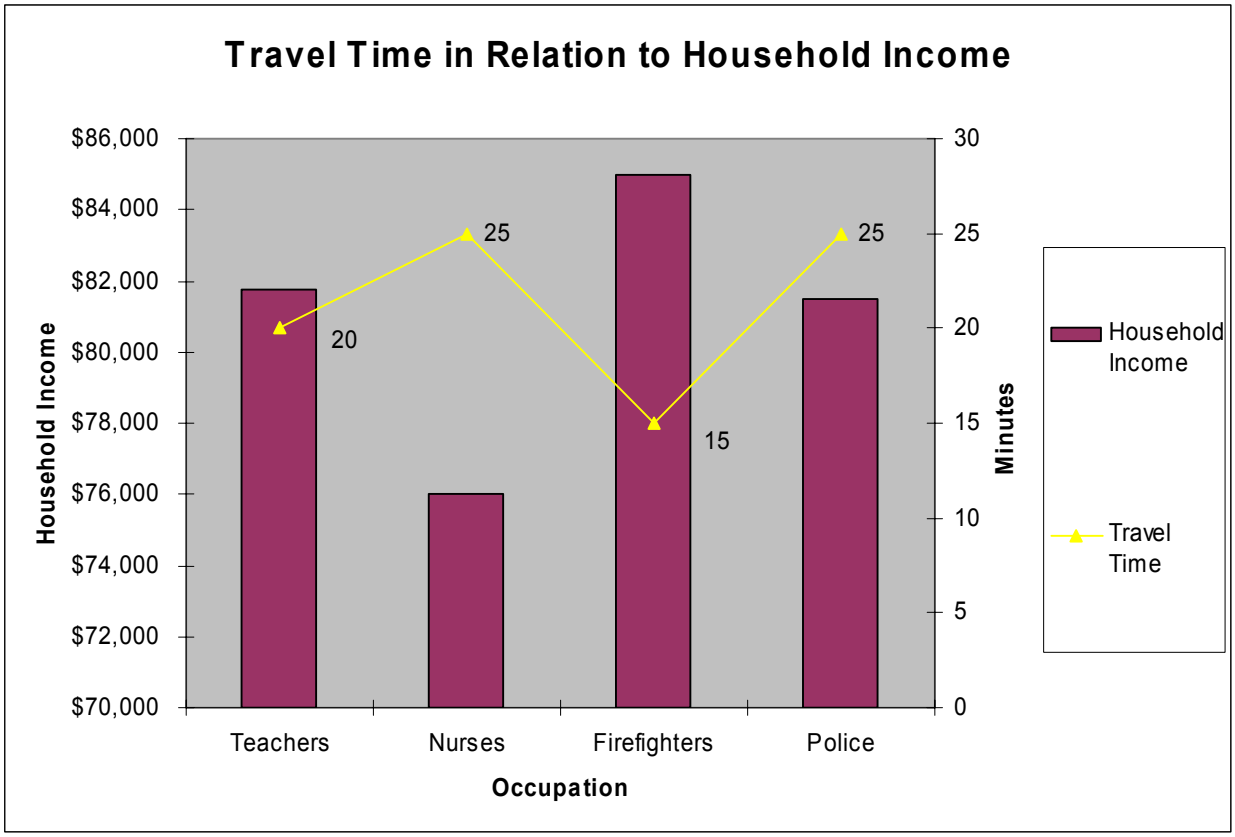
This hypothesis is depicted in the chart below showing how travel time per occupation group is inversely related to the percent of all jobs located in Boston in that occupation group. For example, about 31% of all nursing jobs in Eastern Massachusetts are located in the City of Boston, and nurse commute time on average is 25 minutes. This is compared to firefighters, where about 16% of all firefighter jobs in Eastern Massachusetts are located in Boston, and firefighter commute time is only 15 minutes.

Figure 35: Travel Time by Occupation in Relation to Job Distribution



Another explanation to varying commute times among the key workers is household income. The average commute times per occupation group also are inversely related to household income, implying that those with more household income have greater ability and flexibility to live closer to their jobs.

Figure 36: Travel Time by Occupation in Relation to Household Income

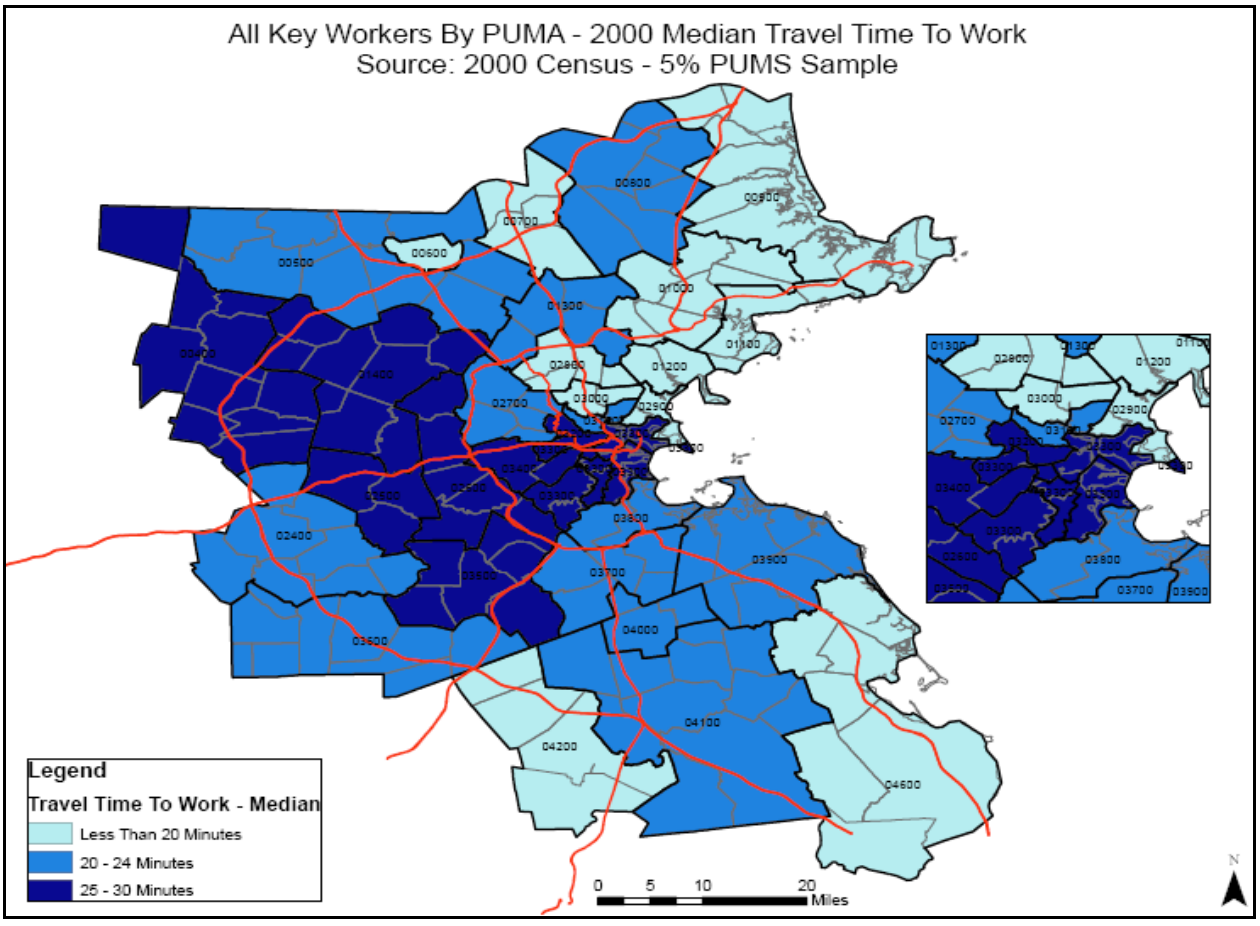


It is important to note that although firefighters have the shortest commute time, they do not have to sacrifice tenure or other building amenities in order to be living closer to their workplace. In fact, as is depicted in the "Tenure by Occupation" and "Building Size by Occupation" in the *Slight Differences* section above, on average firefighters are the most likely to be homeowners and to live in single-family homes than the other three key worker occupations. Therefore, we believe that firefighters' short travel time combined with greater propensity to be a homeowner and to live in a single-family home, are due to both a greater household income and the location of firefighter jobs in Eastern Massachusetts.

Commuting Travel Time by PUMA Job Location

When analyzing key workers' commute time as compared to all workers' commute time, it appears that key workers are better off. As previously discussed, the location of key worker jobs versus all jobs may contribute to this. However, although on average key worker commute time is 20 minutes, when diving into deeper geographic detail, it is evident that some key workers endure longer commute times depending on their place of work location. Therefore, the PUMAs below that show the longest commute times can be a proxy for locations in which key workers employed there either are choosing not to live or cannot afford to live. It is important to note that all workers face the same challenges that follow a similar pattern as is illustrated below.

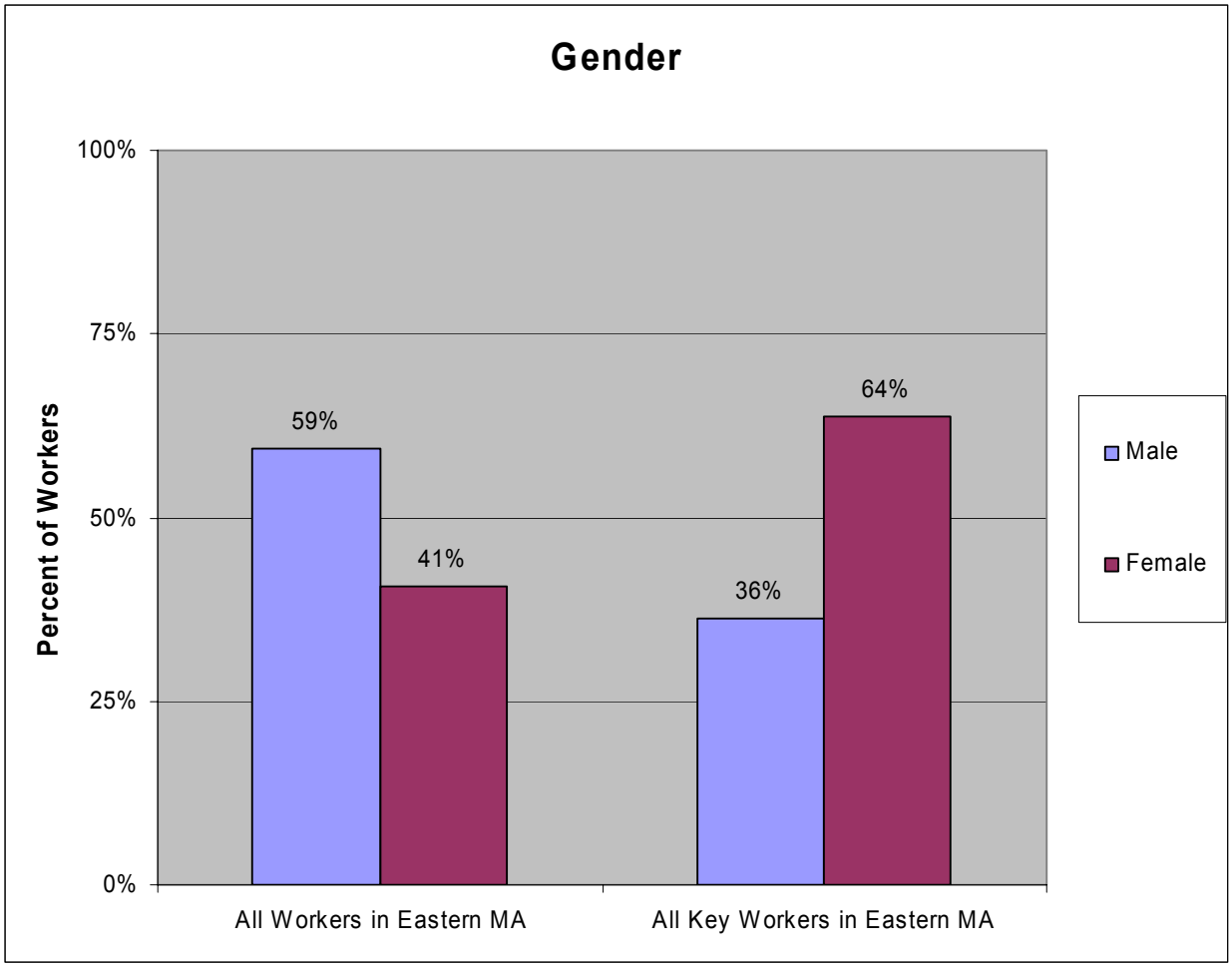
Figure 37: Map of Key Worker Travel Time by Place of Work PUMA



Gender

One major difference between key workers and all workers in Eastern Massachusetts is that key workers are more likely to be female than all workers, as can be seen from the chart below.

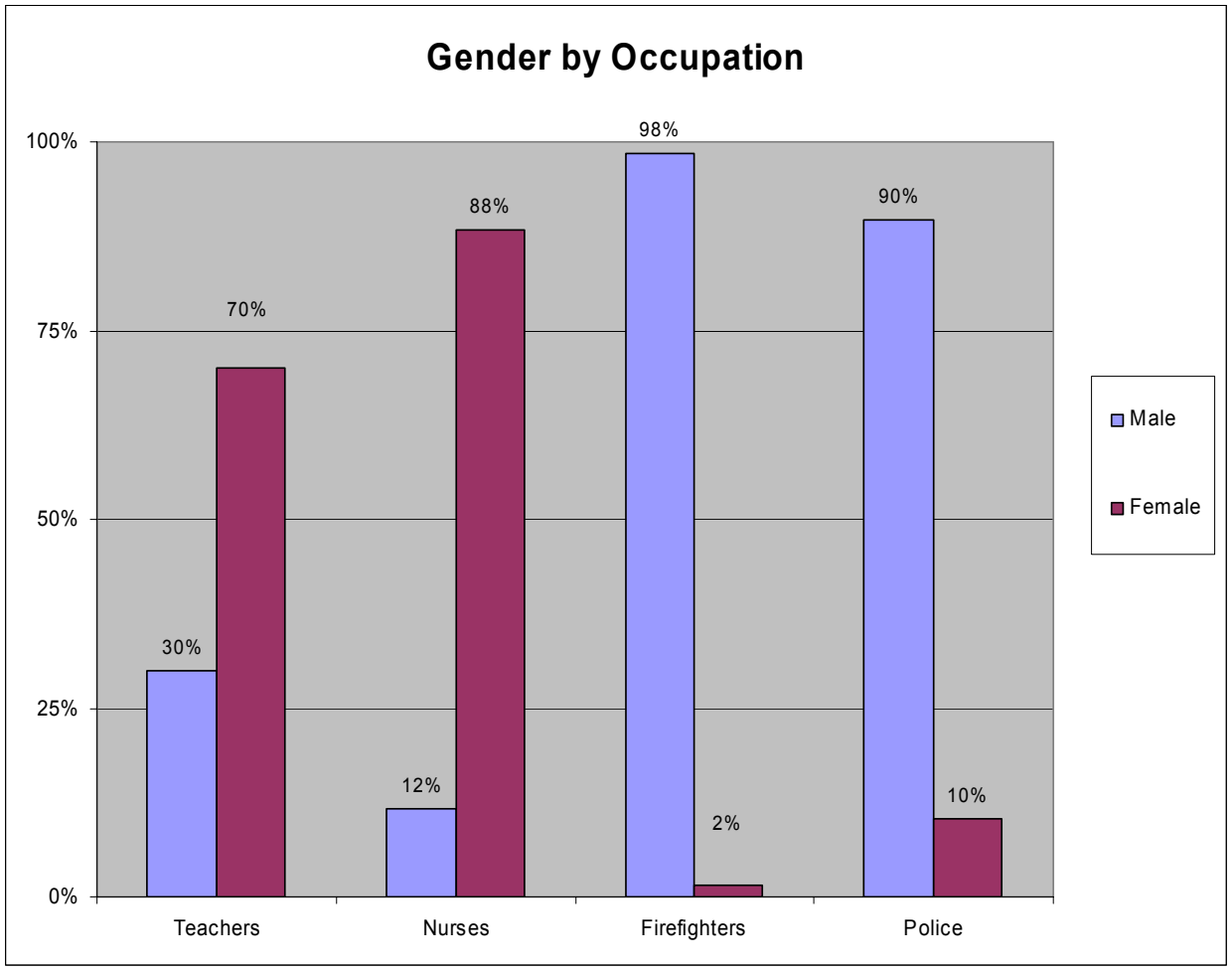
Figure 38: Gender



Gender by Occupation

In order to gain insight into this discrepancy, we analyzed gender by occupation group. What is seen from this analysis is that teachers and nurses are predominantly female (70% and 80% respectively) while firefighters and police officers overwhelmingly are male (98% and 90% respectively), as is illustrated in the chart below.

Figure 39: Gender by Occupation



Although the percentage of firefighters and police that are male is greater than the percentage of teachers and nurses that are female, the number of "female" key worker jobs is significantly greater than "male" jobs. As is detailed below, about 77% of all key worker jobs in Eastern

Massachusetts are teacher and nurse jobs, occupations which are dominated by female workers. Therefore, key workers on the whole are more likely to be female than male due to the majority of key worker "female" jobs. We have dubbed this the "teacher and nurse effect."

Figure 40: Sample Counts and Estimates by Key Worker Occupation

Key Workers and Key Worker Households: Employed in Eastern Massachusetts			
	Sample		**% of Total Key Workers**
	Persons	*Households*	
Teachers	1,547	1,468	34%
Nurses	2,004	1,912	43%
Firefighters	323	317	7%
Police	742	717	16%

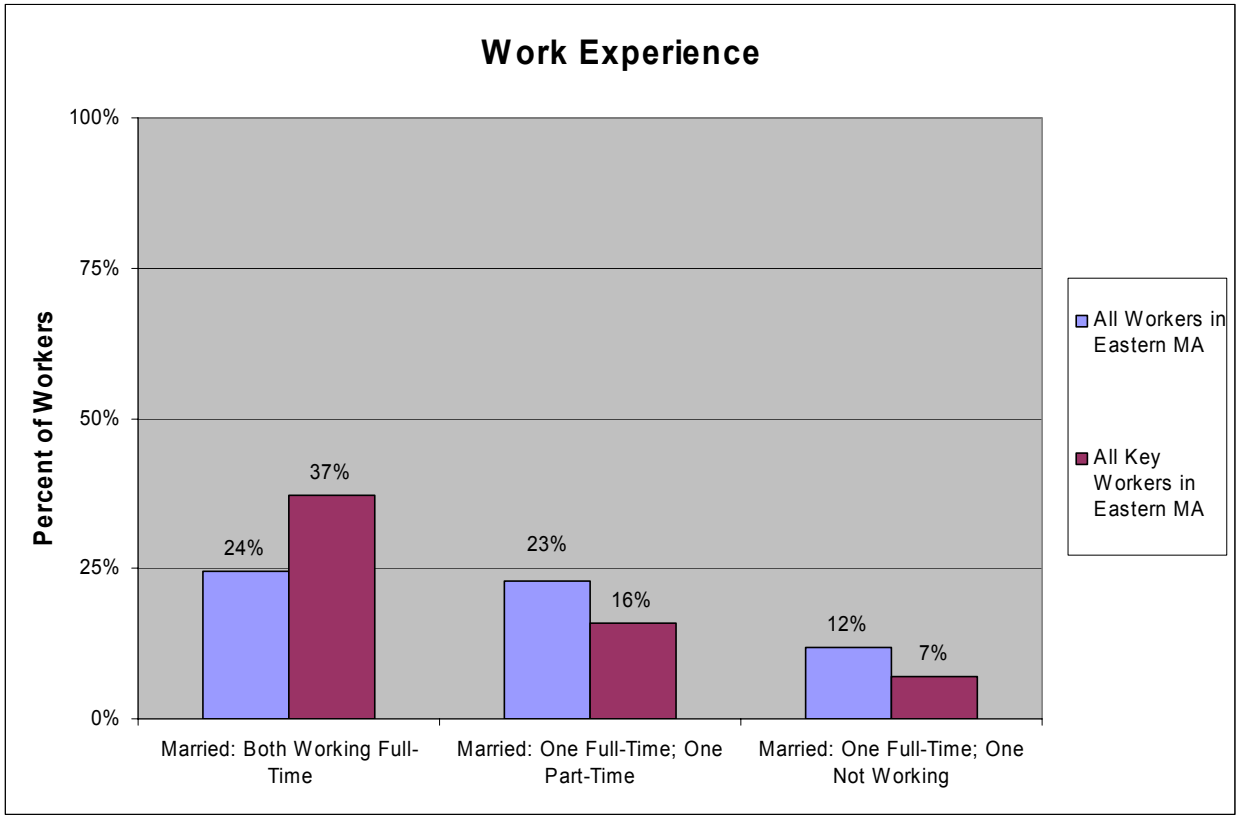
*The total number of key workers is 4,616 and the total number of key worker households is 4,414 in the 5% sample.

It is important to reiterate again 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.

Married: Both Working Full-Time

As discussed above, on the one hand it appears that key workers are better off than all workers because on average they have shorter commute times and they earn slightly more money. However, on the other hand, as the chart below shows, it appears that these benefits come with the cost of more married couples having to work full-time. Out of all key workers in Eastern Massachusetts, 60% of them are married. This is almost the same percentage for all workers employed in Eastern Massachusetts (59%). However, one of the key findings of this thesis is that approximately 37% of all key workers are married with both the husband and wife working full-time as opposed to just 24% of all workers.

Figure 41: Work Experience



Despite key worker or all worker classification, it is interesting to note the striking the small percentage of families who are married with one spouse not working. Out of all key workers in Eastern Massachusetts, only 7% are married with one working full-time and one not working. Similarly, out of all workers in Eastern Massachusetts, 12% are married with one working full-time and one not working. The percent of married couples where both the husband and wife are working has increased over time. As previously cited studies have shown, although on the surface the working family is earning sufficient household income, it is at what cost to their family life? Regardless of key worker or not, working families increasingly have two people in the work force, either by choice and/or necessity.

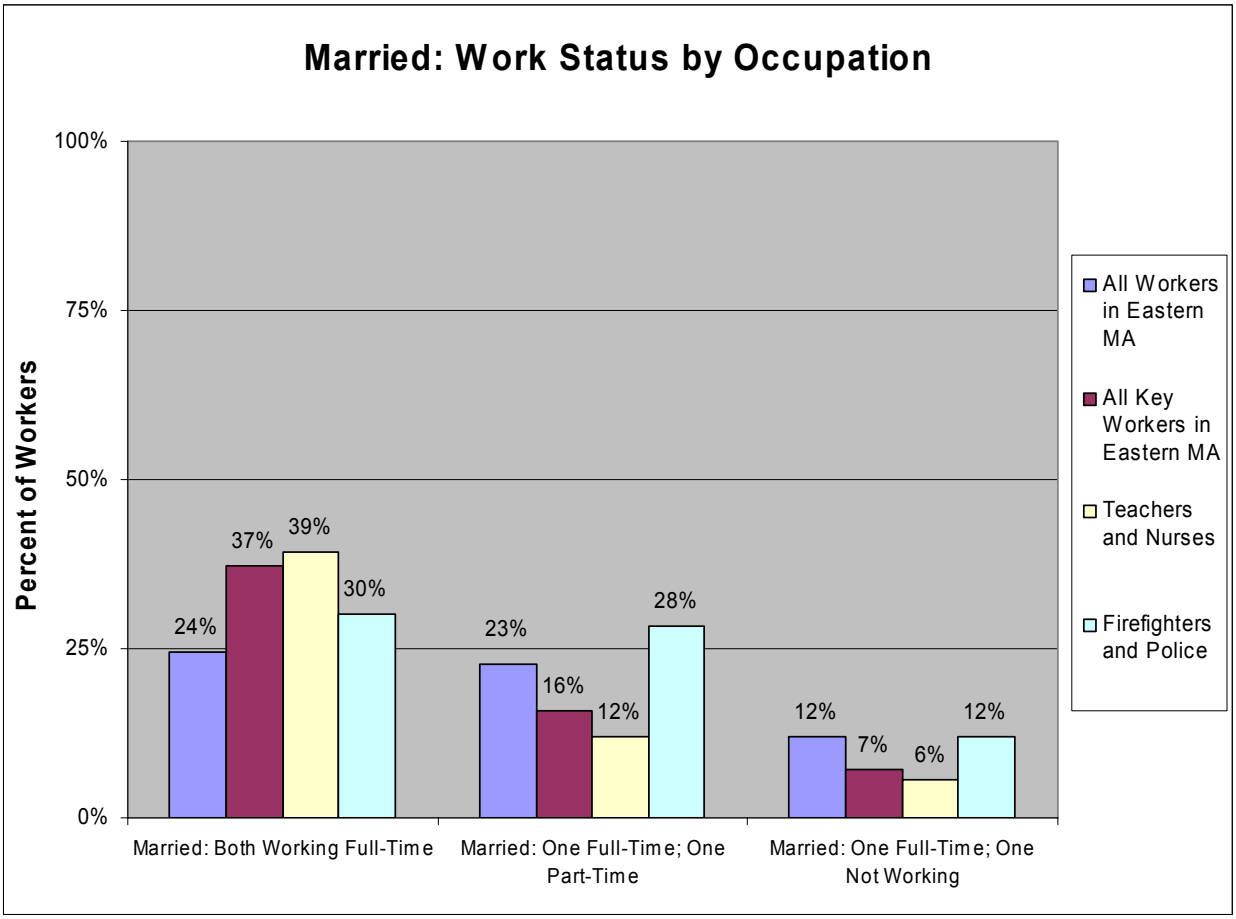
Married: Both Working Full-Time by Occupation

Moreover, it appears that key workers more so than all workers have married couples both in the full-time workforce. Do these married key worker households indeed have to work more than all workers in order to support their families? In order to understand the discrepancy depicted in the above chart, we analyzed the "female" and "male" key worker jobs separately. In the majority of all married households, if there is only one full-time worker, it is the male. However, we need to look at our particular sample. We defined our sample based on full-time key workers. As previously discussed, this definition gives us a sample that is predominantly female due not only to the fact that the majority of teachers and nurses are female, but also to the number of teacher and nurse jobs. Therefore, the sample is not fully representative of the general population of all workers. The "teacher and nurse effect" may partially explain why 37% of all key workers are married with both the husband and wife working full-time as opposed to just 24% of all workers.

As a way to control for the "teacher and nurse effect" we examined just the "male" key worker jobs (firefighters and police) as compared to the "female" key worker jobs (teachers and nurses)

and all workers. The intent is that by controlling for gender the sample will better represent the population as a whole. As can be seen in the chart below, the percentage of "male" key worker jobs who are married with both husband and wife working full-time falls to 30%, which is more in line with the all worker percentage of 24%. Similarly, the percent of married "male" key workers with one person working full-time and one person working part-time increases to 28%, which is more in line with the all worker percent at 23%. And lastly, the percent of married "male" key workers with one person working full-time and the other person not working increases to 12%, which is the same percentage as all workers.

Figure 42: Married: Work Status by Occupation



Even when controlling for the “teacher and nurse effect” we see that on average more married key worker households have both the husband and the wife working full-time. It appears, however, that the discrepancy between all workers and all key workers may not be as great as previously concluded. Firefighters and police, who tend to be male, have less dual full-timers in their households than teachers and nurses. Teachers and nurses who tend to be both married and female, generally live in households were both the husband and wife are working full-time.

It is important to stress that this statistic does not differentiate between necessity and choice. Many of these families may have two full-time workers because both the husband and wife have an interest in working. Others may have two full-time workers simply for the two pay checks needed to pay the mortgage. However, regardless of choice or necessity, it appears that on average a larger percentage of key workers are married with both the husband and wife working full-time than the all workers in Eastern Massachusetts. This finding is even more significant in contrast to past studies (NAHB for example) that only examine the key worker as an individual and not as a household.

Key Worker as Primary Wage Earner

In approximately 56% of all key worker households, the key worker is the primary wage earner, making more than 50% of the total household income. It is important to note that the household statistics include those where there is only one person with one income. Of all key workers who are the primary wage earner, 55% are female, 68% are owners and 51% are marrie . The area median income for the Boston metropolitan area in 1999 was $62,700, and key worker as the primary earner's median household income is $65,000 based on the 2000 Census data. Therefore, these households are about 100% of area median income. This is compared to the average household income of $103,910 in key worker households where the key worker does not make more than 50%. Below is a chart summarizing key statistics about primary and non-primary key worker wage earners.

Figure 43: Key Worker as Primary Wage Earner Statistics

Key Workers Employed in Eastern Massachusetts							
	Percent (%) of All Key Worker Households	Percentage (%) Female	Percent (%) Male	Percent (%) Own	Percent (%) Married	Average Age	Average Household Income
Primary Wage Earner in Household	56%	55%	45%	68%	51%	43	65,000
Not Primary Wage Earner in Household	44%	26%	74%	80%	65%	42	103,910

In the majority of key worker households, the key worker is the primary wage earner. Of the key workers who are the primary wage earner, 55% are female which accounts for the abundant teachers and nurses in our sample. As previously stated, it is important to note that single workers are included in the 56% of all key worker households, and therefore would be categorized as primary breadwinners. However, of the primary wage earners, 51% are married. Of greatest importance is the discrepancy between average household income. It is in those key worker households in which the key worker is the primary wage earner where there may be

a problem of housing affordability. Regardless of gender, when the key worker is the primary wage earner, the household income is between 80% and 120% of AMI. Of the 45% of male key workers who are the primary wage earner, the median household income is $72,540 or 115% of AMI. Similarly, of the 55% of female key workers who are the primary wage earner, the median household income is $58,400 or 93% of AMI. This is compared to the households in which the key worker is not the primary wage earner, where the average household income is $103,910 or 165% of AMI. This is important to note in terms of future housing policies focused on workforce housing.

Area Median Income and Affordability Analysis

One of the main purposes of the demographic analysis is to find out in what income bracket key workers and key worker households actually fall. Many of the previously referenced studies only look at key workers as individuals, not key workers within a household. When looking at key worker's individual income from wages as compared to the area median income for the Boston MSA for a family of four, the situation looks drastically different than if you compare the key worker household income to the area median income. As is illustrated in the following two charts, the most striking distinction is that only 5% of key workers earn more than 120% of area median income, while 54% of key worker households earn more than 120% of area median income. Although 15% of all workers make more than 120% of area median income, only 49% of all worker households have household incomes that exceed 120% of area median income.

Figure 44: Income Group by Individual Person

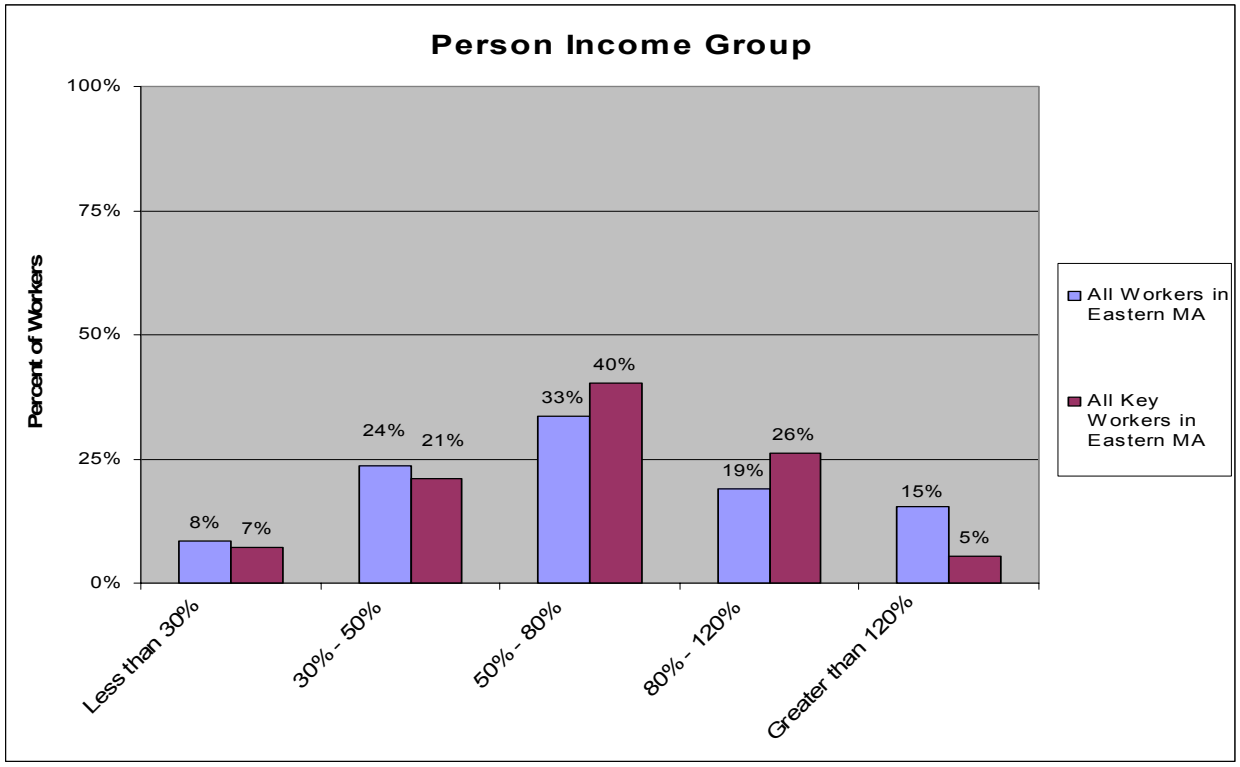
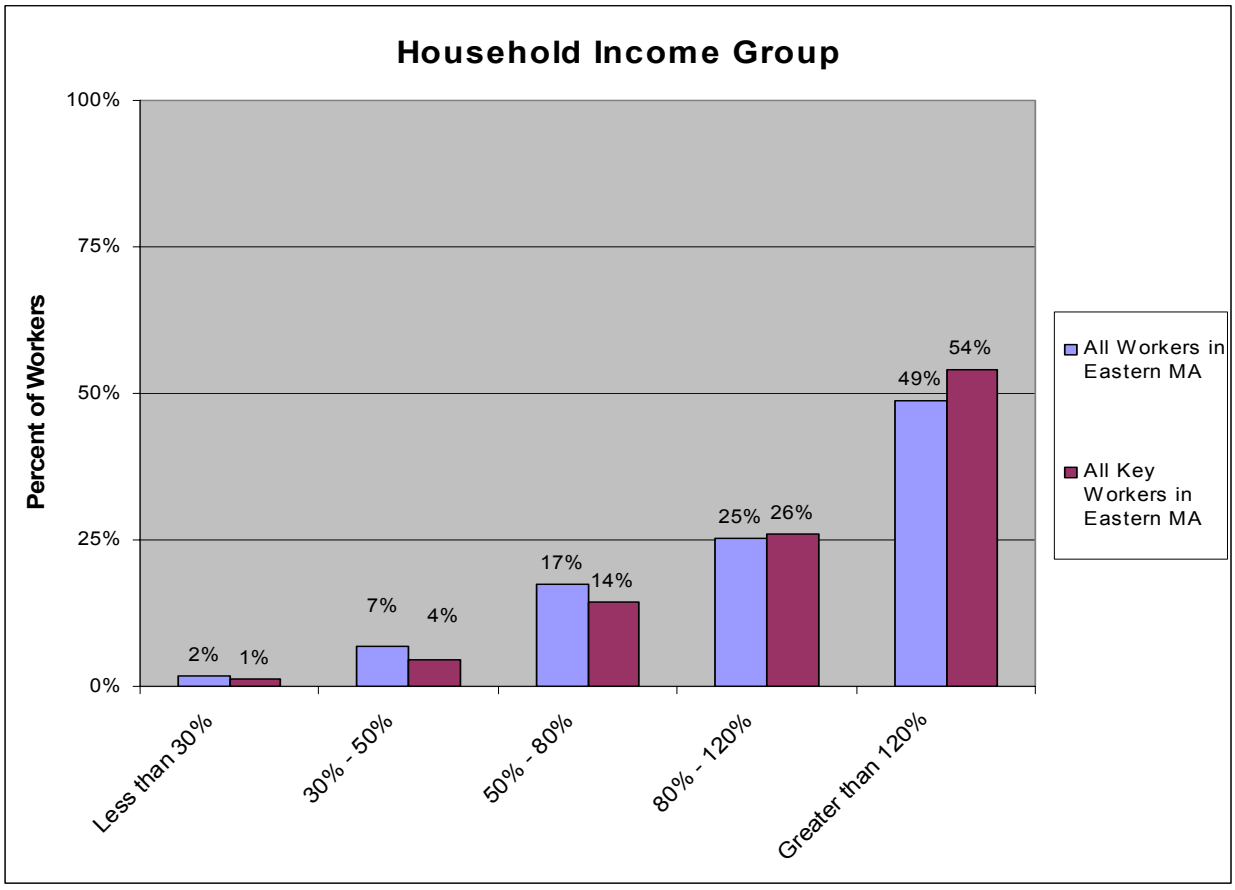


Figure 45: Income Group by Household



The percent of key workers and key worker households that fall within the 80% to 120% of area median income is about the same. This is due to the fact that workers in the 30% to 80% of area median income jump to higher income brackets once placed in a household. About 61% of key workers earn between 30% and 80% of area median income, while only 18% of key worker households earn that same amount. This is in part due to the "teacher and nurse effect" that we described earlier. Given the number of married working females included in our sample, this increase in household income is not surprising.

It is abundantly clear from the above two charts that it is imperative to analyze key workers based on the household level not the person level due to the large difference between individual

income from wages and total household income. As previously discussed, many of the recent referenced studies examine just key workers as individuals which exaggerate their inability to find affordable housing in Eastern Massachusetts. For example, the NAHB study compares median home prices with individual wages, resulting in key workers unable to afford to live in over 90% of the census tracts in the Boston MSA. We know that for a fact that although key workers may not be living in the communities they work in, the majority of them are at least living in Eastern Massachusetts. Therefore, the fatal flaw of many studies is examining key workers on an individual basis, not on a household basis. In contrast, we examined key households, and we are discovering that key worker households actually are better off than the average worker household in Eastern Massachusetts.

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 in the year 2000. 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 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.

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.

Lastly, it is important to note that the home price point for all renters ages 30 to 44 in employed in Eastern Massachusetts is less than the price point for the HUD median income. Per the 2000 Census data, key worker renter households aged 30 to 44 earned more than $65,000 in only four PUMAs (400, 24,00, 4100 and 4200). The above two facts suggest that the majority of key worker households within this age and tenure demographic are earning at or below 100% AMI.

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 (aged

30 to 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 46: Current Price Points for Key Worker Renters: Ages 30 – 44

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

Research has shown that key workers along with all professionals and managers act as role models affecting the vibrancy of a community helping keep teenage pregnancy and high school dropout rates low.[40] As of 2000, approximately 8.8% of all households in Eastern Massachusetts contained at least one full-time key worker. As housing prices have soared, many in the State of Massachusetts have speculated that these key workers are having more difficulty affording to live not only in the communities they serve, but also in the type and amount of housing that they want to consume. Through the use of mircro-level individual and household data by job location, we have provided a more accurate understanding of key worker households for those employed in Eastern Massachusetts. This unique and rigorous approach of placing the key worker in a household has shown surprisingly that key workers do not act much differently than all workers. Therefore, we believe that this key worker analysis is a decent proxy for all middle-income working families in Eastern Massachusetts.

It is important to remember, however, that the analysis included in this thesis is based on 2000 Census data. It is possible that discrepancies between key workers and all workers have developed in the last five years based on rapidly appreciating house prices. More likely, however, is that key workers and all workers have both changed their behavior, and still act in harmony with one another. For example, more working families (including key workers without a residency requirement) may be commuting to Eastern Massachusetts from Rhode Island and New Hampshire as a tradeoff for cheaper housing. Similarly, maybe more "first-time homebuyer" households or young homeowner households are paying more than 20% of their income towards housing, regardless if they are a key worker household or not, while older households are paying less than 20% of their income towards housing. It is safe to assume that

[40] Crane, *The Epidemic Theory of Ghettos.*

the percentage of their income that young homeowners are paying versus older homeowners today in 2005 has changed since the 2000 Census. As discussed previously, those workers (key worker or not) who purchased homes prior to 2000 are considered winners in this housing market. The homeowners with a mortgage in 2000 paying 20% of their incomes for housing have most likely refinanced their mortgages at a lower interest rate and in turn have reduced their monthly housing cost burden, thus furthering their status as a "winner." At the same time, young homebuyers have had to either take on large amounts of debt in order to afford homes or consume less than what they desire (purchasing condominiums rather than single-family homes) thus making them the "losers" in the current market. We will not know the answer to these questions until we have the 2010 Census microdata. We can hypothesize, however, that affordability and housing issues have worsened recently due to double digit home price appreciation from 2000 to 2005.

Most importantly, young workers and working families contribute to the long-term competitiveness of the State. 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] Many analysts have speculated that due to the high cost of housing many families are leaving the State for more affordable places that offer the same or higher quality of life. Sean Sacks' thesis, *Key Worker Housing: A Demand Analysis of Middle-Income Workforce Housing in Eastern Massachusetts*, shows that the City of Boston has trouble retaining married key workers as compared to other families. If young workers, working families and key workers who make communities stronger and safer cannot afford to live in housing that they deem suitable for their needs in Eastern Massachusetts, then what is the future of the State and its economy?

[41] *Housing Poll*, 1.

Based on the 2000 Census data used in this thesis, the majority of key worker households are earning more than 120% of area median income, suggesting that no new housing policy targeting key workers need be created and adopted. This is especially so in light of the ever-present need for more low- and very-low-income housing. That need has always existed and will always exist in varying degrees of urgency. The struggle for middle-income working families to afford housing that suits their needs, however, is now emerging. As one of the key findings of this thesis demonstrates, more working families (with or without a key worker) are relying on two incomes to pay the bills, thus falling into the dual-income trap with less financial stability. If key worker households have more married couples both working full-time out of necessity rather than choice, the housing affordability issue for these community workers could be larger than is quantified by the data included in this paper. What happens to that family if one of the workers is laid off or can no longer work?

It is also important to note that although on average key worker households exceed 120% of area median income, there are specific key worker groups that face housing affordability challenges. In 56% of key worker households in Eastern Massachusetts, the key worker acts as the primary wage earner. Depending on the gender of the breadwinner, the average household income in these families ranges from 93% to 115% of area median income. Similarly, key renters aged 30 to 44 earned approximately 100% of AMI. Coupled with residency requirements in certain areas, can this age group find suitable housing at incomes within these ranges and at the price points discussed in the previous section? It is these particular factions of key workers where attention needs to be paid in order to ensure a viable future for the State.

In sum, although there may not be an affordability issue for key workers on the whole based on the analysis presented in this thesis, it does not mean that all key workers employed in Eastern

Massachusetts can afford to live comfortably here. The State should continue to monitor key worker jobs and incomes in comparison to house prices with more recent data as a way to truly understand the depth of the current housing affordability issue for key workers and all middle-income workers in Eastern Massachusetts. Also, 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. And finally, if the State of Massachusetts or City of Boston were to create a policy to assist key workers, the definition of a key worker should be expanded to encompass more civil workers outside of the four occupations studied in this paper. Any new policy needs to incorporate the household lifecycle, and how the composition and needs of working families change with age. Most importantly, the State of Massachusetts must examine different ways in which to attract and retain young working families as a way to preserve its long-term regional competitiveness and economic viability.

Appendices

Appendix A: All Workers Employed in Eastern Massachusetts

MASSACHUSETTS: All Workers		**Persons**
Employed in Eastern Massachusetts		66,925
		Observations
Gender		
Male	59%	39,810
Female	41%	27,115
Age (median)	40	
18 - 25	8%	5,666
26 - 34	25%	16,635
35 - 44	31%	20,415
45 - 54	25%	16,672
55 - 64	11%	7,509
Other	0%	28
Occupation		
Teachers	2.3%	1,547
Nurses	3.0%	2,004
Firefighters	0.5%	323
Policemen	1.1%	742
Marital Status		
Married	59%	39,791
Widowed	1%	808
Divorced	10%	6,362
Separated	2%	1,291
Never Married	28%	18,673
Place of Birth		
Massachusetts	59%	39,473
Not Massachusetts	41%	27,452
Residence		
Massachusetts	94.66%	63,352
New Hampshire	3.66%	2,452
Rhode Island	1.68%	1,121
Mobility		
Living in same house in Massachusetts 5 years ago	53%	35,278
Not living in same house as 5 years ago	47%	31,647
Travel Time		
Median	30	
Mean	32	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	40,000	
Income Total (median)	42,000	

MASSACHUSETTS: All Workers		**Households**
Employed in Eastern Massachusetts		50,415
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	74,300	
Family Income (median)	63,200	
Tenure		
Own with Mortgage	60%	30,182
Own no Mortgage	9%	4,661
Rent	30%	15,140
Occupy without Pay	1%	432
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,462	
Owner no Mortgage	470	
Renter	825	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	19%	
Year Moved In		
1999 - 2000	17%	8,598
1995 - 1998	32%	16,220
1990 - 1994	17%	8,776
1980 - 1989	17%	8,555
1970 - 1979	10%	5,024
1969 or earlier	6%	3,242
Workers in Family (median)	3	
0	0%	71
1	17%	8,694
2	44%	22,188
3 or more	14%	7,127
Not in universe	24%	12,335
Presence and Age of Own Children Living in Household (median)		
Under 6 only	11%	5,341
6 to 17	23%	11,350
Under 6 and 6 to 17	7%	3,683
No children under 18	60%	30,041
Work Experience		
Married: Both working full-time	24%	12,341
Married: One full-time, one part-time	23%	11,484
Married: One full-time, one not working	12%	5,989
Single: Full-time	10%	5,215
Other	31%	15,386
Emplyment Status by Gender		
Married: Husband and wife working	44%	22,413
Married: Only husband working	13%	6,447
Married: Only wife working	3%	1,420
Not Married: Male working	3%	1,748
Not Married: Female working	8%	4,117
Other	28%	14,270
Building Size		
Single family home	62%	31,278
2 - 4 apartments	23%	11,476
5 - 19 apartments	9%	4,343
20 or more apartments	6%	3,046
Other	1%	272

Appendix B: All Key Workers Employed in Eastern Massachusetts

MASSACHUSETTS: Key Workers		**Persons**
All key workers		4,616
		Observations
Gender		
Male	36%	1,677
Female	64%	2,939
Age (median)	42	
18 - 25	7%	304
26 - 34	22%	1,038
35 - 44	27%	1,267
45 - 54	32%	1,462
55 - 64	12%	544
Other	0%	1
Occupation		
Teachers	34%	1,547
Nurses	43%	2,004
Firefighters	7%	323
Policemen	16%	742
Marital Status		
Married	58%	2,658
Widowed	1%	64
Divorced	12%	536
Separated	3%	125
Never Married	27%	1,233
Place of Birth		
Massachusetts	67%	3,078
Not Massachusetts	33%	1,538
Residence		
Massachusetts	97%	4,475
New Hampshire	2%	98
Rhode Island	1%	43
Mobility		
Living in same house in Massachusetts 5 years ago	58%	2,686
Not living in same house as 5 years ago	42%	1,930
Travel Time		
Median	20	
Mean	27.4	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	42,350	
Income Total (median)	44,000	

MASSACHUSETTS: Key Workers	**Households**
All key workers	4,414

		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	80,000	
Family Income (median)	72,000	
Tenure		
Own with Mortgage	64%	2,830
Own no Mortgage	9%	392
Rent	26%	1,161
Occupy without Pay	1%	31
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,450	
Owner no Mortgage	474	
Renter	817	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	18%	
Year Moved In		
1999 - 2000	15%	652
1995 - 1998	29%	1,281
1990 - 1994	17%	732
1980 - 1989	20%	861
1970 - 1979	14%	600
1969 or earlier	7%	288
Workers in Family (median)	3	
0	0%	2
1	14%	604
2	45%	1,980
3 or more	21%	926
Not in universe	20%	902
Presence and Age of Own Children Living in Household (median)		
Under 6 only	8%	361
6 to 17	26%	1,137
Under 6 and 6 to 17	6%	254
No children under 18	60%	2,662
Work Experience		
Married: Both working full-time	37%	1,641
Married: One full-time, one part-time	16%	700
Married: One full-time, one not working	7%	310
Single: Full-time	15%	653
Other	25%	1,110
Emplyment Status by Gender		
Married: Husband and wife working	52%	2,277
Married: Only husband working	5%	239
Married: Only wife working	4%	172
Not Married: Male working	3%	144
Not Married: Female working	12%	546
Other	23%	1,036
Building Size		
Single family home	66%	2,935
2 - 4 apartments	22%	954
5 - 19 apartments	7%	308
20 or more apartments	5%	200
Other	0%	17

Appendix C: Teachers

MASSACHUSETTS: Key Workers		Persons
Teachers		1,547
		Observations
Gender		
Male	30%	462
Female	70%	1,085
Age (median)	44	
18 - 25	9%	140
26 - 34	22%	346
35 - 44	19%	294
45 - 54	36%	556
55 - 64	14%	211
Other	0%	0
Occupation		
Teachers	100%	1,547
Nurses	0%	0
Firefighters	0%	0
Policemen	0%	0
Marital Status		
Married	59%	905
Widowed	1%	20
Divorced	8%	125
Separated	2%	28
Never Married	30%	469
Place of Birth		
Massachusetts	65%	1,001
Not Massachusetts	35%	546
Residence		
Massachusetts	97%	1,497
New Hampshire	2%	31
Rhode Island	1%	19
Mobility		
Living in same house in Massachusetts 5 years ago	58%	890
Not living in same house as 5 years ago	42%	657
Travel Time		
Median	20	
Mean	25.3	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	40,000	
Income Total (median)	41,000	

MASSACHUSETTS: Key Workers	**Households**
Teachers	1,468

		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	81,750	
Family Income (median)	75,000	
Tenure		
Own with Mortgage	62%	913
Own no Mortgage	11%	161
Rent	26%	380
Occupy without Pay	1%	14
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,467	
Owner no Mortgage	483	
Renter	859	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	6%	
Renter	19%	
Year Moved In		
1999 - 2000	15%	226
1995 - 1998	28%	405
1990 - 1994	14%	199
1980 - 1989	19%	283
1970 - 1979	18%	266
1969 or earlier	6%	89
Workers in Family (median)	3	
0	0%	0
1	10%	153
2	46%	678
3 or more	21%	304
Not in universe	23%	333
Presence and Age of Own Children Living in Household (median)		
Under 6 only	7%	103
6 to 17	24%	345
Under 6 and 6 to 17	4%	55
No children under 18	66%	965
Work Experience		
Married: Both working full-time	42%	622
Married: One full-time, one part-time	14%	209
Married: One full-time, one not working	5%	73
Single: Full-time	10%	151
Other	28%	413
Emplyment Status by Gender		
Married: Husband and wife working	55%	812
Married: Only husband working	4%	55
Married: Only wife working	3%	51
Not Married: Male working	3%	38
Not Married: Female working	9%	128
Other	26%	384
Building Size		
Single family home	67%	987
2 - 4 apartments	21%	315
5 - 19 apartments	7%	102
20 or more apartments	4%	61
Other	0%	3

Appendix D: Nurses

MASSACHUSETTS: Key Workers		Persons
Nurses		2,004
		Observations
Gender		
Male	12%	232
Female	88%	1,772
Age (median)	43	
18 - 25	6%	126
26 - 34	19%	382
35 - 44	30%	598
45 - 54	32%	638
55 - 64	13%	259
Other	0%	1
Occupation		
Teachers	0%	0
Nurses	100%	2004
Firefighters	0%	0
Policemen	0%	0
Marital Status		
Married	51%	1,028
Widowed	2%	40
Divorced	16%	320
Separated	4%	73
Never Married	27%	543
Place of Birth		
Massachusetts	60%	1,203
Not Massachusetts	40%	801
Residence		
Massachusetts	97%	1,935
New Hampshire	3%	53
Rhode Island	1%	16
Mobility		
Living in same house in Massachusetts 5 years ago	59%	1,176
Not living in same house as 5 years ago	41%	828
Travel Time		
Median	25	
Mean	29.4	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	40,000	
Income Total (median)	40,000	

MASSACHUSETTS: Key Workers		**Households**
Nurses		1,912
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	76,015	
Family Income (median)	66,000	
Tenure		
Own with Mortgage	61%	1,162
Own no Mortgage	8%	155
Rent	31%	587
Occupy without Pay	0%	8
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,425	
Owner no Mortgage	471	
Renter	800	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	19%	
Year Moved In		
1999 - 2000	15%	290
1995 - 1998	29%	556
1990 - 1994	18%	347
1980 - 1989	20%	375
1970 - 1979	12%	220
1969 or earlier	6%	124
Workers in Family (median)	3	
0	0%	1
1	15%	289
2	42%	811
3 or more	22%	425
Not in universe	20%	386
Presence and Age of Own Children Living in Household (median)		
Under 6 only	6%	106
6 to 17	27%	525
Under 6 and 6 to 17	5%	101
No children under 18	62%	1,180
Work Experience		
Married: Both working full-time	37%	713
Married: One full-time, one part-time	10%	199
Married: One full-time, one not working	6%	113
Single: Full-time	22%	416
Other	25%	471
Emplyment Status by Gender		
Married: Husband and wife working	46%	888
Married: Only husband working	2%	40
Married: Only wife working	6%	115
Not Married: Male working	3%	53
Not Married: Female working	20%	378
Other	23%	438
Building Size		
Single family home	62%	1,186
2 - 4 apartments	23%	443
5 - 19 apartments	8%	162
20 or more apartments	6%	110
Other	1%	11

Appendix E: Firefighters

MASSACHUSETTS: Key Workers		**Persons**
Firefighters		323
		Observations
Gender		
Male	98%	318
Female	2%	5
Age (median)	43	
18 - 25	2%	5
26 - 34	20%	66
35 - 44	34%	109
45 - 54	37%	118
55 - 64	8%	25
Other	0%	0
Occupation		
Teachers	0%	0
Nurses	0%	0
Firefighters	100%	323
Policemen	0%	0
Marital Status		
Married	76%	247
Widowed	0%	1
Divorced	6%	20
Separated	3%	9
Never Married	14%	46
Place of Birth		
Massachusetts	87%	281
Not Massachusetts	13%	42
Residence		
Massachusetts	98%	316
New Hampshire	2%	5
Rhode Island	1%	2
Mobility		
Living in same house in Massachusetts 5 years ago	63%	203
Not living in same house as 5 years ago	37%	120
Travel Time		
Median	15	
Mean	23.1	
Weeks Worked (median)	52	
Hours Worked (median)	44	
Income from Wages (median)	50,000	
Income Total (median)	51,200	

MASSACHUSETTS: Key Workers		**Households**
Firefighters		317
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	85,000	
Family Income (median)	81,800	
Tenure		
Own with Mortgage	77%	244
Own no Mortgage	8%	25
Rent	15%	46
Occupy without Pay	1%	2
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,403	
Owner no Mortgage	525	
Renter	758	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	14%	
Year Moved In		
1999 - 2000	10%	31
1995 - 1998	26%	84
1990 - 1994	15%	49
1980 - 1989	26%	84
1970 - 1979	14%	44
1969 or earlier	8%	25
Workers in Family (median)	3	
0	0%	1
1	14%	43
2	48%	151
3 or more	27%	85
Not in universe	12%	37
Presence and Age of Own Children Living in Household (median)		
Under 6 only	14%	43
6 to 17	29%	91
Under 6 and 6 to 17	9%	29
No children under 18	49%	154
Work Experience		
Married: Both working full-time	37%	118
Married: One full-time, one part-time	28%	89
Married: One full-time, one not working	12%	38
Single: Full-time	7%	22
Other	16%	50
Emplyment Status by Gender		
Married: Husband and wife working	63%	199
Married: Only husband working	15%	47
Married: Only wife working	0%	0
Not Married: Male working	6%	20
Not Married: Female working	1%	4
Other	15%	47
Building Size		
Single family home	76%	242
2 - 4 apartments	16%	52
5 - 19 apartments	4%	14
20 or more apartments	3%	8
Other	0%	1

Appendix F: Police Officers

MASSACHUSETTS: Key Workers		**Persons**
Police Officers		742
		Observations
Gender		
Male	90%	665
Female	10%	77
Age (median)	38	
18 - 25	4%	33
26 - 34	33%	244
35 - 44	36%	266
45 - 54	20%	150
55 - 64	7%	49
Other	0%	0
Occupation		
Teachers	0%	0
Nurses	0%	0
Firefighters	0%	0
Policemen	100%	742
Marital Status		
Married	64%	478
Widowed	0%	3
Divorced	10%	71
Separated	2%	15
Never Married	24%	175
Place of Birth		
Massachusetts	80%	593
Not Massachusetts	20%	149
Residence		
Massachusetts	98%	727
New Hampshire	1%	9
Rhode Island	1%	6
Mobility		
Living in same house in Massachusetts 5 years ago	56%	417
Not living in same house as 5 years ago	44%	325
Travel Time		
Median	25	
Mean	28.3	
Weeks Worked (median)	52	
Hours Worked (median)	44	
Income from Wages (median)	50,000	
Income Total (median)	51,100	

MASSACHUSETTS: Key Workers		**Households**
Police Officers		717
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	81,500	
Family Income (median)	74,100	
Tenure		
Own with Mortgage	72%	514
Own no Mortgage	7%	51
Rent	20%	145
Occupy without Pay	1%	7
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,478	
Owner no Mortgage	433	
Renter	760	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	21%	
Owner no Mortgage	6%	
Renter	14%	
Year Moved In		
1999 - 2000	14%	102
1995 - 1998	33%	236
1990 - 1994	19%	136
1980 - 1989	17%	122
1970 - 1979	10%	72
1969 or earlier	7%	49
Workers in Family (median)	3	
0	0%	0
1	16%	115
2	48%	345
3 or more	16%	115
Not in universe	20%	142
Presence and Age of Own Children Living in Household (median)		
Under 6 only	15%	108
6 to 17	25%	178
Under 6 and 6 to 17	9%	66
No children under 18	51%	365
Work Experience		
Married: Both working full-time	27%	194
Married: One full-time, one part-time	28%	203
Married: One full-time, one not working	12%	86
Single: Full-time	9%	62
Other	24%	172
Emplyment Status by Gender		
Married: Husband and wife working	54%	385
Married: Only husband working	13%	96
Married: Only wife working	1%	6
Not Married: Male working	5%	33
Not Married: Female working	5%	34
Other	23%	163
Building Size		
Single family home	73%	524
2 - 4 apartments	20%	141
5 - 19 apartments	4%	30
20 or more apartments	3%	20
Other	0%	2

Appendix G: Key Worker Men

MASSACHUSETTS: Key Workers		**Persons**
Men		1,677
		Observations
Age (median)	41	
18 - 25	4%	71
26 - 34	26%	443
35 - 44	30%	496
45 - 54	30%	500
55 - 64	10%	167
Other	0%	0
Occupation		
Teachers	28%	462
Nurses	14%	232
Firefighters	19%	318
Policemen	40%	665
Marital Status		
Married	68%	1,133
Widowed	0%	7
Divorced	7%	121
Separated	2%	33
Never Married	23%	383
Place of Birth		
Massachusetts	74%	1,248
Not Massachusetts	26%	429
Residence		
Massachusetts	170%	2,843
New Hampshire	4%	68
Rhode Island	2%	28
Mobility		
Living in same house in Massachusetts 5 years ago	57%	957
Not living in same house as 5 years ago	43%	720
Travel Time		
Median	20	
Mean	26.8	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	50,000	
Income Total (median)	50,000	

MASSACHUSETTS: Key Workers		**Households**
Men		1,623
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	82,120	
Family Income (median)	76,000	
Tenure		
Own with Mortgage	70%	1,129
Own no Mortgage	8%	128
Rent	21%	346
Occupy without Pay	1%	20
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,460	
Owner no Mortgage	471	
Renter	797	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	16%	
Year Moved In		
1999 - 2000	14%	226
1995 - 1998	31%	501
1990 - 1994	17%	279
1980 - 1989	19%	309
1970 - 1979	12%	202
1969 or earlier	7%	106
Workers in Family (median)	3	
0	0%	1
1	13%	214
2	48%	783
3 or more	21%	336
Not in universe	18%	289
Presence and Age of Own Children Living in Household (median)		
Under 6 only	13%	210
6 to 17	24%	395
Under 6 and 6 to 17	8%	135
No children under 18	54%	883
Work Experience		
Married: Both working full-time	32%	512
Married: One full-time, one part-time	28%	457
Married: One full-time, one not working	10%	169
Single: Full-time	7%	118
Other	23%	367
Emplyment Status by Gender		
Married: Husband and wife working	58%	937
Married: Only husband working	13%	205
Married: Only wife working	1%	12
Not Married: Male working	6%	97
Not Married: Female working	2%	36
Other	21%	336
Building Size		
Single family home	72%	1,161
2 - 4 apartments	19%	316
5 - 19 apartments	5%	88
20 or more apartments	3%	54
Other	0%	4

Appendix H: Key Worker Women

MASSACHUSETTS: Key Workers		Persons
Women		2,939
		Observations
Age (median)	43	
18 - 25	8%	233
26 - 34	20%	595
35 - 44	26%	771
45 - 54	33%	962
55 - 64	13%	377
Other	0%	1
Occupation		
Teachers	37%	1,085
Nurses	60%	1,772
Firefighters	0%	5
Policemen	3%	77
Marital Status		
Married	52%	1,525
Widowed	2%	57
Divorced	14%	415
Separated	3%	92
Never Married	29%	850
Place of Birth		
Massachusetts	62%	1,830
Not Massachusetts	38%	1,109
Residence		
Massachusetts	97%	2,843
New Hampshire	2%	68
Rhode Island	1%	28
Mobility		
Living in same house in Massachusetts 5 years ago	59%	1,729
Not living in same house as 5 years ago	41%	1,210
Travel Time		
Median	20	
Mean	27.8	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	38,000	
Income Total (median)	40,000	

MASSACHUSETTS: Key Workers		**Households**
Women		2,791
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	77,800	
Family Income (median)	69,000	
Tenure		
Own with Mortgage	61%	1,701
Own no Mortgage	9%	264
Rent	29%	815
Occupy without Pay	0%	11
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,437	
Owner no Mortgage	475	
Renter	827	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Renter	19%	
Year Moved In		
1999 - 2000	15%	426
1995 - 1998	28%	780
1990 - 1994	16%	453
1980 - 1989	20%	552
1970 - 1979	14%	398
1969 or earlier	7%	182
Workers in Family (median)	3	
0	0%	1
1	14%	390
2	43%	1,197
3 or more	21%	590
Not in universe	22%	613
Presence and Age of Own Children Living in Household (median)		
Under 6 only	5%	151
6 to 17	27%	742
Under 6 and 6 to 17	4%	119
No children under 18	64%	1,779
Work Experience		
Married: Both working full-time	40%	1,129
Married: One full-time, one part-time	9%	243
Married: One full-time, one not working	5%	141
Single: Full-time	19%	535
Other	27%	743
Emplyment Status by Gender		
Married: Husband and wife working	48%	1,340
Married: Only husband working	1%	34
Married: Only wife working	6%	160
Not Married: Male working	2%	47
Not Married: Female working	18%	510
Other	25%	700
Building Size		
Single family home	64%	1,774
2 - 4 apartments	23%	638
5 - 19 apartments	8%	220
20 or more apartments	5%	146
Other	0%	13

Appendix I: Key Worker as Primary Wage Earner

MASSACHUSETTS: Key Workers		Persons
Primary wage earner		2,514
		Observations
Gender		
Male	45%	1,128
Female	55%	1,386
Age (median)	43	
18 - 25	3%	86
26 - 34	21%	522
35 - 44	32%	803
45 - 54	32%	796
55 - 64	12%	307
Other	0%	0
Occupation		
Teachers	26%	660
Nurses	43%	1,072
Firefighters	9%	230
Policemen	22%	552
Marital Status		
Married	51%	1,283
Widowed	2%	47
Divorced	16%	405
Separated	4%	104
Never Married	27%	675
Place of Birth		
Massachusetts	68%	1,709
Not Massachusetts	32%	805
Residence		
Massachusetts	97%	2,441
New Hampshire	2%	48
Rhode Island	1%	25
Mobility		
Living in same house in Massachusetts 5 years ago	57%	1,427
Not living in same house as 5 years ago	43%	1,087
Travel Time		
Median	20	
Mean	28.1	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	50,000	
Income Total (median)	50,000	

MASSACHUSETTS: Key Workers		**Households**
Primary wage earner		2,474
		Observations
Persons in Household (median)	2	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	65,000	
Family Income (median)	55,610	
Tenure		
Own with Mortgage	61%	1,497
Own no Mortgage	7%	185
Rent	31%	770
Occupy without Pay	1%	22
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,413	
Owner no Mortgage	450	
Renter	783	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	22%	
Owner no Mortgage	8%	
Renter	20%	
Year Moved In		
1999 - 2000	16%	399
1995 - 1998	30%	754
1990 - 1994	18%	443
1980 - 1989	19%	459
1970 - 1979	11%	275
1969 or earlier	6%	144
Workers in Family (median)	3	
0	0%	2
1	20%	491
2	42%	1,046
3 or more	9%	232
Not in universe	28%	703
Presence and Age of Own Children Living in Household (median)		
Under 6 only	9%	225
6 to 17	25%	616
Under 6 and 6 to 17	7%	177
No children under 18	59%	1,456
Work Experience		
Married: Both working full-time	22%	546
Married: One full-time, one part-time	19%	458
Married: One full-time, one not working	10%	236
Single: Full-time	18%	450
Other	32%	784
Emplyment Status by Gender		
Married: Husband and wife working	39%	965
Married: Only husband working	7%	181
Married: Only wife working	4%	104
Not Married: Male working	3%	76
Not Married: Female working	16%	390
Other	31%	758
Building Size		
Single family home	62%	1,534
2 - 4 apartments	22%	553
5 - 19 apartments	9%	223
20 or more apartments	6%	152
Other	0%	12

Appendix J: Key Worker Not as Primary Wage Earner

MASSACHUSETTS: Key Workers		**Persons**
Not the primary wage earner		2,102
		Observations
Gender		
Male	26%	549
Female	74%	1,553
Age (median)	42	
18 - 25	10%	218
26 - 34	25%	516
35 - 44	22%	464
45 - 54	32%	666
55 - 64	11%	237
Other	0%	1
Occupation		
Teachers	42%	887
Nurses	44%	932
Firefighters	4%	93
Policemen	9%	190
Marital Status		
Married	65%	1,375
Widowed	1%	17
Divorced	6%	131
Separated	1%	21
Never Married	27%	558
Place of Birth		
Massachusetts	65%	1,369
Not Massachusetts	35%	733
Residence		
Massachusetts	97%	2,034
New Hampshire	2%	50
Rhode Island	1%	18
Mobility		
Living in same house in Massachusetts 5 years ago	60%	1,259
Not living in same house as 5 years ago	40%	843
Travel Time		
Median	20	
Mean	26.6	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	35,000	
Income Total (median)	36,000	

MASSACHUSETTS: Key Workers	**Households**
Not the primary wage earner	1,940

		Observations
Persons in Household (median)	3	
Rooms (median)	5	
Bedrooms (median)	3	
Household Income (median)	103,910	
Family Income (median)	96,775	
Tenure		
Own with Mortgage	69%	1,336
Own no Mortgage	11%	207
Rent	20%	388
Occupy without Pay	0%	9
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,500	
Owner no Mortgage	403	
Renter	872	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	17%	
Owner no Mortgage	5%	
Renter	14%	
Year Moved In		
1999 - 2000	13%	250
1995 - 1998	27%	527
1990 - 1994	15%	288
1980 - 1989	21%	405
1970 - 1979	17%	327
1969 or earlier	7%	143
Workers in Family (median)	3	
0	0%	0
1	6%	109
2	48%	939
3 or more	36%	697
Not in universe	10%	195
Presence and Age of Own Children Living in Household (median)		
Under 6 only	7%	135
6 to 17	27%	523
Under 6 and 6 to 17	4%	74
No children under 18	62%	1,208
Work Experience		
Married: Both working full-time	57%	1,101
Married: One full-time, one part-time	12%	242
Married: One full-time, one not working	4%	74
Single: Full-time	10%	201
Other	17%	322
Emplyment Status by Gender		
Married: Husband and wife working	68%	1,319
Married: Only husband working	3%	57
Married: Only wife working	4%	68
Not Married: Male working	4%	68
Not Married: Female working	8%	154
Other	14%	274
Building Size		
Single family home	72%	1,405
2 - 4 apartments	21%	398
5 - 19 apartments	4%	85
20 or more apartments	2%	47
Other	0%	5

Appendix K: Key Worker Household: Married Both Working Full-Time

MASSACHUSETTS: Key Workers		**Persons**
Married: Husband & Wife Working Full-Time		1,768
		Observations
Gender		
Male	30%	535
Female	70%	1,233
Age (median)	44	
18 - 25	4%	70
26 - 34	20%	357
35 - 44	28%	494
45 - 54	38%	668
55 - 64	10%	179
Other	0%	0
Occupation		
Teachers	38%	669
Nurses	43%	769
Firefighters	7%	122
Policemen	12%	208
Marital Status		
Married	95%	1,688
Widowed	0%	0
Divorced	0%	4
Separated	0%	1
Never Married	4%	75
Place of Birth		
Massachusetts	66%	1,165
Not Massachusetts	34%	603
Residence		
Massachusetts	96%	1,701
New Hampshire	3%	50
Rhode Island	1%	17
Mobility		
Living in same house in Massachusetts 5 years ago	63%	1,119
Not living in same house as 5 years ago	37%	649
Travel Time		
Median	20	
Mean	26.8	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	43,000	
Income Total (median)	44,500	

MASSACHUSETTS: Key Workers		**Households**
Married: Husband & Wife Working Full-Time		1,641
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	102,000	
Family Income (median)	101,500	
Tenure		
Own with Mortgage	78%	1,284
Own no Mortgage	7%	116
Rent	14%	231
Occupy without Pay	1%	10
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,525	
Owner no Mortgage	467	
Renter	824	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	18%	
Owner no Mortgage	5%	
Renter	13%	
Year Moved In		
1999 - 2000	11%	188
1995 - 1998	28%	463
1990 - 1994	16%	263
1980 - 1989	24%	392
1970 - 1979	16%	264
1969 or earlier	4%	71
Workers in Family (median)	3	
0	0%	0
1	0%	0
2	69%	1,130
3 or more	32%	518
Not in universe	0%	0
Presence and Age of Own Children Living in Household (median)		
Under 6 only	9%	150
6 to 17	33%	549
Under 6 and 6 to 17	6%	92
No children under 18	52%	850
Work Experience		
Married: Both working full-time	100%	1,641
Married: One full-time, one part-time	0%	0
Married: One full-time, one not working	0%	0
Single: Full-time	0%	0
Other	0%	0
Emplyment Status by Gender		
Married: Husband and wife working	98%	1,602
Married: Only husband working	1%	16
Married: Only wife working	1%	23
Not Married: Male working	0%	0
Not Married: Female working	0%	0
Other	0%	0
Building Size		
Single family home	80%	1,316
2 - 4 apartments	14%	232
5 - 19 apartments	3%	50
20 or more apartments	2%	39
Other	0%	4

Appendix L: All Worker and Key Worker Area Median Income Analysis

MASSACHUSETTS: Key and All Workers		
1999 AMI for Boston PMSA		$62,700
		Household Level
% of AMI		
	30%	18,810
	50%	31,350
	80%	50,160
	120%	75,240
	OBSERVATIONS	% of Total
TOTAL- All Workers	50,415	
Less than 30%	856	2%
30% - 50%	3,488	7%
50% - 80%	8,788	17%
80% - 120%	12,691	25%
Greater than 120%	24,592	49%
	OBSERVATIONS	% of Total
TOTAL- Key Workers	4,414	
Less than 30%	53	1%
30% - 50%	198	4%
50% - 80%	638	14%
80% - 120%	1,143	26%
Greater than 120%	2,382	54%

% of AMI		**Person Level**
	30%	18,810
	50%	31,350
	80%	50,160
	120%	75,240
	OBSERVATIONS	% of Total
TOTAL- All Workers	66,925	
Less than 30%	5,593	11%
30% - 50%	15,823	31%
50% - 80%	22,416	44%
80% - 120%	12,740	25%
Greater than 120%	10,353	21%
	OBSERVATIONS	% of Total
TOTAL- Key Workers	4,616	
Less than 30%	331	7%
30% - 50%	970	22%
50% - 80%	1,853	42%
80% - 120%	1,210	27%
Greater than 120%	252	6%

Appendix M: Key Worker Owners

MASSACHUSETTS: Key Workers		Persons
Owners		3,379
		Observations
Gender		
Male	38%	1,295
Female	62%	2,084
Age (median)	45	
18 - 25	4%	151
26 - 34	18%	592
35 - 44	28%	933
45 - 54	37%	1,238
55 - 64	14%	464
Other	0%	1
Occupation		
Teachers	33%	1,130
Nurses	41%	1,385
Firefighters	8%	275
Policemen	17%	589
Marital Status		
Married	67%	2,264
Widowed	1%	43
Divorced	10%	330
Separated	2%	67
Never Married	20%	675
Place of Birth		
Massachusetts	72%	2,425
Not Massachusetts	28%	954
Residence		
Massachusetts	96%	3,254
New Hampshire	3%	89
Rhode Island	1%	36
Mobility		
Living in same house in Massachusetts 5 years ago	67%	2,262
Not living in same house as 5 years ago	33%	1,117
Travel Time		
Median	20	
Mean	27.6	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	47,000	
Income Total (median)	48,000	

MASSACHUSETTS: Key Workers		**Households**
Owners		3,222
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	88,450	
Family Income (median)	84,000	
Tenure		
Owner with Mortgage	88%	2,830
Owner no Mortgage	12%	392
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,450	
Owner no Mortgage	474	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	20%	
Owner no Mortgage	7%	
Year Moved In		
1999 - 2000	10%	308
1995 - 1998	23%	757
1990 - 1994	17%	547
1980 - 1989	24%	768
1970 - 1979	18%	571
1969 or earlier	8%	271
Workers in Family (median)	3	
0	0%	1
1	12%	398
2	50%	1,602
3 or more	25%	813
Not in universe	13%	408
Presence and Age of Own Children Living in Household (median)		
Under 6 only	8%	251
6 to 17	28%	918
Under 6 and 6 to 17	6%	194
No children under 18	58%	1,859
Work Experience		
Married: Both working full-time	43%	1,400
Married: One full-time, one part-time	19%	603
Married: One full-time, one not working	8%	267
Single: Full-time	12%	382
Other	18%	570
Emplyment Status by Gender		
Married: Husband and wife working	61%	1,956
Married: Only husband working	6%	204
Married: Only wife working	4%	143
Not Married: Male working	3%	93
Not Married: Female working	10%	308
Other	16%	518
Building Size		
Single family home	85%	2,733
2 - 4 apartments	11%	362
5 - 19 apartments	2%	67
20 or more apartments	1%	46
Other	0%	14

Appendix N: Key Worker Renters

MASSACHUSETTS: Key Workers		Persons
Renters		1,209
		Observations
Gender		
Male	30%	364
Female	70%	845
Age (median)	35	
18 - 25	12%	151
26 - 34	36%	439
35 - 44	27%	329
45 - 54	18%	215
55 - 64	6%	75
Other	0%	0
Occupation		
Teachers	33%	404
Nurses	50%	610
Firefighters	4%	46
Policemen	12%	149
Marital Status		
Married	31%	376
Widowed	2%	21
Divorced	16%	199
Separated	5%	58
Never Married	46%	555
Place of Birth		
Massachusetts	53%	641
Not Massachusetts	47%	568
Residence		
Massachusetts	99%	1,191
New Hampshire	1%	10
Rhode Island	1%	8
Mobility		
Living in same house in Massachusetts 5 years ago	34%	413
Not living in same house as 5 years ago	66%	796
Travel Time		
Median	22	
Mean	27.2	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	33,300	
Income Total (median)	34,400	

MASSACHUSETTS: Key Workers		**Households**
Renters		1,161
		Observations
Persons in Household (median)	2	
Rooms (median)	4	
Bedrooms (median)	2	
Household Income (median)	55,000	
Family Income (median)	26,500	
Monthly Housing Costs by Tenure - gross (median)		
Renter	817	
Monthly Housing Costs by Tenure - as a % of income (median)		
Renter	18%	
Year Moved In		
1999 - 2000	29%	338
1995 - 1998	44%	512
1990 - 1994	15%	179
1980 - 1989	8%	89
1970 - 1979	2%	28
1969 or earlier	1%	15
Workers in Family (median)	2	
0	0%	1
1	17%	202
2	31%	364
3 or more	9%	108
Not in universe	42%	486
Presence and Age of Own Children Living in Household (median)		
Under 6 only	9%	109
6 to 17	18%	210
Under 6 and 6 to 17	5%	59
No children under 18	67%	783
Work Experience		
Married: Both working full-time	20%	231
Married: One full-time, one part-time	8%	89
Married: One full-time, one not working	4%	41
Single: Full-time	23%	268
Other	46%	532
Emplyment Status by Gender		
Married: Husband and wife working	26%	306
Married: Only husband working	3%	30
Married: Only wife working	2%	29
Not Married: Male working	4%	51
Not Married: Female working	20%	235
Other	44%	510
Building Size		
Single family home	16%	180
2 - 4 apartments	50%	584
5 - 19 apartments	21%	240
20 or more apartments	13%	154
Other	0%	3

Appendix O: Key Worker Households with Two Key Workers

MASSACHUSETTS: Key Workers		**Persons**
Multiple Key Workers in the Same Household		399
		Observations
Gender		
Male	42%	169
Female	58%	230
Age (median)	40	
18 - 25	11%	42
26 - 34	27%	107
35 - 44	21%	84
45 - 54	28%	113
55 - 64	13%	53
Other	0%	0
Occupation		
Teachers	40%	159
Nurses	38%	152
Firefighters	7%	28
Policemen	15%	60
Marital Status		
Married	58%	230
Widowed	2%	6
Divorced	7%	29
Separated	1%	3
Never Married	33%	131
Place of Birth		
Massachusetts	61%	245
Not Massachusetts	39%	154
Residence		
Massachusetts	298%	1,191
New Hampshire	3%	10
Rhode Island	2%	8
Mobility		
Living in same house in Massachusetts 5 years ago	54%	217
Not living in same house as 5 years ago	46%	182
Travel Time		
Median	20	
Mean	25.5	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	41,000	
Income Total (median)	42,000	

MASSACHUSETTS: Key Workers		**Households**
Multiple Key Workers in the Same Household		200
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	102,500	
Family Income (median)	94,770	
Tenure		
Own with Mortgage	66%	132
Own no Mortgage	8%	16
Rent	26%	51
Occupy without Pay	1%	1
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,366	
Owner no Mortgage	535	
Renter	860	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	16%	
Owner no Mortgage	6%	
Renter	14%	
Year Moved In		
1999 - 2000	15%	30
1995 - 1998	30%	59
1990 - 1994	9%	18
1980 - 1989	17%	34
1970 - 1979	21%	42
1969 or earlier	9%	17
Workers in Family (median)	3	
0	0%	0
1	3%	6
2	40%	80
3 or more	37%	74
Not in universe	20%	40
Presence and Age of Own Children Living in Household (median)		
Under 6 only	7%	14
6 to 17	21%	41
Under 6 and 6 to 17	5%	9
No children under 18	68%	136
Work Experience		
Married: Both working full-time	59%	117
Married: One full-time, one part-time	4%	8
Married: One full-time, one not working	3%	6
Single: Full-time	12%	24
Other	23%	45
Emplyment Status by Gender		
Married: Husband and wife working	63%	126
Married: Only husband working	1%	2
Married: Only wife working	2%	3
Not Married: Male working	4%	8
Not Married: Female working	9%	17
Other	22%	44
Building Size		
Single family home	71%	141
2 - 4 apartments	22%	43
5 - 19 apartments	6%	12
20 or more apartments	2%	3
Other	1%	1

Appendix P: Key Workers Ages 18 - 25

MASSACHUSETTS: Key Workers		**Persons**
Ages 18 - 25		304
		Observations
Gender		
Male	23%	71
Female	77%	233
Age (median)	24	
18 - 25	100%	304
26 - 34	0%	0
35 - 44	0%	0
45 - 54	0%	0
55 - 64	0%	0
Other	0%	0
Occupation		
Teachers	46%	140
Nurses	41%	126
Firefighters	2%	5
Policemen	11%	33
Marital Status		
Married	14%	43
Widowed	0%	0
Divorced	1%	3
Separated	1%	2
Never Married	84%	256
Place of Birth		
Massachusetts	70%	212
Not Massachusetts	30%	92
Residence		
Massachusetts	97%	295
New Hampshire	2%	5
Rhode Island	1%	4
Mobility		
Living in same house in Massachusetts 5 years ago	41%	124
Not living in same house as 5 years ago	59%	180
Travel Time		
Median	20	
Mean	27.6	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	23,350	
Income Total (median)	24,000	

MASSACHUSETTS: Key Workers		**Households**
Ages 18 - 25		272
		Observations
Persons in Household (median)	3	
Rooms (median)	5	
Bedrooms (median)	3	
Household Income (median)	68,150	
Family Income (median)	49,450	
Tenure		
Owner with Mortgage	40%	108
Owner no Mortgage	8%	21
Rent	52%	141
Occupy without Pay	1%	2
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,301	
Owner no Mortgage	439	
Renter	905	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	16%	
Owner no Mortgage	7%	
Renter	22%	
Year Moved In		
1999 - 2000	38%	104
1995 - 1998	23%	62
1990 - 1994	7%	19
1980 - 1989	10%	27
1970 - 1979	21%	56
1969 or earlier	1%	4
Workers in Family (median)	3	
0	0%	0
1	8%	22
2	23%	62
3 or more	35%	96
Not in universe	34%	92
Presence and Age of Own Children Living in Household (median)		
Under 6 only	9%	25
6 to 17	11%	30
Under 6 and 6 to 17	3%	9
No children under 18	76%	208
Work Experience		
Married: Both working full-time	21%	57
Married: One full-time, one part-time	15%	40
Married: One full-time, one not working	6%	16
Single: Full-time	16%	43
Other	43%	116
Emplyment Status by Gender		
Married: Husband and wife working	35%	96
Married: Only husband working	6%	16
Married: Only wife working	3%	9
Not Married: Male working	5%	13
Not Married: Female working	14%	39
Other	36%	99
Building Size		
Single family home	47%	127
2 - 4 apartments	33%	89
5 - 19 apartments	12%	33
20 or more apartments	8%	21
Other	1%	2

Appendix Q: Key Workers Ages 26 - 34

MASSACHUSETTS: Key Workers		**Persons**
Ages 26 - 34		1,038
		Observations
Age (median)	30	
18 - 25	0%	0
26 - 34	100%	1,038
35 - 44	0%	0
45 - 54	0%	0
55 - 64	0%	0
Other	0%	0
Occupation		
Teachers	33%	346
Nurses	37%	382
Firefighters	6%	66
Policemen	24%	244
Marital Status		
Married	49%	509
Widowed	0%	-
Divorced	5%	57
Separated	2%	21
Never Married	43%	451
Place of Birth		
Massachusetts	68%	711
Not Massachusetts	32%	327
Residence		
Massachusetts	98%	1,019
New Hampshire	1%	10
Rhode Island	1%	9
Mobility		
Living in same house in Massachusetts 5 years ago	31%	321
Not living in same house as 5 years ago	69%	717
Travel Time		
Median	25	
Mean	26.9	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	36,450	
Income Total (median)	37,000	

MASSACHUSETTS: Key Workers		**Households**
Ages 26 - 34		975
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	75,000	
Family Income (median)	62,200	
Tenure		
Own with Mortgage	52%	503
Own no Mortgage	5%	53
Rent	42%	410
Occupy without Pay	1%	9
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,446	
Owner no Mortgage	490	
Renter	823	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	21%	
Owner no Mortgage	6%	
Renter	17%	
Year Moved In		
1999 - 2000	27%	259
1995 - 1998	46%	446
1990 - 1994	12%	120
1980 - 1989	5%	45
1970 - 1979	6%	56
1969 or earlier	5%	49
Workers in Family (median)	3	
0	0%	0
1	14%	136
2	49%	481
3 or more	11%	104
Not in universe	26%	254
Presence and Age of Own Children Living in Household (median)		
Under 6 only	19%	187
6 to 17	11%	107
Under 6 and 6 to 17	7%	71
No children under 18	63%	610
Work Experience		
Married: Both working full-time	33%	326
Married: One full-time, one part-time	15%	149
Married: One full-time, one not working	6%	61
Single: Full-time	12%	121
Other	33%	318
Emplyment Status by Gender		
Married: Husband and wife working	47%	457
Married: Only husband working	7%	73
Married: Only wife working	2%	23
Not Married: Male working	4%	38
Not Married: Female working	10%	94
Other	30%	290
Building Size		
Single family home	55%	534
2 - 4 apartments	30%	291
5 - 19 apartments	10%	95
20 or more apartments	5%	51

Appendix R: Key Workers Ages 35 - 44

MASSACHUSETTS: Key Workers		**Persons**
Ages 35 - 44		1,267
		Observations
Gender		
Male	39%	496
Female	61%	771
Age (median)	40	
18 - 25	0%	0
26 - 34	0%	0
35 - 44	100%	1267
45 - 54	0%	0
55 - 64	0%	0
Other	0%	0
Occupation		
Teachers	23%	294
Nurses	47%	598
Firefighters	9%	109
Policemen	21%	266
Marital Status		
Married	61%	771
Widowed	0%	6
Divorced	14%	180
Separated	3%	33
Never Married	22%	277
Place of Birth		
Massachusetts	65%	818
Not Massachusetts	35%	449
Residence		
Massachusetts	97%	1,223
New Hampshire	3%	33
Rhode Island	1%	11
Mobility		
Living in same house in Massachusetts 5 years ago	56%	715
Not living in same house as 5 years ago	44%	552
Travel Time		
Median	20	
Mean	28.6	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	44,800	
Income Total (median)	46,000	

MASSACHUSETTS: Key Workers		**Households**
Ages 35 - 44		1,225
		Observations
Persons in Household (median)	3	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	75,000	
Family Income (median)	68,100	
Tenure		
Owner with Mortgage	68%	833
Owner no Mortgage	5%	63
Rent	26%	323
Occupy without Pay	0%	6
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,467	
Owner no Mortgage	435	
Renter	796	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	21%	
Owner no Mortgage	6%	
Renter	18%	
Year Moved In		
1999 - 2000	13%	155
1995 - 1998	35%	429
1990 - 1994	24%	293
1980 - 1989	20%	239
1970 - 1979	4%	50
1969 or earlier	5%	59
Workers in Family (median)	3	
0	0%	0
1	19%	233
2	50%	611
3 or more	15%	181
Not in universe	16%	200
Presence and Age of Own Children Living in Household (median)		
Under 6 only	11%	135
6 to 17	39%	476
Under 6 and 6 to 17	12%	148
No children under 18	38%	466
Work Experience		
Married: Both working full-time	38%	461
Married: One full-time, one part-time	16%	200
Married: One full-time, one not working	6%	68
Single: Full-time	19%	230
Other	22%	266
Emplyment Status by Gender		
Married: Husband and wife working	53%	651
Married: Only husband working	5%	58
Married: Only wife working	2%	28
Not Married: Male working	4%	48
Not Married: Female working	16%	192
Other	20%	248
Building Size		
Single family home	66%	811
2 - 4 apartments	22%	267
5 - 19 apartments	7%	80
20 or more apartments	5%	65
Other	0%	2

Appendix S: Key Workers Ages 45 -54

MASSACHUSETTS: Key Workers		**Persons**
Ages 45 - 54		1,462
		Observations
Gender		
Male	34%	500
Female	66%	962
Age (median)	49	
18 - 25	0%	0
26 - 34	0%	0
35 - 44	0%	0
45 - 54	100%	1,462
55 - 64	0%	0
Other	0%	0
Occupation		
Teachers	38%	556
Nurses	44%	638
Firefighters	8%	118
Policemen	10%	150
Marital Status		
Married	68%	991
Widowed	2%	26
Divorced	13%	187
Separated	4%	59
Never Married	14%	199
Place of Birth		
Massachusetts	68%	993
Not Massachusetts	32%	469
Residence		
Massachusetts	96%	1,406
New Hampshire	3%	42
Rhode Island	1%	14
Mobility		
Living in same house in Massachusetts 5 years ago	75%	1,094
Not living in same house as 5 years ago	25%	368
Travel Time		
Median	20	
Mean	27.7	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	49,550	
Income Total (median)	50,000	

MASSACHUSETTS: Key Workers		**Households**
Ages 45 - 54		1,414
		Observations
Persons in Household (median)	3	
Rooms (median)	7	
Bedrooms (median)	3	
Household Income (median)	90,000	
Family Income (median)	86,015	
Tenure		
Owner with Mortgage	75%	1,060
Owner no Mortgage	9%	133
Rent	15%	212
Occupy without Pay	1%	9
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,467	
Owner no Mortgage	458	
Renter	825	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	19%	
Owner no Mortgage	7%	
Renter	18%	
Year Moved In		
1999 - 2000	7%	99
1995 - 1998	19%	269
1990 - 1994	17%	244
1980 - 1989	31%	438
1970 - 1979	20%	282
1969 or earlier	6%	82
Workers in Family (median)	3	
0	0%	0
1	10%	145
2	44%	616
3 or more	30%	424
Not in universe	16%	229
Presence and Age of Own Children Living in Household (median)		
Under 6 only	1%	10
6 to 17	35%	492
Under 6 and 6 to 17	2%	23
No children under 18	63%	889
Work Experience		
Married: Both working full-time	45%	631
Married: One full-time, one part-time	16%	230
Married: One full-time, one not working	6%	85
Single: Full-time	14%	197
Other	19%	271
Emplyment Status by Gender		
Married: Husband and wife working	60%	844
Married: Only husband working	4%	59
Married: Only wife working	3%	46
Not Married: Male working	2%	34
Not Married: Female working	12%	167
Other	19%	264
Building Size		
Single family home	76%	1,074
2 - 4 apartments	15%	219
5 - 19 apartments	5%	77
20 or more apartments	3%	39
Other	0%	5

Appendix T: Key Workers Ages 55 - 64

MASSACHUSETTS: Key Workers		**Persons**
Ages 55 - 64		544
		Observations
Gender		
Male	31%	167
Female	69%	377
Age (median)	58	
18 - 25	0%	0
26 - 34	0%	0
35 - 44	0%	0
45 - 54	100%	544
55 - 64	0%	0
Other	0%	0
Occupation		
Teachers	39%	211
Nurses	48%	259
Firefighters	5%	25
Policemen	9%	49
Marital Status		
Married	63%	344
Widowed	6%	32
Divorced	20%	109
Separated	2%	10
Never Married	9%	49
Place of Birth		
Massachusetts	63%	343
Not Massachusetts	37%	201
Residence		
Massachusetts	98%	531
New Hampshire	1%	8
Rhode Island	1%	5
Mobility		
Living in same house in Massachusetts 5 years ago	79%	431
Not living in same house as 5 years ago	21%	113
Travel Time		
Median	20	
Mean	24.9	
Weeks Worked (median)	52	
Hours Worked (median)	40	
Income from Wages (median)	49,000	
Income Total (median)	50,000	

MASSACHUSETTS: Key Workers	**Households**
Ages 55 - 64	527

		Observations
Persons in Household (median)	2	
Rooms (median)	6	
Bedrooms (median)	3	
Household Income (median)	83,700	
Family Income (median)	74,250	
Tenure		
Owner with Mortgage	62%	325
Owner no Mortgage	23%	122
Rent	14%	75
Occupy without Pay	1%	5
Monthly Housing Costs by Tenure - gross (median)		
Owner with Mortgage	1,341	
Owner no Mortgage	496	
Renter	750	
Monthly Housing Costs by Tenure - as a % of income (median)		
Owner with Mortgage	18%	
Owner no Mortgage	7%	
Renter	20%	
Year Moved In		
1999 - 2000	7%	35
1995 - 1998	14%	75
1990 - 1994	11%	56
1980 - 1989	21%	111
1970 - 1979	30%	156
1969 or earlier	18%	94
Workers in Family (median)	3	
0	0%	2
1	13%	68
2	40%	209
3 or more	23%	121
Not in universe	24%	127
Presence and Age of Own Children Living in Household (median)		
Under 6 only	1%	4
6 to 17	6%	31
Under 6 and 6 to 17	1%	3
No children under 18	93%	489
Work Experience		
Married: Both working full-time	31%	166
Married: One full-time, one part-time	15%	81
Married: One full-time, one not working	15%	80
Single: Full-time	12%	61
Other	26%	139
Emplyment Status by Gender		
Married: Husband and wife working	43%	229
Married: Only husband working	6%	33
Married: Only wife working	13%	66
Not Married: Male working	2%	11
Not Married: Female working	10%	53
Other	26%	135
Building Size		
Single family home	74%	388
2 - 4 apartments	17%	88
5 - 19 apartments	4%	23
20 or more apartments	5%	24
Other	1%	4

Appendix U: List of Towns and the Corresponding PUMAs

List of Towns and the Corresponding PUMAs					
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

Appendix V: 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		

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