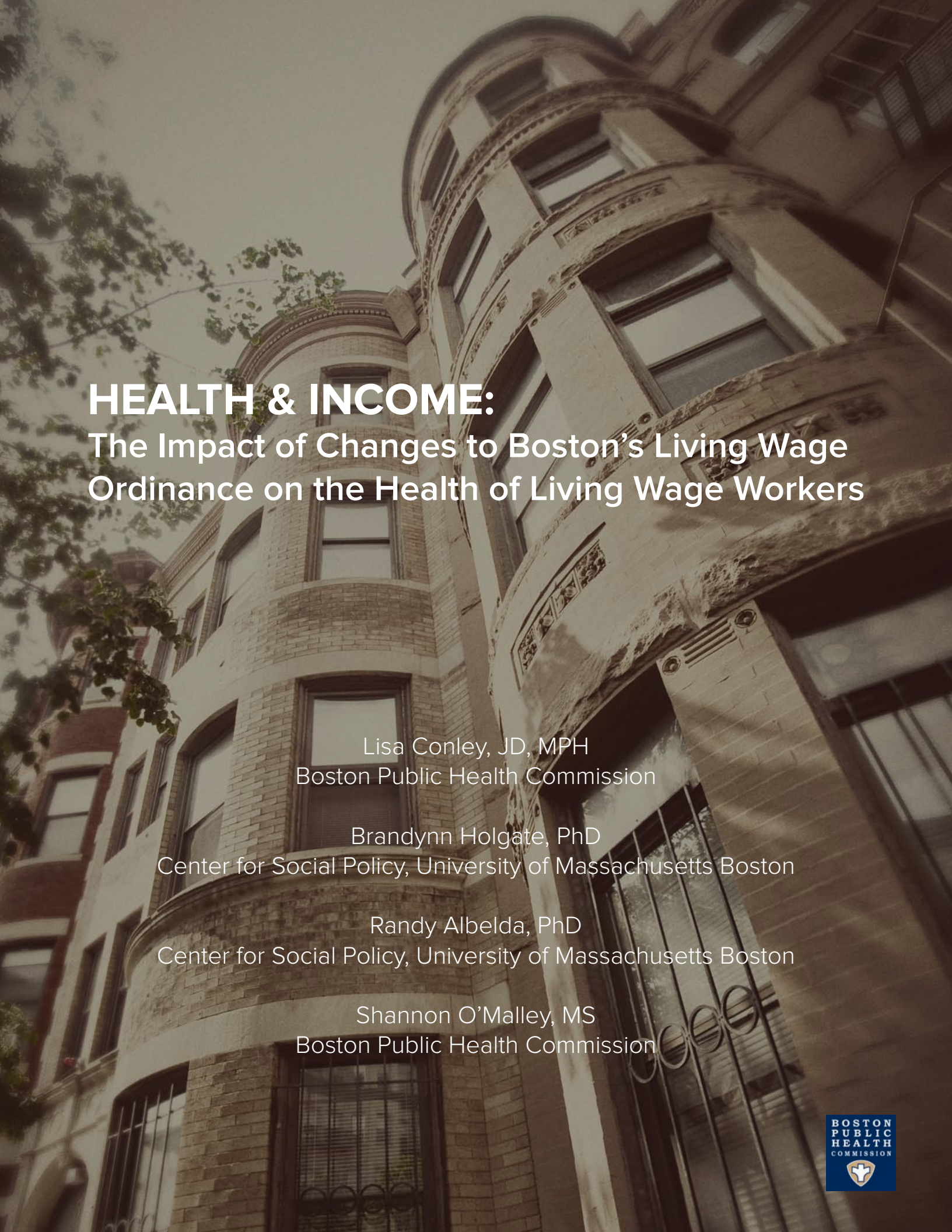


HEALTH & INCOME:
The Impact of Changes to Boston's Living Wage Ordinance on the Health of Living Wage Workers

Lisa Conley, JD, MPH
Boston Public Health Commission

Brandynn Holgate, PhD
Center for Social Policy, University of Massachusetts Boston

Randy Albelda, PhD
Center for Social Policy, University of Massachusetts Boston

Shannon O'Malley, MS
Boston Public Health Commission

BOSTON PUBLIC HEALTH COMMISSION

ACKNOWLEDGEMENTS AND DISCLAIMER

This project is supported by a grant from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, with funding from the de Beaumont Foundation. The views expressed are those of the authors and do not necessarily reflect the views of The Pew Charitable Trusts, the Robert Wood Johnson Foundation, or the de Beaumont Foundation. The report also does not reflect the views of the agencies that may have participated in the HIA process, including reviewing drafts of the report and/or providing data for the analyses in the report. The authors are solely responsible for the accuracy of the statements and interpretations in this publication. The authors have no involvements or conflicts of interest that might raise questions of bias in the study results reported.

Authors and Contributors:

Lisa Conley, Director, Office of Intergovernmental Relations & Policy Development, Boston Public Health Commission
Shannon O'Malley, Research Associate, Boston Public Health Commission
Maria Rios, Policy Analyst, Boston Public Health Commission
Makaila Manukyan, Program Coordinator, Boston Public Health Commission
Megan McClaire, Former Chief of Staff, Boston Public Health Commission
Aliza Wasserman, Former Policy Analyst, Boston Public Health Commission
Randy Albelda, PhD, Professor of Economics and Senior Research Fellow, Center for Social Policy, University of Massachusetts Boston
Brandynn Holgate, PhD, Center for Social Policy, University of Massachusetts Boston
Michael Carr, PhD. Associate Professor of Economics, University of Massachusetts Boston
Michael McCormack, Graduate Research Assistant, University of Massachusetts Boston
Scott Simon, Undergraduate Intern, University of Massachusetts Boston
Kim Gilhuly, Human Impact Partners, Project Consultant
Katie Belgard, Political Organizer, 1199 SEIU Boston

The authors wish to acknowledge and thank the following individuals for serving on the Advisory Board for this HIA project:

Randy Albelda, PhD, Professor of Economics and Senior Research Fellow, Center for Social Policy, University of Massachusetts – Boston
Katie Belgard, Political Organizer, 1199 SEIU Boston
Lisa Clauson, Former Organizer, UNITE HERE Local 26
Alvaro Lima, Director of Research, Boston Redevelopment Authority
Darlene Lombos, Executive Director, Community Labor United
Lydia Lowe, Executive Director, Chinese Progressive Association
Huy Nguyen, MD, Medical Director, Boston Public Health Commission
Trinh Nguyen, Director, Office of Workforce Development, City of Boston
Susan Moir, Director, Labor Resource Center, University of Massachusetts Boston
Mirna Montaño, Organizer, Worker Center, Massachusetts Coalition for Occupational Safety and Health
Steven Snyder, Vice President of Marketing & Development, East Boston Neighborhood Health Center
Brooke Thomson, Vice President of External Affairs, AT&T New England

Special thanks also to current and former staff of Boston's Office of Workforce Development, including Peggy Hinds-Watson, Justin Polk, Constance Martin and Mimi Turchenitz for helping us to understand the complexities of the work they do and for sharing their compliance data with us. We also owe a debt of gratitude to Joyce Linehan for suggesting this topic.

Finally, the authors are deeply indebted to the many low-wage workers who joined us as active participants in focus groups and community meetings to share their stories of the challenges they face trying to stay healthy while working in low-wage jobs. Our only hope is that this report sheds some light on the struggles they face every day just trying to meet their basic needs.

TABLE OF CONTENTS

A LETTER FROM THE MAYOR

My Fellow Bostonians,

Boston is thriving: our economy is adding jobs, we have a record number of construction starts and we are attracting new businesses to the city. But we know that the city's economic success is not shared equally. Unemployment rates among people of color are high, a quarter of our city's children grow up in poverty and the average rent in Boston is increasingly unaffordable for many of our residents.

As an elected official and a union leader, I have dedicated my career to leveling the playing field for working people. This continues to be a guiding principle for me as Mayor of the City of Boston.

When I took office in 2014, I made it a top priority to examine all of the ways in which City government could leverage its authority to improve opportunities for poor and working people. I am proud to say that in just two years, we have made significant progress toward this goal by changing policy and practice to benefit the working people of Boston. I signed an executive order to prevent wage theft in Boston, passed a paid family leave ordinance for city employees and enhanced training opportunities for individuals who are reentering the workforce after incarceration. We have worked to close the gender pay gap and committed tens of millions of dollars to increasing the availability of affordable housing in Boston.

While I am proud of the work we have done, still more lies ahead. I am pleased to be able to present the findings of this report, which helps us understand how we can improve the city's Living Wage Ordinance. In addition to identifying opportunities to increase prosperity among low wage workers, it also makes important connections between the economic well-being and health of our residents. It shows that when we make commitments to improving economic opportunities for the city's most vulnerable residents, we are also taking steps to improve the health of families.

I encourage you to explore the report and to think of other ways that we might improve our residents' health by enhancing economic well-being.

Sincerely,

Martin J. Walsh
Mayor
City of Boston

A LETTER FROM THE EXECUTIVE DIRECTOR

In the field of public health, we have long understood that health outcomes are affected by many factors unrelated to health care access and quality. While clinical health care services are important, access to quality education, housing and transportation play as critical a role in our ability to maintain healthy communities. Boston has world-renowned hospitals, award-winning doctors and a rich network of community health centers. Despite these tremendous health assets, we still face longstanding inequities between the health enjoyed by many White residents and those of Black and Latino residents in the city.

Boston is facing unprecedented levels of economic inequality and this inequality is affecting the health of our children, families and communities. Almost a third of children in Boston live in poverty, but this burden is not evenly distributed. While predominantly White neighborhoods have low rates of child poverty, neighborhoods of color, such as Roxbury and North Dorchester, have poverty rates well above the city average. As described in detail in this Health Impact Assessment, low-income families struggle to find resources to pay for basic necessities, including quality housing, healthy foods and medicines.

In keeping with Mayor Walsh's Economic Inclusion and Equity Agenda, we must look for opportunities to increase access to good paying jobs for all Boston residents. It is my hope that this Health Impact Assessment contributes to this goal and that it sheds light on the many challenges that low-wage workers face as they try to maintain their health in today's economy.

Monica Valdes Lupi, JD, MPH
Executive Director
Boston Public Health Commission

EXECUTIVE SUMMARY

By many measures, the City of Boston is a great place to live and ranks at or near the top of many "best of" cities lists. The Hub is among the most walkable cities in the US,[1] holds title to the best-tasting tap water,[2] and tops the list of cities with the best access to healthcare. Boston is one of the best cities for love according to Zillow,[3] the third best city for people who enjoy sports[4] and the best place in the country to go to college.[5] At the same time, Boston also ranks in the top 10 of cities that are least affordable in terms of housing and number one on the list of the most unequal cities in the nation[6]. The qualities that make Boston a desirable place to live are also contributing to a population surge that is driving up the cost of living in the city. Indeed, between 2010 and 2014, the Greater Boston area, which includes both the city of Boston and cities and towns just outside of Boston, added 67,000 new households but only 15,000 housing units.[7] The average rent in Boston is now over $2,000 per month, putting it just behind New York, San Francisco and the Silicon Valley as among the nation's most expensive places to rent an apartment.[8]

The steep rise in costs and stagnant real median income[9] means that Boston is quickly becoming a city of haves and have-nots. Economic inequality in Boston breaks down starkly along racial and ethnic lines and is borne out in a number of ways – through unequal access to employment opportunities, housing and transportation. Of the city's approximately 617,594 residents, 24.4% are Black and 18% are Latino.[10] Poverty rates for Boston's residents of color are higher than that of White residents. Black, Latino and Asian residents in Boston have poverty rates of 23%, 34.8% and 26.6%, respectively. [9] Unemployment among Black and Latino men is perennially higher when compared

with the rest of Boston; in 2014, the unemployment rate in Boston was as low as 8%, but the unemployment rate among Latino men was 1.5 times the city average and unemployment among Black men was 1.75 times the city average.[11] Boston's median family income is $63,058 per year, but Black families on average make only $43,902 and Latino families $32,372 per year.[12] In addition, Black and Latino residents in Boston make up 59% of the city's residents who are living at or below the poverty line.[13] And the trend is not getting better; household income inequality has grown in Boston over the past thirty years. According to analysis from the Boston Redevelopment Authority, the number of Boston households making over $150,000 has grown - from 3.1% in 1980 to 13% in 2013 - while middle class income has fallen.[9]

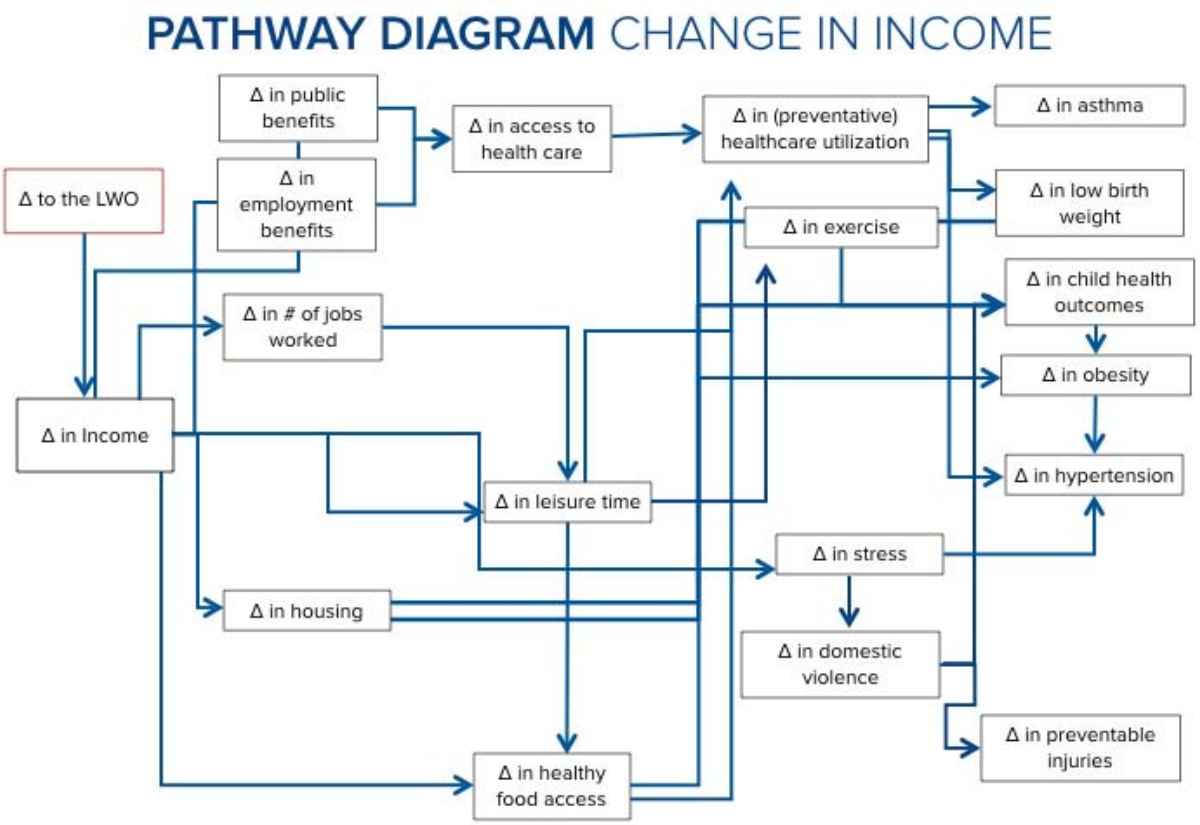
Mayor Martin J. Walsh, who took office in January 2014, has deep roots in the labor movement and a strong commitment to social equity. As the new administration assumed office, Mayor Walsh initiated a review of the city's labor practices, including settling long-overdue collective bargaining agreements with city unions, proposing a paid parental leave ordinance for exempt city workers, issuing an Executive Order to prevent wage theft and revitalizing and rebranding the city's Office of Jobs and Community Services, now the Office of Workforce Development. As part of this process, the Administration committed to a review of the effectiveness of the city's Living Wage Ordinance, which was enacted in 1997 and went into effect in 1998.

HEALTH IMPACT ASSESSMENT

This Health Impact Assessment (HIA) examines the impact of Boston's Living Wage Ordinance (LWO) on the health of those currently covered and asks what changes could be made to maximize improvements in health. Specifically, the analysis focuses on the health impacts that could be anticipated with an increase in the living wage from its current level of approximately $14 per hour to approximately $17 per hour. Due to data and resource limitations, we were unable to provide predictions of outcomes on other recommendations. However, we make additional policy recommendations in this HIA that are based on our extensive analysis of the published literature, existing data, stakeholder input, and the experience of living wage implementation in other cities.

An HIA is a systematic process that examines published research, data, stakeholder input and other sources of information to draw conclusions about how a proposed policy, program or plan will impact the health of populations with a focus on increasing equity and inserting health considerations into the decision-making process. HIAs follow six distinct steps: screening, scoping, assessment, recommendations, reporting and monitoring.

As depicted below, we examined the relationship between income and health with a focus on outcomes related to diet-related chronic disease, stress and access to quality housing.



BACKGROUND

Almost 20 years ago, labor advocates, community activists and faith leaders organized to pass Boston's LWO. Approved in 1997, Boston's ordinance was one of the first in the country, and in the ensuing years and decades over 140 other local governments followed the lead in adopting living wage policies. At least 20 percent of the total US population and 40 percent of residents in large cities live in an area covered by a local living wage policy.[14] Like other municipalities, the goal in Boston was to ensure that city resources were used in a way that would promote the financial well-being of workers who were employed under city contracts, particularly at a time when some good-paying city jobs were privatized and paid at a lower wage.

In the years that followed implementation of the LWO, the percentage of workers making less than the living wage in covered businesses in Boston fell from 25 percent to less than 5 percent, with no such changes seen in a non-covered comparison group of employers.[14] As importantly, covered businesses did not cut jobs or hours as a result of the LWO, and contracting costs actually decreased.[14] A 2005 study found that most living wage workers were adults who were well into their careers. A survey of these workers concluded that Boston workers experienced "small but concrete" improvements to their quality of life as a result of implementation of the LWO.[14] Despite this, it was "not enough to lift affected workers to a higher standard of living that better reflects the spirit and intent of the ordinance."[14]

The current state of the LWO is unchanged from the analysis in the mid-2000s: the ordinance continues to produce a modest improvement in the economic standing of covered low-wage workers. However, as the cost of living rises in Boston, the living wage as currently defined in the ordinance is not enough to afford basic necessities such as food, housing, transportation and childcare, and the gap between the living wage and a family-sustaining wage in Boston is growing. What's more is that the LWO as currently written applies to only about 1,900 individuals, of which only about 600 are low-wage, which limits its overall impact.

POLICY OPTIONS

Proposals Under Consideration

- Increase Living Wage to better approach or equal family-sustaining wage
- Expand scope of LWO to cover additional workers
- Improve enforcement of LWO and invest in enhanced data collection

KEY FINDINGS

- The Living Wage (LW), currently pegged at $14.11/hour, is insufficient to sustain a family in Boston. Based on 2013 data, each working adult in a two-parent family, working full-time would need to earn at least $16.96/hour each to afford basic needs of food, housing, transportation and childcare.
- The LWO covers only about 600 individuals at the bottom of the wage scale, which limits its impact on low wage workers. Of these individuals, we estimate that almost half are people of color.
- 21% of covered workers are Boston residents and 47% are women. 28% of covered workers workers have children, while 51% are married without children.
- Most workers on city contracts that are affected by the LWO are providing vital social and human services to vulnerable populations in the city, including homeless individuals, elders and children.
- Income is strongly linked to food access and diet-related chronic disease. An increase in the wage to equal a family-sustaining wage for low-wage covered workers would yield almost a 30% drop in hunger and food insecurity and a 43% drop in diabetes.
- Increases in income are also strongly associated with mental health outcomes. Increasing the wage for low-wage covered workers would result in a 62% drop in persistent sadness and a 30% decrease in anxiety. Hypertension would drop by 10%.

Health Outcome	Increase/Decrease in the Percent of Cases
Persistent Sadness	-61.9%
Persistent Anxiety	-29.8%
Consuming Fruit at least Once a Day	5.3%
Consuming Vegetables at least Once a Day	2.0%
Hypertension	-9.5%
Diabetes	-43.4%
Adult Asthma	-11.0%
Food Insecurity	-28.0%
Hunger	-28.0%

RECOMMENDATIONS

Almost twenty years into implementation, Boston's LWO has yet to live up to its full potential to improve the health and well-being of low-wage workers. We recommend that the city update the LWO in the following ways:

- Alter the way that the Living Wage is calculated to ensure that it is equal to a family sustaining wage in Boston. This would enable more individuals who are working in living wage firms to afford their families' basic needs, such as housing, transporta-

tion, childcare and food.

- Expand the LWO to cover entities and workers that are not currently covered. For example, the city should cover quasi-independent city agencies, businesses that hold large leases with the city, businesses that benefit from tax credits and those that receive city-subsidized financing. The city should also ensure that the LWO covers all city employees.
- Collect better data on employees who are covered by the LWO. This will enable the city, advocates and others to better understand who is currently working under the Living Wage and to tailor services to this population of vulnerable workers. It will also enable the city to document its successes.

SECTION I: INTRODUCTION

"Income inequality" is a phrase oft-heard on the lips of politicians, pundits and academics. It has become shorthand for the ever-expanding economic divide that separates the poorest people in society from the richest ones. It is a gap that is growing, leading President Obama in 2013 to declare it "the defining challenge of our time," and one that "poses a fundamental threat to the American Dream."[15] According to a study by the Pew Research Center, the United States ranks fourth among all nations in income inequality and first among developed nations.[16] In this context, it is not surprising that almost 7 in 10 Americans say that the income divide is growing and that they are dissatisfied with their income and their opportunities to get ahead.[17] The most recent analysis by the Brookings Institution pegged Boston as the most unequal city in the United States. Among cities in the US with a population of 500,000 residents or greater, Boston has the largest gap between rich and poor – higher than other well-off cities such as New York City and Washington, DC.

Arriving in office in January 2014, Mayor Martin J. Walsh has made addressing income inequality a signature issue of his administration. A son of Irish immigrant parents and longtime union laborer, Mayor Walsh rose through the ranks of the Laborers Local 223 and later became an administrator for the Building Trades Council. He was elected as a state representative from Dorchester for the 13th Suffolk District in 1997 and served in the House of Representatives until he became Mayor in 2014. During the mayoral transition, then-Mayor-Elect Walsh's Economic Development Transition Team recommended that the administration undertake "an examination of the current impact and enforcement of the Living Wage ordinance and [assess] the feasibility of its expansion to ensure that all residents have access to good jobs that allow them to provide for their loved ones."[18] According to the transition document, the city should look to expand the ordinance to cover employees of businesses receiving city subsidies and employees of subcontractors and tenants, and strengthen enforcement for those already covered.

In his inauguration speech, the Mayor spoke to the problem of inequality in Boston, saying "we cannot tolerate a city divided by privilege and poverty."[19] Since taking office in 2014, Mayor Walsh has pursued policy changes that are in line with his goal to ease the strain on low income, working poor individuals and families in Boston. This focus has included a commitment to reviewing the city's current wage and labor policies to evaluate their impact and strengthen their effectiveness.

Among the policies under review is the City of Boston's Living Wage Ordinance (LWO). The LWO, passed in 1997, requires contractors who hold service contracts with the city to pay a living wage to employees covered by those contracts. As part of this review and updating process, Mayor Walsh has already taken steps with support of City Council to pass amendments to the Living Wage Advisory Committee and has appointed new members to the Committee in an effort to reinvigorate this advisory body. The Mayor's Office of Workforce

Development (OWD), which bears primary responsibility for enforcement of the LWO, has undertaken a thorough review of its enforcement system and identified opportunities to enhance enforcement activities. This review has led to the hiring of additional enforcement staff, a new system of conducting payroll audits of covered employers and a thorough audit of compliance mechanisms.

There is also an interest in understanding the historic impact of the LWO on low-wage workers and whether there are areas that could be improved to maximize the impact. This Health Impact Assessment (HIA) report is part of this review process and will provide recommendations and an analysis of the impact of potential changes on the health of Boston residents. This report shows how higher household income relates to better average health outcomes and then looks more closely at how an increase in the LW might impact health outcomes for Boston's LW workers.

The proposed policy changes are expected to have the greatest impact on low-wage workers with jobs in Boston (residents and non-residents), as well as the businesses that employ them. As noted above, Boston continues to experience large inequities in the distribution of wealth, employment and health status. Of the city's approximately 618,000 residents, 24.4% are Black and 18% are Lati-

no, but they do not share equally in the prosperity enjoyed by white Boston residents. [10] Boston's median family income is just under $50,000 per year, but Black families make only $42,902 per year and Latino families $32,372 per year. During 2012, White residents had a poverty rate of 15% while the poverty rate for Asian, Black and Latino residents was higher (26.6%, 23% and 34.8% respectively).[20]

One in 4 children lives in poverty in Boston. Forty percent of workers in Boston are in low wage jobs, and the majority of low wage workers are people of color, particularly Black and Latino residents. Although Boston has recovered all of the jobs lost during the Great Recession, 85% of the jobs added between 2009 and 2014 were low-paying, meaning that they have annual salaries of less than $38,000 per year.[21] The fields that accounted for the most gains in job growth were in the traditionally low-paying sectors of food service, janitorial services, and home health care.[22]

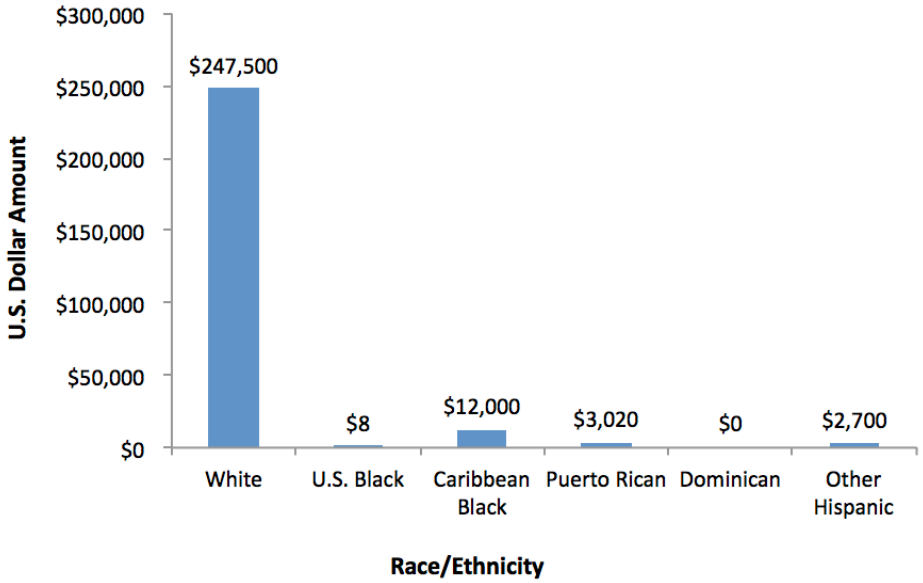
Nationwide, Black and Latino workers are disproportionately represented in the lowest-paying occupations. In 2014, 25% and 26% of employed Black and Latino workers, respectively, were in a service occupation, compared to 16% of White workers. Blacks and Latinos were also less likely to be employed in the higher-paying management, professional, and related occupations: 39% of employed Whites had jobs in this category compared to 30% of Black and 21% Latino workers. Labor statistics also reveal that White men out earn Black and Hispanic men across nearly all major occupational groups, as well as at all levels of educational attainment.[23]

When stagnant or declining wages are coupled with the described increases in costs of living, we can expect to see increased poverty among working families. Among households living in poverty in Boston, 15% had at least two working adults in 2013, up from less than 10% in 2008.[21] Nationally, Blacks and Latinos were more than twice as likely to be working poor (defined as having worked for at least 27 weeks during the year but with incomes below the poverty level) than Whites were in 2013. The working poor rate for Whites was 6.1% compared to 13.3% for Blacks and 12.8% for Latinos.[24]

A 2015 report by the Federal Reserve Bank of Boston, "The Color of Wealth in Boston," highlights the stark income and wealth differences between White and Non-White residents of Boston's Metropolitan Statistical Area (MSA). Net worth, the sum of the value of total assets minus the value of debts, provides a snapshot of household financial well-being. Striking racial differences are evident when looking at total household wealth. Non-White households have only a fraction of the wealth of white households. Whereas White households have a median wealth of $247,500, Dominicans and U.S. Blacks have a median wealth of close to zero. Of all Non-White groups for which estimates could be made, Caribbean Black households had the highest median wealth with $12,000, which represents only 5 percent as much wealth as White households (see Figure 1).[25]

Racial and ethnic differences in net worth demonstrate the extreme financial vulnerability faced by people of color in Boston. Possessing less than 5 percent of the wealth of White households, people of color are less likely to have the financial resources to draw upon in times of financial stress. In addition, they have fewer resources to invest in their own future and those of their children. Racial differences in asset ownership, particularly homeownership, contribute to vast racial disparities in net worth. Homes—the most valuable asset owned by middle-class households—comprise the bulk of middle-class wealth. However, unequal opportunities (past and present) to build other assets and to reduce debt are contributors to the vast racial wealth gap substantiated in this analysis.

Figure 1. Comparison of Household Median Net Worth By Race/Ethnicity in The Boston MSA*



Source: Muñoz et al. 2015. National Asset Scorecard for Communities of Color (NASCC) survey.
Note: The Boston MSA (Metropolitan Statistical Area) includes the following counties: Essex, Middlesex, Norfolk, Plymouth, and Suffolk in Massachusetts; and Rockingham and Strafford New Hampshire.
Note: The Boston MSA is home to 4.6 million residents and accounts for almost one third of New England's population (2012 American Community Survey 1-year estimates).

The HIA will assess the potential health impacts on all of those affected in addition to the important subset of the city's Black and Latino residents.

POLICY PROPOSALS

As the LWO approaches its 20-year anniversary, the ordinance is ripe for review. While it is clear from the evidence that the ordinance has brought improvement for a small number of workers who were previously making lower wages, there is little doubt that it has yet to live up to the lofty principles that accompanied the policy when it first passed. The poverty-level standard in the ordinance remains well-below Boston's cost of living and there are too few workers covered by the ordinance to have a real impact on the experience of most low-wage earners in Boston.

At the outset, the Research Team identified a number of areas where the city could consider changes to the ordinance that could improve the health and well-being of vulnerable residents.

PROPOSED POLICY CHANGE: Increasing the Living Wage to $16.96/hour or higher

The living wage for our baseline year of 2013 was set at $13.89 per hour. If one assumes that a full-time, year-round living wage worker works 2,000 hours in a year, at this wage their pre-tax income is about $27,780 a year. One possible policy proposal is to increase the living wage to $16.96 per hour,[26] or approximately $33,920 for a full-time, year-round worker. This wage increase is estimated to be enough for a family of four with two adults working and earning at least $16.96 to cover basic needs for a family living in Boston. It is higher than the U.S. poverty income threshold for a family of four and calculated to just be sufficient to cover housing, childcare, transportation and other basic needs.

However, it only covers the most basic needs for a family of four living in the City of Boston and does not include enough for savings, emergency expenditures, or larger one-time expenses such as car repair or medical bills.[1]

This proposal is the main topic of this HIA.

PROPOSED POLICY CHANGE: Extend LWO requirement to cover additional workers, including those who work for business relationships that the city has with private entities and for quasi-governmental city authorities and commissions.

Boston is in the midst of an economic development boom. Cranes dot the skyline of the city and developers are looking at unused city parcels for ways to enhance economic opportunities and contribute to the city's ever-growing need for housing. Through the Boston Redevelopment Authority and Department of Neighborhood Development, the city leases property to a number of private entities. The city also engages in a number of business deals whereby the city confers a benefit on private companies, including business tax credits and project financing. An amendment to the LWO could potentially extend the reach of the ordinance to cover thousands more employees.

In addition, the city of Boston has a number of quasi-governmental agencies that perform vital city functions but operate outside of the city's legal authority. The LWO should be expanded to reach these quasi-governmental agencies and the employees and contracts that they hold. Currently, there are four quasi-independent agencies.[2]

This policy proposal arose in the course of discussions with stakeholders, especially after the HIA analysis showed limited impact of only raising the living wage.

PROPOSED POLICY CHANGE: Enhance Enforcement of the LWO

Data from the Office of Workforce Development (OWD) suggests that enforcement of the LWO is consistently and rigorously pursued by the Living Wage Office. Still, there is lingering suspicion among labor advocates that there are ways to evade enforcement and that some firms escape compliance. As OWD increases its enforcement capacity, providing greater transparency regarding enforcement, including documentation of audits and other oversight functions may help to dispel the perception that the ordinance is unevenly enforced.

This policy proposal was not considered in the analysis of the HIA. However, OWD is considering and to some extent starting to implement it.

1 While data shows that a family can make ends meet in a situation where both working adults make a wage of $16.96/hour, the Research Team noted that improvement in health and well-being was maximized for individuals in the income range of $50,000 a year or higher, so it may also make sense for policymakers to consider a wage that would help an individual achieve this ideal level of income.

2 The four quasi-independent public city agencies are the Boston Redevelopment Authority, the Boston Housing Authority, the Boston Public Health Commission, and the Boston Water and Sewer Commission.

HEALTH IMPACT ASSESSMENTS

Health impact assessment (HIA) is an internationally-recognized method used to connect anticipated health outcomes to a non-health related decision. According to the World Health Organization, HIA is "a means of assessing the health impacts of policies, plans and projects in diverse sectors using quantitative, qualitative and participatory techniques."[27] HIAs follow six distinct steps:[28]

- Screening is the process of determining if an HIA would be timely, add value to a decision making process and be feasible in light of resource constraints. In this HIA, the screening phase began with informal interviews with city leaders and experts in labor policy. Factors that solidified the LWO as a target of the HIA were specifically interest from the Mayor's Office, timing of the decision to occur within the designated grant period and interest in connecting health to economic policy decisions.

- Scoping is the process of determining priority issues, research questions, methods and the roles of participants. The scoping phase of this HIA began with a preliminary discussion of data and a literature review by the Research Team. After this, the scope was honed during a meeting of the Advisory Board and in two community meetings where we reviewed the preliminary scope and added determinants and connections between health and income.

- Assessment includes both the determination of existing conditions and the evaluation of potential health impacts using qualitative and quantitative research methods and data. The Research Team collaborated on the assessment phase, including the existing conditions, potential impacts of the proposed plan and the recommendations.

- Recommendations should be developed to improve the project, plan, or policy and mitigate negative health impacts as well as improve potential positive health impacts. Recommendations for this project were drawn from the assessment as well as from a study of best practices in other cities that have implemented living wage ordinances.

- Reporting involves preparing a presentation or report of the findings, and communicating the results formally within the decision-making process. In this case, the recommendations regarding the potential changes to the LWO will be made in a phased roll-out of the key findings to the Office of Workforce Development, the Advisory Board, the Mayor's Office, City Council and other stakeholders.

- Monitoring tracks the impacts of the HIA on decision-making, implementation of decisions, and the impact of the decision on selected health determinants. Ideally, an evaluation plan will focus on understanding the extent to which the recommendations are implemented, and in a more long term way, the impact that these policy changes have on health.

HIA SCREENING

The Boston Public Health Commission (BPHC) chose to conduct an HIA on the LWO changes after consulting with multiple stakeholders who were active in efforts to improve the economic standing of low-income residents in Boston and across the state. In particular, we contacted Mayor Walsh's Chief of Policy, Joyce Linehan, who suggested that an HIA on the LWO would be a useful resource in helping to inform the city's next steps on updating the LWO. We also met with the Director of the City's Jobs and Community Services Department (now known as the Office of Workforce Development), Trinh Nguyen, whose agency is responsible for enforcement of the ordinance. In addition, we consulted with labor unions that had been involved in the past in advocating for enhanced enforcement and changes to the LWO. This included representatives from SEIU 32BJ, SEIU 1199 and UNITE HERE Local 26. Once we received the grant to complete the HIA, we worked with our Advisory Board to confirm that the LWO was an appropriate topic for the HIA. While concrete policy changes had not yet been proposed, the Advisory Board agreed that the LWO was ripe for reconsideration, and this, combined with the interest from the Mayor's Office, contributed to the general agreement that an HIA on the LWO would be useful.[3]

HIA SCOPE

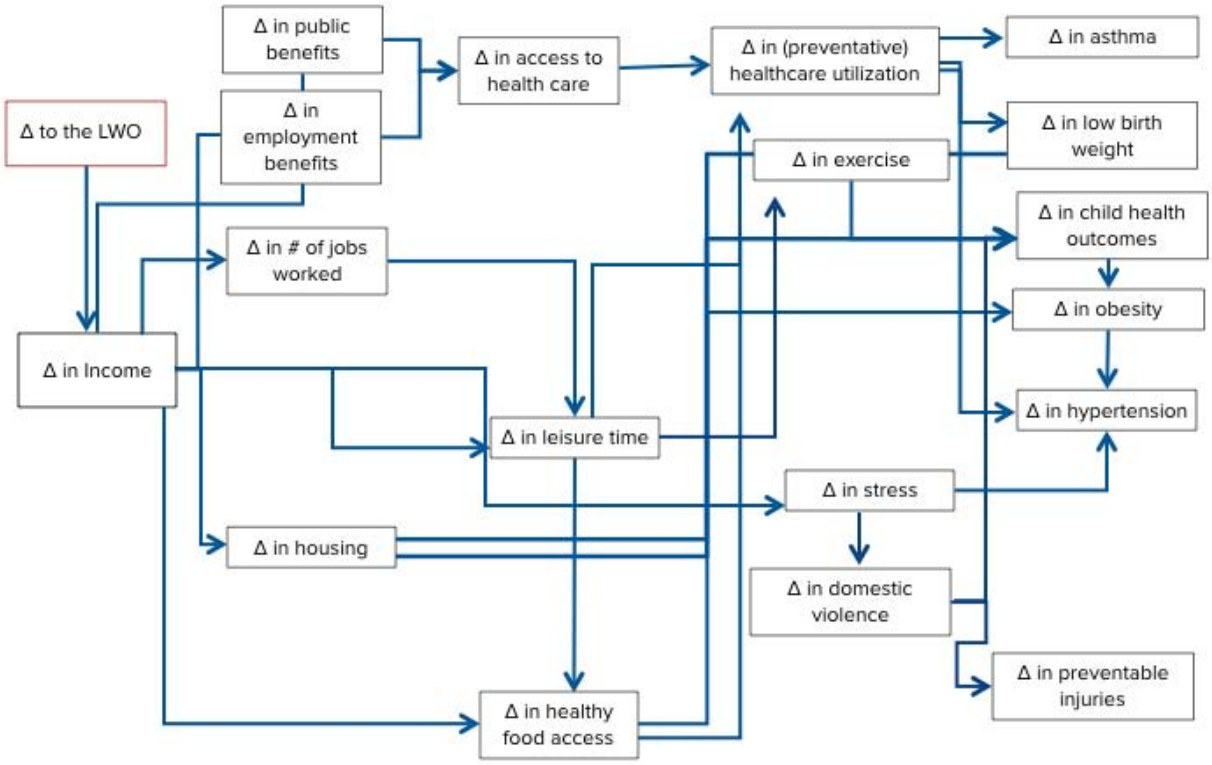
The goals of the Boston Living Wage Ordinance Health Impact Assessment are:

- To inform public debate about how the proposed changes to the ordinance might affect the health of the city's residents, particularly Black and Latino residents and low income workers.
- To inform future debate on the links between economic policy and the health of the city's low income residents and neighborhoods and build stronger connections between efforts to build health equity and economic justice in the city.

The Pathway Diagram on page 19 demonstrates the connections between health and an increase in income that could result from an increase in the living wage hourly rate. We anticipate that changes to the living wage rate would have mostly positive and few potentially negative impacts on the affected workers. For example, as workers make a higher wage, they are able to access better housing and food and have more leisure time. This, in turn, lowers their risk of many negative health outcomes. At the same time, we anticipate that some workers may also lose publicly provided benefits, such as childcare assistance and refundable tax credits, if their incomes increase too sharply. If workers lose benefits that help pay for basic needs as their earnings rise, it could reduce their access to preventive health care, food, affordable housing, and quality childcare.[4]

3 Please see Appendix 1 for a complete description of the screening process.
4 Please see Appendix 2 for a complete summary of the scoping process.

PATHWAY DIAGRAM CHANGE IN INCOME



BASELINE RESEARCH QUESTIONS

- What is the current Living Wage Ordinance?
- Which workers are most impacted by the current Living Wage Ordinance (LWO)?
    - How does the current LWO impact particular subgroups?
        - People of color?
        - Families?
        - Single-parent households?

- What are proposed or possible changes to the current LWO?
- How does income impact health?
- What is the relationship between income and stress?

IMPACT RESEARCH QUESTIONS

- How would changes to the LWO impact health outcomes for:
    - Workers currently covered by the LWO?
    - Low-wage workers not currently covered by the LWO?
- Specific LWO Changes:
    - If the living wage ordinance were expanded to cover other sectors, how would that impact income for those workers?
    - How would an increase in the living wage impact health outcomes?

- How would a change in income impact workers' housing circumstances and health outcomes related to housing?
- How would a change to the LWO impact the number of hours worked (and thus income) and stress? How would this impact health outcomes related to stress?
- How would a change in the number of hours worked impact a worker's eligibility for public benefits? How would this impact health outcomes related to access to benefits?
- What would changes to the LWO mean for businesses (including potential increased pay and potential increased health insurance coverage)? Would a change to the LWO impact the number of full-time jobs available (i.e. would businesses not offer as many full-time jobs)? How would these changes impact the health of low wage workers in Boston?

VULNERABLE POPULATIONS

This HIA focuses on the health and wellbeing of low wage workers, defined as workers receiving less than $20/hour with a particular focus on Black and Latino residents in Boston.

GEOGRAPHIC AND TEMPORAL BOUNDARIES

We are studying residents of the City of Boston and will be using the five-year 2009-2013 (US Census Bureau's American Community Survey) and various health data sets from 2010-2013 for health data for our existing conditions benchmark period. Although many workers covered under the current LWO live outside the City of Boston, the goals of the ordinance are to improve opportunities for a living wage and financial empowerment for residents of Boston. Further, most of the data collected and analyzed by BPHC pertains specifically to residents of the city of Boston so the geographic boundaries of our quantitative analysis and predictions of impacts will be focused on residents of the city. However, in order to have a sufficiently large sample for the ACS, we needed to utilize data from neighboring cities and towns that are demographically similar to Boston. In addition, we acknowledge that changes to the living wage ordinance are likely to have a regional impact in that many of the workers affected by the LWO live outside of Boston and since changes to the LWO could affect employer policies regionally.

DATA SOURCES AND METHODOLOGY

LWO Data & American Community Survey Data

Researchers from the Center for Social Policy (CSP) at the University of Massachusetts Boston analyzed data provided by the City of Boston's Office of Workforce Development (OWD) and the American Community Survey (ACS) to document existing conditions for workers covered by the living wage and for Boston-area residents who work in the four industries most likely to be covered by the LWO. The data presented here provide a description of the vendors and

contracts covered by Boston's LWO, the employees that work on these contracts, and the Boston residents that work in the major industries impacted by the LWO.

CSP researchers received data on contracts covered by the LWO from the City of Boston's OWD. These data include all contracts that have been entered in the City's system since 1998. It includes information on the vendor that holds the contract, what services they supply, how many employees are covered by the contract each year and whether these employees are Boston residents, people of color, and women.[5] CSP researchers also analyzed the ACS using the 2009-2013 5-year estimate Public Use Microdata Sample (PUMS) for Boston and some surrounding cities. We provide a description of Boston residents that work in industries most likely to be impacted by the living wage. This includes wage and demographic information.

Health of Boston Data

The BPHC's Research and Evaluation Office analyzed select health data for Boston residents by race, gender, income level, and employment status. The health data for this analysis were drawn from the 2013 Boston Behavioral Risk Factor Survey (BBRFSS).

Qualitative Data

Community Meetings

BPHC held two 2-hour community meetings during the scoping phase of the project to better understand the relationship between low-wage work and health. These community meetings were held on consecutive Saturdays in March 2015 in Dorchester and East Boston. There were a total of 32 participants in the community meetings, who were low-wage workers and their advocates. The qualitative data gathered during these meetings helped to define the scope of the HIA and to validate the connection between certain health outcomes and income.

Focus Group

BPHC also conducted a focus group to gather qualitative data from individuals impacted by low income. The focus group was conducted on May 27, 2015 at Jewish Vocational Services. The qualitative data added weight to the quantitative data analysis by adding the personal accounts of the real life impact of having low income and working in low-wage jobs. Demographic data for focus group participants may be found in Appendix 3 and a full summary of focus group feedback is located in Appendix 4.

Stakeholder Interviews

5 The data do not indicate any overlap among these three categories of workers. For example, we do not know if Boston residents are also women or people of color.

Qualitative data was also collected by interviewing stakeholders such as organizations and businesses that are currently impacted by the LWO and those that could potentially be impacted if the ordinance were changed. In all, we conducted eight stakeholder interviews with interested parties, including personnel from businesses that are directly impacted, the staff at the Boston Chamber of Commerce, representatives from the agency that enforces the LWO, and labor advocates.

Prediction Methodology

We determined the likely impact on health outcomes for the set of workers that would see a boost in their family income due to an increase in the living wage from $13.89 per hour to $16.96 per hour. For full-time workers working year round (2,000 hours a year), this would be an increase in annual income of $6,140. Through a literature review as well as the feedback processes employed in conducting this HIA, we identified several key income-related health outcomes for adults: stress, fruit and vegetable consumption, hypertension, diabetes, asthma and food security.

The data used come from three sources: the BPHC's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, OWD, and the United States Census American Communities Survey. The BBRFSS is a telephone survey conducted every two or three years that provides information on health outcomes for Boston residents. This data provide the average prevalence of health outcomes by household income ranges for Boston's adult residents. Based on this information, we estimate the average change in the prevalence of health outcomes for every $1,000 increase in annual household income for adults with income above $10,000. This provides us with the ability to estimate the average change in health prevalence that would occur with a $6,140 change in annual income. We then multiply this change in prevalence by the total number of potentially affected workers.[6] To calculate the number of potentially affected workers, we use data from Boston City contracts that indicate the total number of workers covered by the LWO that earn less than $20.00 an hour.[7] This information was provided to us by OWD. This data also provide information on the total number of Boston residents covered by the LWO as well as women and people of color. On average over the last five years, there are 617 workers annually covered by the LWO that would be affected by an increase in the living wage. This number represents a subset of the total average number of workers that are covered by the LWO, which is 2,848.

6 The formula we use is: Change in health impact = (Average change in health prevalence/$1000) x (change in family income in $1000s due in increase in living wage) x (number of workers potentially affected by an increase in living wage). To get the average change in health prevalence, we calculate the average change per change in income for each of the seven income categories and take an average of those. See Appendix 5 for an example.

7 The administrative data that we have received from the Mayor's Office of Workforce Development tracks the number of living wage workers on each contract by their hourly pay range. Those ranges are: less than the living wage, the living wage to $15.00 an hour, $15.01 to $20.00 an hour, and more than $20.00 an hour. When using the OWD data we estimate that the workers most likely to be impacted by an increase in the living wage earn $20.00 or less.

Using the American Community Survey (ACS) Public Use Microdata Sample (PUMS), 2009-2013 for Boston area residents, we based the income ranges for this estimate on our analysis of the income characteristics of Boston-area workers most likely to be in industries covered by the LWO and earn less than $20 an hour. The lowest income bracket (those with less than $10,000 in household income) from the BBRFSS survey includes many non-earners which are not representative of adults who are earning the living wage, so we excluded that income range from our analysis. Analysis of the ACS sample of workers that best approximate affected LW workers revealed that about one in four workers live in families with income in the highest income bracket of $75,000 or more, so we retain this income category in our analysis. The income ranges used in this analysis ($10,000 and above) represent 82.5% of the workers most likely to be affected by a living wage increase.

Based on the information from the BBRFSS and OWD data, we predict the change in the number of cases for each health outcome given the proposed increase in family income that would result from an increase in the living wage. We predict the increase or decrease in the number of cases of a specific health outcome by multiplying the average change in the probability for a health outcome by the proposed dollar increase in the living wage (estimated to be $6,140 per year for a full time worker) by the number of workers expected to be impacted by an increase to $16.96 (on average, 617 workers per year). We also predict the increase or decrease in the percent of cases for each health outcome.

SECTION II. ASSESSMENT FINDINGS

PART 1. EXISTING CONDITIONS

What is the Boston Living Wage Ordinance?

The campaign to establish a LWO in Boston began on Labor Day, 1996. Led by a coalition of labor advocates, religious leaders and community activists, the campaign lobbied City Council and the Mayor and were successful in passing an ordinance in 1997. Implementation, however, was stalled by litigation and in 1998 City Council passed a replacement ordinance, which became the framework for today's LWO. In doing so, the City of Boston joined an early wave of cities, including Baltimore, New Orleans, Santa Monica, Portland, OR and Los Angeles in adopting a living wage ordinance. Living wage ordinances passed in cities across the country during the mid-1990s and early 2000's in response to concerns about the impact of recent changes to welfare policies that required employment, stagnating wages and the growing cost of living in metro areas. Today, nearly 40 percent of city residents in the United States live in a region that has adopted a living wage policy.[14][9]

The stated purpose of Boston's ordinance is "to assure that employees of vendors who contract with the City of Boston to provide services earn an hourly wage that is sufficient for a family of four to live at or above the Federal poverty level," and to "maximize access for low- and moderate-income Bostonians to the jobs that are created, maintained or subsidized through service contracts with the City."[29] Originally, Boston's LWO covered employers that received city contracts in excess of $100,000 for services and had more than 25 full-time equiv-

9 While living wage ordinances generally have the same goal – to require payment of a living wage to those workers who are on municipal contracts – they vary significantly in their scope.

alent (FTE) employees (if a for-profit firm) or 100 FTEs for non-profit firms. The original ordinance was expanded in 2001, when City Council voted to lower the contract threshold to $25,000 and to lower the employee threshold for non-profits to 25 FTEs.

Boston's LWO includes 4 categories of exemption for certain employers who provide services to the city. These categories include (1) construction contracts awarded by the city that are subject to the prevailing wage law; (2) contracts for youth programming where youth are awarded stipends; (3) contracts for work-study or cooperative educational programs that provide stipends to students; and (4) contracts with vendors who provide stipends to trainees as part of a job training or work experience program.[29] Employers may also apply for a general waiver or hardship waiver from the provisions of the LWO. To qualify for a general waiver, employers must demonstrate that compliance with the LWO would violate another statutory requirement. Firms that apply for the hardship waiver must submit "a detailed explanation of how the payment of the living wage will cause undue economic hardship including supporting financial statements."[29]

In keeping with its intent to secure better-paying jobs for Boston residents, the ordinance devotes an entire section to "first source hiring agreements," meaning that the businesses must give a priority to Boston residents when hiring for new positions. This section requires "covered vendors and all beneficiaries of assistance" to "sign a First Source Hiring Agreement with one or more referral agencies or one or more Boston One Stop Career Centers." Employers must notify the referral agency of openings five days before posting them publicly so they can be matched with Boston residents. However, this provision does not apply if the employer fills the vacancy through hiring of an internal candidate.[29]

As currently implemented, the LWO is enforced by the OWD. OWD requires city vendors who are covered by the LWO to sign upfront documents, including the Living Wage Agreement (LW2) when a contract is signed. They also require submission of the Living Wage Affidavit, or LW8, which requires the employer to provide basic information regarding the employees covered by the contract. Once a contract has been signed, OWD requires covered vendors to submit annual and quarterly reports to OWD with information that demonstrates their continued compliance with the LWO. OWD also grants exemptions as provided for under the ordinance. The vendor is required to provide a living wage to employees who work under the city contract, but not necessarily for all of its employees.

From its inception, the LWO has pegged the living wage to the U.S. poverty income threshold for a family of four, assuming that there would be one adult wage earner working 2,000 hours per year. In 1998, this equated to an hourly wage of $8.23. In July 2015, the Boston living wage was adjusted to $14.11 per hour to reflect changes to the poverty income threshold caused by inflation.

The U.S. poverty income threshold was developed in the 1960s based on food budgets (noting that food was a third of a family's budget at that time) and has been adjusted for inflation ever since. It is used to measure poverty rates for

persons and families in the United States. It is also sometimes used to help determine eligibility for some public assistance such as for the Supplemental Nutrition Assistance Program (SNAP, formerly known as Food Stamps) and Medicaid. However, it is not an adequate measure of the family income needed to meet basic living expenses in Boston. Other research conducted in Massachusetts by the Crittenton Women's Union[30] has found that for a family of four in Boston to meet basic living expenses in 2013, both adults would need to work full time and each earn at least $16.58 per hour.

HOW HAVE LIVING WAGE ORDINANCES IMPACTED INCOME AND HEALTH?

The economic impact of city living wage ordinances has been the subject of lively debate in economics literature since they were passed in the 1990's. Numerous studies look at changes in contract costs, bidding patterns, labor costs, jobs, hours and wages that occurred as a result of living wage ordinances. For the purposes of this HIA, the Research Team chose to limit the universe of LWO economic studies to those that specifically focused on Boston's LWO. We did this for two reasons. First, each LWO is different in its coverage and implementation, so findings from other cities are not necessarily transferable to Boston's situation. Second, studies on Boston's LWO are methodologically sound and focus on city, worker and vendor impacts in the years after the LWO was passed.

Boston's LWO has been the subject of a handful of in-depth studies regarding its economic impact. One study, completed by Mark Brenner, then at the University of Massachusetts – Amherst, examined the economic impact of Boston's living

wage three years after it passed, including the impact on covered vendors and on the workers who were covered.[31] Using a city database of covered vendors, researchers contacted each of the 212 covered vendors at the time to ask them to complete an in-depth phone survey. The survey, which was completed by 40 percent of existing LWO vendors, asked about labor costs, worker turnover, absenteeism, and adjustments that firms had made in response to the LWO.

Brenner found that, on balance, the LWO had a significant impact on wages for the low-wage workers who were covered by the ordinance.[31] In firms that were covered by the LWO, the percentage of workers making less than the living wage fell from 25 percent to less than 5 percent, with no such changes seen in the non-covered comparison group of employers.[31] Moreover, covered vendors did not cut jobs or hours as a result of the LWO.[31] The study found that turnover and absenteeism were unchanged, so firms did not recoup the loss through a reduction in indirect costs.[31] The author also found, importantly, that the covered vendors did not pass the increased labor costs onto the city or to other customers. Indeed, only 15 percent of covered vendors reported increasing their bid prices to the city.[31] The author concludes that most firms adjusted to the LWO by accepting lower profits on their city contracts.

Another study conducted by Mark Brenner and Stephanie Luce compared the impact of LWO on three northeastern cities: Boston, New Haven and Hartford.[14] This study analyzed the impact of the LWO on the three cities' contracting, covered vendors and covered workers. After comparing contracts in Boston before and after implementation of the LWO, researchers found that the number of bids for city contracts varied by sector. For example, cleaning and janitorial bidders

dropped while contractors bidding for security services increased. Looking at the cost of contracts, researchers found that contract costs on balance actually dropped after implementation of the LWO, an effect that researchers attribute to the fact that many of the services for which Boston contracts – human services – have rates that are set by state and federal agencies, making it more difficult for vendors to pass along extra costs to the city.[14]

Brenner and Luce also looked at the impact of the LWO on covered workers. To understand the impact of the LWO on workers, the researchers surveyed 96 workers who represented each of the sectors covered by the LWO. They found that living wage workers were adults who were well into their careers. Most were women and people of color and roughly a third of the covered workers remained near the poverty level even after implementation of the LWO, in part because of Boston's high cost of living. Researchers found that poverty status and ability to meet basic needs was, not surprisingly, related to the worker's family status, including whether they were trying to support children on the living wage or not. Those who were single adults without children were doing much better than those who were in families with children. Ultimately, the study concludes that Boston workers experienced "small but concrete" improvements to their quality of life as a result of implementation of the LWO.[14] Despite this, they continue, it was "not enough to lift affected workers to a higher standard of living that better reflects the spirit and intent of the ordinance."[14]

In addition to the economic analyses that have been completed on LWO, there are at least two major HIAs that have been published on the subject of living wage ordinances. The first, completed by Bhatia and Katz, focused on the impact of implementing San Francisco's LWO, which they estimated would impact just over 40,000 full and part-time employees in the Bay Area.[32] The study found that an increase in wages would yield significant reductions in mortality risk, especially for the lowest paid workers, as well as improvements in subjective health outcomes. The researchers were also able to connect increases in income to increased chances of completing high school among the children of workers and a lowered risk of teen pregnancy.[32]

The other study on the health impact of a living wage ordinance came from researchers studying changes associated with Los Angeles's LWO.[33] In LA, roughly 10,000 workers saw an increase in income when the city passed a living wage ordinance in 1997. LA's ordinance varied from others at the time in that it included a requirement that employers offer health insurance coverage to workers or pay a higher wage instead. Researchers looked at both impacts of increased income and increased insurance coverage and found a drop in mortality of 1.4 deaths per 10,000 workers per year at a savings of $27.5M.[33]

WHICH WORKERS ARE CURRENTLY MOST IMPACTED BY THE LWO?

Although the studies of Boston's LWO draw on 2001 data from the LWO, we find that our more recent data tracks with the data from previous studies. This would suggest that the composition of the LWO workers and covered vendors is fairly consistent over time. The following data describe which workers are most impacted by the current LWO and specifically how it impacts women, people of color, and workers with families. Table 1 depicts the service industries of the firms and non-profit organizations that have LWO contracts. The vast majority of contractors who provide services under the LWO are categorized as working in social assistance or as human service providers. This includes those who provide shelter and case management to homeless individuals, providers of elder care services and childcare providers. In most cases, the sources of funding for these contracts are state and federal government grants, in particular the Emergency Solutions Grant and the Community Development Block Grant through the US Department of Housing and Urban Development.

Table 1. Distribution of Contracts in the City's Living Wage Database by Industry, 2013

Industry Description	Frequency	Percent
Social Assistance	272	60%
Professional, Scientific, and Technical Services	99	22%
Educational Services	37	8%
Repair and Maintenance	16	4%
Administrative and Support Services	13	3%
Other Industries	6	1%
Total	**456**	**100%**

Table 2 lists these contracts from 2013 by City Department. The vast majority of the contracts come from five main departments. Thirty-seven percent of contracts come through the Department of Neighborhood Development, 26% come through Economic Development and Industrial Corporation, and about 10% each come through the Police, Public Facilities, and Schools.

Table 2. Distribution of Contracts by City Department, 2013

Industry Description	Frequency	Percent
Neighborhood Development	169	37%
Economic Development and Industrial Corporation	120	26%
Police Department	46	10%
Public Facilities Department	44	10%
Schools	44	10%
Other Departments	33	7%
Total	**456**	**100%**

The City's database also provides information on whether or not a contract is in compliance or if it is exempt from the LWO. Overall, cases of non-compliance and exemption are few. For example, in an average year, between 2009 and 2013, there were about 480 contracts that fall under the LWO. On average, six of these contracts were exempt and four were non-compliant. This is an average compliance rate of 99.2% and an average exemption rate of 1.3%. Between 2009 and 2013, the most common reason for exemptions for contracts was paying trainee or youth stipends.

According to the City's database, there were 1,924 employees covered by the LWO in 2013. These employees are distributed across several industries. Table 3 provides the distribution of workers covered under the LWO by industry for 2013. More than half work in the Social Assistance and Professional, Scientific, and Technical Services Industries. While the Social Assistance Industry provides services to vulnerable resident populations, the Professional, Scientific and Technical Services Industries are comprised of workers such as architects, attorneys and IT professionals.

Table 3. Distribution of Covered Employees in the City's Database by Industry, 2013

Industry Description	Percent
Social Assistance	33%
Professional, Scientific, and Technical Services	30%
Educational Services	12%
Repair and Maintenance	9%
Healthcare	6%
Administrative and Support Services	1%
Other Industries	9%
Total	**100%**

HOW DOES THE CURRENT LWO IMPACT SPECIFIC POPULATIONS?

Living wage workers are categorized based on whether they are Boston residents, people of color or women. In 2013, 21% of LWO covered workers were Boston residents, 29% were people of color, and 47% were women (see Table 4). Forty-five percent of employees working for vendors in the Social Assistance industry are Boston residents. Other industries that employ a large percentage of Boston residents are Administrative Support Services and Other industries (like Construction), but this is a small number of employees. In Social Assistance, Healthcare, Administrative Support, and Other the majority of covered employees are people of color. There are more women covered by living wage contracts than men in Social Assistance, Educational Services, and Healthcare.

Table 4. Boston Residents, People of Color and Women as a Percentage of Total Living Wage Workers by Industry, 2013

Industry Description	Percent	People of Color	Women
Social Assistance	45%	53%	67%
Professional, Scientific, and Technical Services	7%	13%	35%
Educational Services	13%	15%	76%
Repair and Maintenance	1%	3%	14%
Healthcare	5%	56%	57%
Administrative and Support Services	100%	83%	17%
Other Industries	100%	70%	20%
Total	**21%**	**29%**	**47%**

Table 5 shows that, those earning the lowest wages are disproportionately people of color and women. We used a weighted average by industry (2009-2013) to estimate the percentage of Black, Latino and Asian individuals among the living wage workers most likely to be impacted by an increase in the living wage (i.e. those making less than $20 per hour). People of color make up almost a third of all living wage workers, but because of their over-representation in LWO-covered industries such as social assistance, roughly forty percent of all workers likely to be impacted by the increase are people of color. Similarly, while Boston residents make up roughly 20% of living wage workers, 31% of the workers most likely to be making less than $20 per hour are Boston residents. On average, women make up 40% of living wage workers, but they make up 48% of living wage workers who are on the low end of the wage scale.

Table 5. Average* Percentage of Living Wage Workers who are Boston Residents, People of Color, and Women by Wage Level, 2009-2013

Wage Level	Residents	People of Color	Women
Less than $20/hour	31%	37%	48%
All LW workers	19%	26%	40%

*Weighted average by industry

Many of the workers in contracts covered by the LWO are already paid wages that are higher than the living wage. Table 6 shows the average percent of employees who earn more than the living wage over a five-year period is 78.3%, and only about 21.7% make at or below $20 per hour. Table 6 shows the average percent of LWO-covered employees who earn more than the living wage is 78%. More than three-quarters of employees covered by the LWO, therefore, do not benefit from it at the current wage level of $14.11/hour.

Table 6. Count of Living Wage Workers by Wage Categories, 2004-2013

Year	Earning Less Than Living Wage	Earining Living Wage $15/hr	Earning $15.01-$20/hr	Total Earning $20/hr or below	Total Earning more than $20/hr	Total Covered Employees
2009	0	235	551	786	3,075	3,861
2011	0	345	670	1,015	1,236	2,251
2012	2	114	200	316	3,092	3,408
2013	1	79	273	353	1,517	1,871
Average*	**1**	**193**	**423**	**617**	**2,230**	**2,848**
% of Total	**0%**	**6.8%**	**14.9%**	**21.7%**	**78.3%**	**100%**

* 2010 Omitted. The data for 2010 contains several outliers that cannot be explained and has been omitted for data quality issues.

EXISTING CONDITIONS FOR BOSTON RESIDENTS WHO WORK IN INDUSTRIES SIMILAR TO LIVING WAGE WORKERS

Using the ACS, 2009-2013 5-year estimates, CSP researchers examined Boston residents that work in the four main industries impacted by the Boston LWO and explored the distribution of those workers by a host of demographic and economic factors. Those industries are Social Assistance, Professional, Scientific and Technical Services, Educational Services, and Repair and Maintenance. While 85% of workers covered by the LWO work in these four industries, approximately 32% of employed Boston residents work in them suggesting that the LWO benefits do not extend to the majority of industries in which Boston residents are employed. About 54% of Boston residents who work in these industries are women. 34% are people of color. Table 7 provides basic demographics for these Boston-area residents.

Table 7. Gender, Race and Ethnicity of Boston-area Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance, 2009-2013

	Women	White	Black or African American	Asian	Other Race/ Multiple Races	Hispanic
% of Boston Residents who Work in the Industries Most Likely to be Covered by the Living Wage Oridnance	54%	66%	16%	9%	9%	15%

The age distribution for Boston-area residents who work in the four main industries impacted by the LWO is provided in Table 8. Approximately 19% are young adults age 18-24 and 87% are prime working age.

Table 8. Age of Boston-area Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance, 2009-2013

	Age 18-24	Age 25-34	Age 35-54	Age 55-64	Age 65+
% of Boston Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance	54%	66%	16%	9%	9%

Of Boston-area residents who work in industries impacted by the LWO, about 25% earned less than the living wage on average between 2009 and 2013, 21% earned a living wage or a little higher, and 54% earned more than 150% of the living wage (see Table 8). Thus, one of every four workers in industries most likely to be impacted by the living wage earns less than a living wage.

Table 9. Earnings for Boston-area Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance, 2009-2013

	Earning less than the living wage	Earning 100% to 150% of the living wage	Earning more than 150% of the living wage
% of Boston Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance	25%	21%	54%

For Boston-area residents who work in industries most likely impacted by the current LWO, about 9% have an annual household income that is below the U.S. poverty income threshold for their family size, which in 2015 is $24,250 for a family of four. Table 10 also demonstrates that the LWO covers a large percentage of workers who would normally make more than one and a half times the living wage by virtue of their chosen profession.

Another 11% of these residents have a household income between 100 and 200% of the U.S. poverty income threshold (see Table 10).

Table 10. Boston-area Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance by Poverty Status, 2009-2013

	Household Income less than 100% of the U.S. Poverty Threshold	Household Income is 100% to 200% of the U.S. Poverty Threshold	Household Income is more than 200% of the U.S. Poverty Threshold
% of Boston Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance	9%	11%	79%

For these same residents, approximately 37% own their home and 63% rent (see Table 11). Of those that rent, 37% are rent burdened, meaning they pay more than 35% of their household income on rent.

Table 11. Housing Tenure for Boston-area Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance, 2009-2013

	Own their Home	Rent their Home
% of Boston Residents who Work in the Industries Most Likely to be Covered by the Living Wage Ordinance	37%	63%

ARE LW WORKERS LIVING IN FAMILIES?

Using the family income distribution of workers most likely to be eligible for the living wage, based on Boston-area ACS data of workers earning less than $20 per hour in those industries with the most living wage workers, we can estimate the percentages of married workers and workers with children that might be affected by an increase in the living wage. We estimate that the vast majority of LW workers (72%) do not have children, with married workers without children comprising 51% of all workers most likely to be eligible for the living wage and unmarried childless single workers comprising 21% of likely living wage workers. Married earners with children comprise about 16% of all likely living wage workers. Just over 12% of all likely living wage earners are unmarried parents.

PART 2. ESTIMATED IMPACTS

Change in Income for Those Currently Covered by the Living Wage Ordinance and Number of People Affected

Full-time workers who experience an increase in their hourly income to $16.96 from the 2014 living wage of $13.89 will be making an estimated $6,140 more per year. If one assumes that a full-time, year-round living wage worker works 2,000 hours in a year, pre-tax income of the current living wage is about $27,780 a year. Increasing the living wage to $16.96 per hour would raise the annual salary for a full-time year-round worker to $33,920.

Based on OWD data over the last five years, on average, there are 617 low-wage workers annually who are covered by the LWO and earn a wage in which they would most likely be affected by an increase in the living wage. We assume that changing the policy to raise the hourly rate would have no impact on the number of workers covered by the LWO nor would it change the gender or racial composition of workers affected.

While our baseline health analysis is based on 2013 data, in order to have a large enough sample size to stratify the data into 7 income brackets, we combined 2010 and 2013 data. We generated predictive models to assess the association between a wage increase and selected health outcomes.

INCOME, HEALTH AND BOSTON'S LIVING WAGE ORDINANCE

RESEARCH QUESTIONS:

- **How does income impact health outcomes?**
- **What is the relationship between income and stress?**
- **How would changes to the LWO impact health outcomes for:**
  - **Workers currently covered by the LWO?**
  - **Low wage workers not currently covered by the LWO?**
- **How would an increase in the living wage impact health outcomes? How would a change in income impact workers' housing circumstances and health outcomes related to housing?**

HOW DOES INCOME IMPACT HEALTH?

Income has a direct impact on individual and community health. Extensive research demonstrates individuals with low income have poorer health outcomes than individuals with higher incomes. This can be true for a number of reasons, including limited access to healthy, affordable food, increased stress, and the negative impact poverty has on other social determinants of health such as safe and affordable housing, reliable transportation, safe neighborhoods, educational attainment and the like. In Boston and across the nation, people of color are

disproportionately affected by low income status which results in a worsening of racial health inequities. In the data below on self-reported health and specific health outcomes, the connection between income and health is illustrated and makes clear the need for policies to address income to improve the health of Boston residents.

Combined BBRFSS data from 2010 and 2013 shows that overall, 84% of Boston residents reported their health to be excellent, very good, or good. Self-reported perception of overall health has been shown to be a valid marker of actual overall health. When broken out into eight income ranges, more residents in higher income brackets ($35,000 to $75,000 and over) report better health (between 90%-96%) than those in income brackets below $25,000 (64%-78%).

Table 12. Percent Self- Reporting Health as Excellent, Very Good, or Good, Combined by Income, 2010 and 2013 Combined

Income Level	Percent	95% Confidence Limits (Percent)
Boston Overall	84.3%	83.2-85.5%
<$10,000	64.0%	57.0-70.9%
$10,000- <$15,000	65.4%	59.1-71.6%
$15,000- <$20,000	70.6%	65.0-76.2%
$20,000- <$25,000	77.6%	72.7-82.3%
$25,000- <$35,000	84.8%	80.8-88.9%
$35,000- <$50,000	89.5%	86.9-92.1%
$50,000- <$75,000	94.5%	92.8-96.2%
$75,000 and over	95.8%	94.6-97.0%

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013, Combined

As noted earlier in the report, Blacks and Latinos have a lower family median income compared to Boston overall. There are also differences in reported health among Black and Latino residents compared to Boston overall and White residents. A greater percent of White residents (90%) reported excellent, very good, or good health compared to Boston overall (84%). A lower percent of Black (79%) and Latino residents (70%) report excellent, very good or good health compared to White residents (90%) and Boston overall (84%). Additionally, the differences between all four groups are statistically significant. See Table 13.

Table 13. Percent Self- Reporting Health as Excellent, Very Good, Good, Combined by Race/Ethnicity, 2010 and 2013 Combined

Race/Ethnicity	Percent	95% Confidence Limits (Percent)	
Boston Overall	84.3%	83.2%	85.5%
Black	79.7%	76.0%	81.4%
Latino	70.2%	66.3%	74.0%
White	89.6%	88.2%	90.9%

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013, Combined

HOW DO INCOME AND EMPLOYMENT STATUS AFFECT THE HEALTH OF BOSTON RESIDENTS?

Using data from the 2013 Boston Behavioral Risk Factor Survey, and 2012 Massachusetts Department of Public Health data on Boston resident live births, BPHC's Research and Evaluation Office gathered the following measures of existing health conditions for Boston residents. For each health indicator, we provide the research that connects income level to the outcome and then summarize the measurement for Boston residents of that health indicator. We also highlight qualitative findings from the focus group, which helps to ground the quantitative data in the personal experiences of low-wage workers.

We found that higher household income relates to better health outcomes for Bostonians with respect to stress, fruit and vegetable consumption, hypertension and diabetes. Figures 1 through 7 below report the findings from an analysis of the combined 2010 and 2013 BBRFSS on each of these outcomes, which calculates the mean health outcome by income range. Each figure depicts the average health outcome for Boston residents in each of seven income brackets. For each bracket there is a vertical line with a dot somewhere in the middle. The top and bottom of the line represent the "confidence interval" or the range in which the true mean value is expected to fall with a great deal of certainty (95 percent confidence), while the dot is the average (or mean) value for the response.

STRESS, SADNESS AND ANXIETY

It is well established that stress has a negative impact on individual health and wellbeing and is impacted by social conditions such as racism and socioeconomic status.[34] Low income affects an individual's stress level for many reasons, from being unable to afford quality housing and to limiting one's ability to make healthy lifestyle choices, such as exercise and eating a healthy diet. Exposure to income-related stress may explain, in part, why certain groups suffer from poorer mental and physical health outcomes than others.[35] Economic difficulties, physical deprivation, job strain, family responsibilities, material disadvantage and discrimination can have detrimental effects on mental health.[36, 37] In addition, chronic stress shares a well-established connection with morbidity and mortality.

[36] A growing body of evidence demonstrates how chronic stress levels, even low levels, "get under the skin" and influence the release of stress hormones that affect cholesterol levels, blood pressure, and inflammation. These markers of high stress are connected with both depression and heart disease, demonstrating how mental health is integrated with the "whole person" health experience.[38] Recent scientific research suggests that maternal stress, even in the prenatal period, can have detrimental effects on the lifetime health trajectory of the children of affected mothers.[39]

Even children of low income households are shown to have elevated resting blood pressure and cortisol, both symptoms of high chronic physiological stress levels. Increased chronic stress associated with early childhood poverty has a negative impact on achieving full academic and occupational potential which perpetuates the cycle of poverty and stress on low income populations.[40]

Exercise is a well known means to improving one's mental health as it reduces stress and can be an effective treatment for depression[41]; however many studies show that individuals with low income have consistently lower levels of physical activity.[42, 43]

Stress is measured by self-reported levels of persistent sadness and anxiety, which is defined as sadness or anxiety that persist for 30 days or longer.

BOSTON DATA

Sadness

Twelve percent of Boston adults experienced persistent sadness during 2013. Table 14 shows that the percentage of residents reporting persistent sadness varied by race/ethnicity, annual household income, and subsidized housing status. The percentage of adults who experienced persistent sadness was

higher for adults with annual household incomes of less than $25,000 compared to adults with annual household incomes of $50,000 or more. It was also higher for adults who lived in public housing or received rental assistance compared to adults in neither situation. Within race/ethnicity, a higher percentage of Latino adults experience persistent sadness compared to White adults. There were no significant differences by gender.

Table 14. Persistent Sadness by Selected Indicators, 2013

Indicator	Percent and 95% Confidence
Boston	12.2% (10.7-13.7)
Gender	
Female	14% (11.9-16)
Male	10.3% (8-12.5)
Race/Ethnicity	
Asian	9.1% (4.6-13.7)
Black	13.1% (10.3-16.0)
Latino	16.7% (12.8-20.6)
White	10.8% (8.5-13.0)
Employment Status	
Employed/Self Employed	8.4% (6.7-10.2)
Out of Work	21.5% (15.6-27.4)
Homemaker/Student/Retired	9.9% (7.2-12.7)
Unable to Work	42% (33.8-50.2)
Income	
<$25,000**	22.2% (18.6-25.8)
$25,000-$49,999**	8.7% (5.9-11.6)
$50,000+**	6.1% (4.4-7.8)

** 15-20% of unweighted sample was missing data.

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

"I cry a lot. I don't sleep because I think about everything [paying bills, buying food] and how it's gonna go for the next day. It's really really hard. I'm not healthy because of that."

-Focus Group Participant, 2015

Anxiety

Twenty percent of Boston adults experienced persistent anxiety in 2013. The percentage of residents who experienced persistent anxiety during 2013 varied by race/ethnicity, annual household income and housing status. The percentage of residents who experienced anxiety was higher for those who received rental assistance compared to residents who were in neither situation. The percentage of residents who experienced persistent anxiety was also higher among those who reported an annual household income of less than $25,000 as compared to those with an annual household income of $50,000 or more. Percentages were similar within gender.

Table 15. Persistent Anxiety by Selected Indicators, 2013 limits

Indicator	Percent and 95% Confidence
Boston	20.2% (18.3-22.1)
Gender	
Female	22.7% (20.1-25.3)
Male	17.4% (14.6-20.2)
Race/Ethnicity	
Asian	10.7% (5.7-15.7)
Black	19.2% (16.0-22.5)
Latino	17.7 (13.6-21.8)
White	23.1% (20.0-26.1
Employment Status	
Employed/Self Employed	17.6% (15.1-20.0)
Out of Work	26.5% (20.3-32.7)
Homemaker/Student/Retired	17.4% (13.7-21.1)
Unable to Work	44.4% (36.2-52)
Income	
<$25,000**	28.6% (24.5-32.7)
$25,000-$49,999**	17.8% (13.7-21.9)
$50,000+**	15.9% (13.2-18.5)
Housing Assistance	
Public Housing	21.8% (15.7-28.0)
Rental Assistance	28.8% (22.3-35.3)
Neither	19.0% (16.9-21.2)

** 15-20% of unweighted sample was missing data.

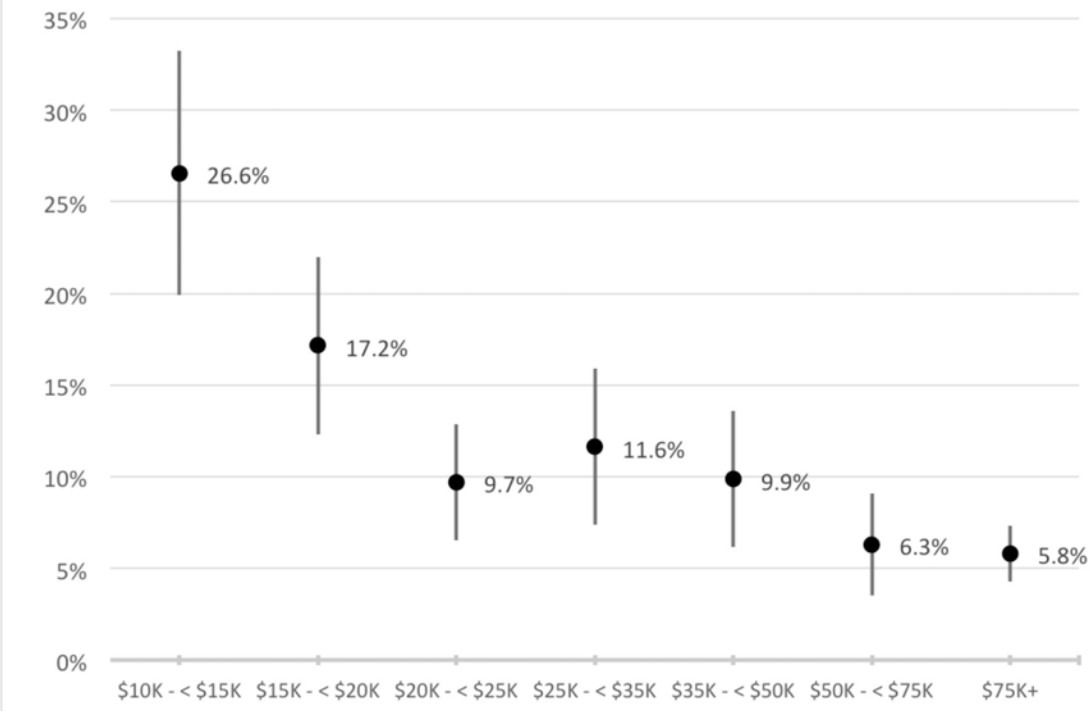
Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

"I was told that I've been having a lot of pain throughout my body; muscle spasms be stuff, [my doctor] made me aware that each time you go into stress mode, whether it might be-cause your family being sick, or you not being able to provide for your household, whatever the case may be, the stress sometimes, it affects your body too. I'm on three different medi-cations, [my doctor is] making me aware that this is because every time I get so stressed out, that's when my body starts acting up. So it does affect you mentally, and it's physical."

-Focus Group Participant, 2015

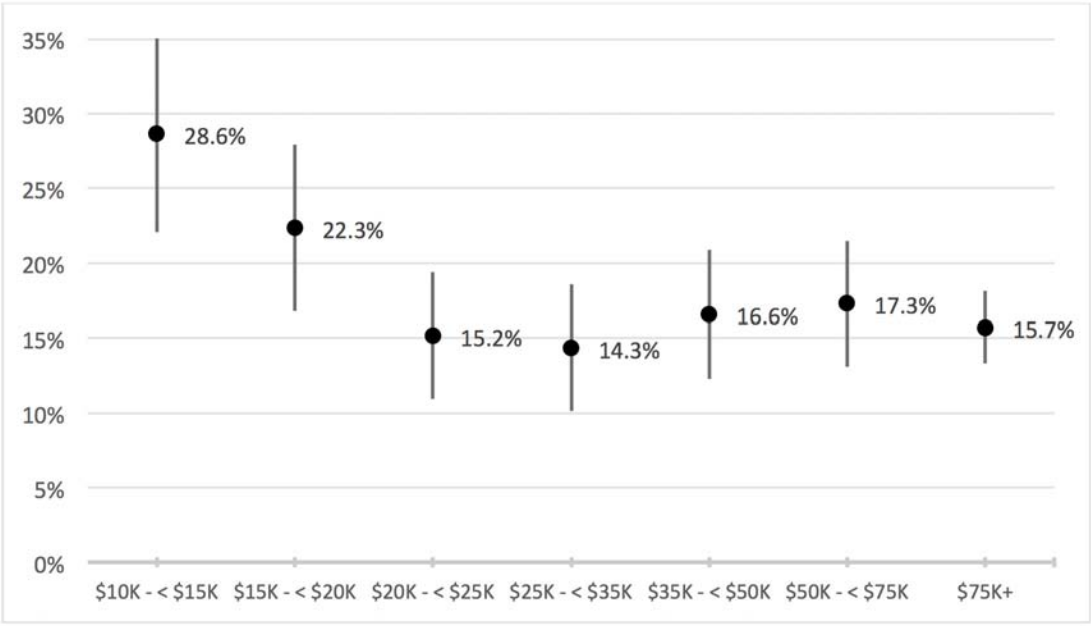
ESTIMATED IMPACT: With an increase in the living wage to $16.96, we estimate a 62% decrease in sadness and a 30% decrease in anxiety among living wage workers most likely to be affected.

Figure 2. Prevalence of Persistent Sadness among Boston Residents by Household Income, 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

Figure 3. Prevalence of Persistent Anxiety among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combinedsurvey, 2010 and 2013 Combined

Obesity

Obesity is an epidemic affecting all corners of the globe, but in the US, obesity is concentrated in areas of high poverty.[44] Researchers have found that obesity among low income individuals is related to consumption of low-cost, energy-dense foods, including highly processed foods and sugar-sweetened beverages, which often results from a lack of access to healthy affordable foods in low income neighborhoods.[45] On the other side of the energy-balance equation, individuals living in poverty are more likely to be sedentary, which is the result of more limited access to safe spaces for physical activity.[46]

Stress (already established as being associated with low income) is also linked to being overweight or obese as it contributes to disordered eating. For example, some studies have shown that 40 percent of individuals eat more food and gain weight during periods of stress.[47, 48] Another study even found binge eating (consuming large quantities of food in a short amount of time) is sometimes promoted by a family's need to stretch or skip meals due to low income, which leads to unhealthy eating patterns and overeating.[48]

Boston Data

In Boston in 2013, there was no significant difference in the percentage of males and females who were obese. A higher percentage of adults ages 45-64 (30%) and 65 and over (27%) were obese compared with adults ages 18-24 (13%). A higher percentage of Black (33%) and Latino (27%) residents were obese compared to White residents (16%). A higher percent of residents who are out of work (33%) or unable to work (38%) were obese compared to those who are employed (18%). A higher percentage of adults living in households with an annual income of less than $25,000 (29%) were obese compared to those living in households with an annual income of $50,000 or more (17%).

Table 16. Obesity (BMI of 30 or higher)^ Among Adults by Selected Indicators, 2013

Indicator	Percent and 95% Confidence
Boston	21.7% (20.0-23.4)
Gender	
Female	23.1% (20.7-25.4)
Male	20.2% (17.7-22.7)
Race/Ethnicity	
Asian	15.3% (8.9-21.6)
Black	33.0% (29.3-36.8)
Latino	27.3% (23.1-31.6)
White	16.2% (13.9-18.4)
Employment Status	
Employed/Self Employed	17.8% (15.8-19.3)
Out of Work	32.8% (26.2-39.4)
Homemaker/Student/Retired	22.7% (19.0-26.4)
Unable to Work	38.3% (31.1-45.6)
Income	
<$25,000	29.3% (25.6-33.0)
$25,000-$49,999	20.7% (17.1-24.3)
$50,000+	17.1% (14.6-19.5)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

^Body Mass Index (BMI) based on self-reported height and weight

ESTIMATED IMPACT: Due to challenges with confounding variables such as race/ethnicity, and a lack of data in the literature review connecting income and obesity, we were unable to make a prediction.[10]

10 In our review of the literature we found that researchers have established a negative relationship between socioeconomic status and obesity. However, several other factors, including race, ethnicity and gender have greater explanatory power and authors caution against drawing a relationship between socioeconomic status and obesity without controlling for these other characteristics. Therefore, since we are unable to control for race, ethnicity and gender in our estimates, we have omitted obesity from our calculations.

Hypertension

In high-income countries such as the US, hypertension is inversely associated with socioeconomic status (SES); that is, the wealthier a person is, the less likely he is to be diagnosed with hypertension.[49] A review of studies across cultures found that the association is stronger for women than in men and US studies show that Black Americans have higher rates of hypertension-related morbidity and mortality than Whites and Latinos.[50, 51] As described by Bell et al, SES affects the likelihood that individuals will engage in certain behaviors that put them at a higher risk for hypertension. These health behaviors include smoking, alcohol consumption, physical activity and diet, among others.[50] Other studies have explained the relationship between low SES and hypertension by examining social stress, economic deprivation, limited social networks and more limited access to medical care.[51]

"I have um high blood pressure and stuff like that. So sometimes I have to let that go because I can't afford to pay for the prescriptions. I have a lot of eye problems with my high blood pressure. I have seizure medicine. I don't take my seizure medication because I can't afford it. So its like I'd rather take my seizure pills than my high blood pressure medication because if I'm outside sometimes from headaches it triggers my seizures so it's like I try to make sure I have money for those."

-Focus Group Participant, 2015

Boston Data

In Boston in 2013, 24% of Boston residents reported having hypertension. Table 17 provides a detailed look at self-reported hypertension rates among Boston residents. A higher percentage of residents ages 45-64 and 65 and over reported having hypertension than residents ages 18-24. A higher percentage of Black (37%) and Latino (26%) residents reported having hypertension than White (19%) residents. A higher percentage of residents with a high school degree or less than a high school degree reported having hypertension than residents with at least some college education. A higher percentage of residents who were out of work (25%) or unable to work (54%) reported having hypertension than residents who were employed (17%). A higher percentage of residents living in households with an annual income of $25,000 or less and $25,000-$49,999 reported having hypertension than residents living in households with an annual income of $50,000 or more. There was no significant difference in reported hypertension by gender.

Table 17. Reported Hypertension among Adults by Selected Indicators, 2013

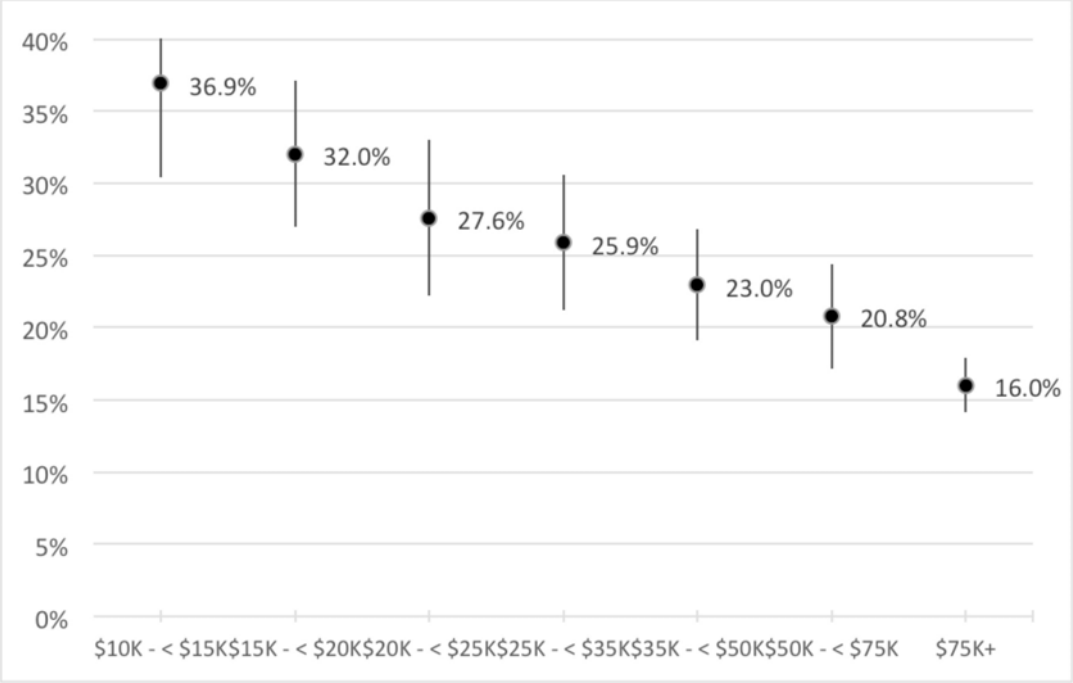
Indicator	Percent and 95% Confidence
Boston	24% (22.3-25.6)
Gender	
Female	23.5% (21.4-25.5)
Male	24.5% (22-27.1)
Race/Ethnicity	
Asian	16.2% (9.9-22.4)
Black	36.7% (33.0-40.5)
Latino	26.2% (22.0-30.3)
White	18.6% (16.7-20.6)
Employment Status	
Employed/Self Employed	16.8% (15.0-18.7)
Out of Work	24.7% (18.9-30.5)
Homemaker/Student/Retired	33.7% (30-37.4)
Unable to Work	54.1 (46.5-61.7)
Income	
<$25,000	32.8% (29.2-36.3)
$25,000-$49,999	24.8% (20.8-28.7)
$50,000+	17.8% (15.6-20.1)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

We find a strong relationship between hypertension and income which is shown in Figure 4. The higher the household income, the less likely adults report having hypertension. Thirty-seven percent of individuals in the lowest income bracket reported having hypertension. The prevalence declines as income goes up and 23% of individuals with at least $35,000-<$50,000 in household income report hypertension. The difference between the highest group ($75,000 and over) is statistically significant when compared to any of the lower income groups.

ESTIMATED IMPACT: Based on average changes in prevalence by income bracket depicted in Figure 4, with an increase in the living wage to $16.96, we estimate a 10% decrease in hypertension among living wage workers most likely to be affected.

Figure 4. Prevalence of Hypertension among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

Diabetes

People with low income have a higher prevalence of diabetes than do wealthy individuals. U.S. and international studies demonstrate that diabetes may be up to two times more prevalent in low income populations than in wealthy ones and this effect is seen across cultures.[52] There is also evidence that low socioeconomic status contributes to greater diabetes morbidity, in the form of increased hospitalization rates for diabetes-related complications.[53] The relationship between diabetes and income is complex, and cannot be attributed to one pathway or mechanism. Studies have linked low SES to inadequate or unhealthy food intake, inadequate access to health care, unhealthy behaviors such as poor diet or lack of physical activity and stress, all of which are potential factors in the development of diabetes.[54, 55] At the same time, researchers seem to agree that preventing individuals from becoming overweight and obese is an effective strategy for preventing onset of type 2 diabetes.[56]

"You know what they say you don't eat during the day so much you have a high tendency of getting diabetes because the sugar intake that you supposed to take during the day you're not getting it. The nutrition that you need to digest you're not getting it."

-Focus Group Participant, 2015

Boston Data

Table 18 provides data on self-reported diabetes among Boston residents in 2013. In 2013, 8.6% of Boston adult residents reported having diabetes. A higher percentage of those aged 45-64 (17.3%) and those 65 and over (24.9%) had diabetes compared to those aged 25-44 (1.8%). A higher percentage of Black residents (14.1%) and Latino residents (12.6%) had diabetes compared to White residents (5.1%). A higher percentage of residents who were out of work (10%) or unable to work (28%) reported having diabetes than residents who were employed (5%). A higher percentage of residents living in households with an annual income of less than $25,000 (13.5%) and between $25,000-$49,999 (9.1%) had diabetes compared to residents living in households with an annual income of $50,000 or more (4.4%).

Table 18. Reported Diabetes among Adults by Selected Indicators, 2013

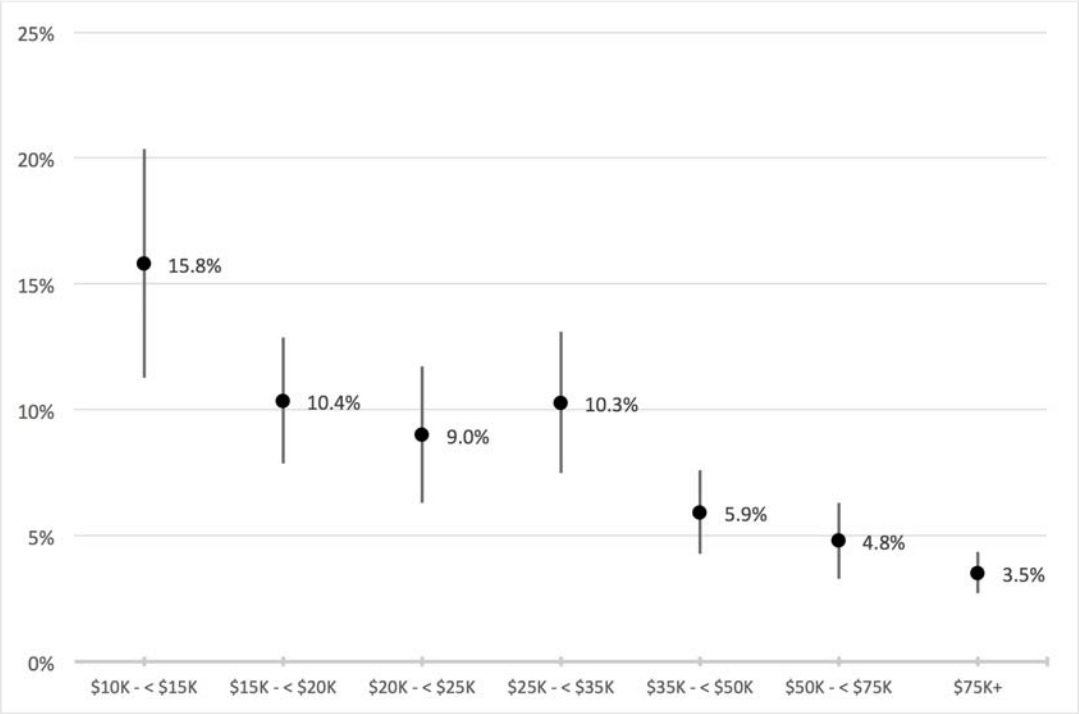
Indicator	Percent and 95% Confidence
Boston	8.6% (7.7-9.6)
Gender	
Female	8.4% (7.1-9.6)
Male	8.9% (7.4-10.4)
Race/Ethnicity	
Asian	6.4% (2.3-10.5)
Black	14.1% (11.6-16.6)
Latino	12.6% (9.7-15.5)
White	5.1% (4.2-6.1)
Employment Status	
Employed/Self Employed	4.6% (3.6-5.5)
Out of Work	9.8% (6.3-13.4)
Homemaker/Student/Retired	13.3% (11-15.6)
Unable to Work	26.7% (21.1-34)
Income	
<$25,000	13.5% (11.1-15.9)
$25,000-$49,999	9.1% (7-11.2)
$50,000+	4.4% (3.4-5.5)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

We find a strong relationship between the prevalence of diabetes and income. About four percent of individuals in the highest income group reported having diabetes. This is significantly lower than the prevalence of diabetes found in the three lowest income groups. For example, 16 percent of people earning $10,000 to $15,000 a year report having diabetes.

ESTIMATED IMPACT: Based on the data in Figure 5, we estimate that an increase in the living wage to $16.96 would yield a 43% decrease in diabetes among living wage workers most likely to be affected.

Figure 5. Prevalence of Diabetes among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

VEGETABLE AND FRUIT CONSUMPTION AND FOOD INSECURITY

Access to healthy, affordable food is greatly dependent on income and neighborhood assets. Individuals living in poor neighborhoods are less likely to have access to healthy and affordable food. Low-income and food insecurity increase an individual's likelihood of obesity, in addition to the multiple risk factors associated with poverty.[57, 58]

The price of healthy food is a significant barrier to healthy eating among individuals with low income. Studies show that healthy food choices among low income households are negatively impacted by the cost of items and the distance to a full-service grocery store.[59] Childhood obesity is also a risk associated with the higher cost of fresh fruits and vegetables.[60] One study connected data from a nationally representative study of children from infancy to age 5 to local food price data and found a correlation between higher-priced fresh fruits and vegetables and higher body mass index (BMI) among children. The researchers determined this correlation to be a result of the prices of fresh fruits and vegetables as opposed to less costly processed foods.[60]

A study conducted in 25 stores in Los Angeles and Sacramento compared the availability and cost of a healthy food basket with the USDA recommended "Thrifty Food Plan". The researchers found limited healthy food options in smaller grocery stores which are more common in low-income urban neighborhoods.

The study also found that the healthy food basket for a two week shopping list was on average $36 higher due to the higher cost of whole grains and healthy, low-fat meat.[61] Studies such as this provide understanding that the cost of healthy food is a significant barrier for low income individuals and families to be healthy.

According to the USDA Economic Research Service, in 2014, 14.0% of American households were food insecure at some time during that year.[62] Unsurprisingly, households with income levels below 185% of the federal poverty level were more than twice as likely to be food insecure as the national average.[62] In addition, Black and Hispanic households had higher rates of food insecurity than White households, with 26.1% and 22.4% respectively reporting food insecurity compared to 10% of White households.[62]

Boston Data
Consumption of Fruits and Vegetables

The relationship between having low income and a lower reported consumption of vegetables and fruits exists among Boston residents as well. Table 19 below demonstrates that during 2013, 25% of Boston adults reported consuming vegetables less than once a day. A higher percentage of Black (34%) adults reported consuming vegetables less than once a day compared to White (22%) adults. A higher percentage of males reported consuming vegetables less than once per day compared to females. A higher percentage of those who are unable to work reported consuming vegetables less than once per day compared to those who are employed. A higher percentage of those living in a household with an annual income of less than $25,000 consumed vegetables less than once per day compared with those who live in a household with an annual income of $50,000 or more.

Table 19. Adults Who Consume Vegetables Less Than One Time Daily by Selected Indicators, 2013

Indicator	Percent and 95% Confidence
Boston	24.8% (22.9-26.8)
Gender	
Female	21.4% (19.0-23.8)
Male	28.7% (25.7-31.8)
Race/Ethnicity	
Asian	20.8% (14.1-27.4)
Black	34.0% (30.1-37.9)
Latino	24.9% (20.5-29.3)
White	21.5% (18.7-24.4)
Employment Status	
Employed/Self Employed	21.0% (18.6-23.4)
Out of Work	27.0% (20.7-33.3)
Homemaker/Student/Retired	29.9% (25.7-34.2)
Unable to Work	40.4% (32.4-48.3)
Income	
<$25,000	30.0% (26.3-33.8)
$25,000-$49,999	27.6% (23.1-32.1)
$50,000+	17.3% (14.7-20.0)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

In 2013, 38% of Boston adults reported consuming fruit less than once a day. Higher percentages of Black and Latino adults reported consuming fruit less than once a day compared to White adults. A higher percentage of males consumed fruit less than once per day compared to females. A higher percentage of those who are unable to work reported consuming fruits less than once per day compared to those who are employed. Additionally, a higher percentage of those living in a household with an annual income of less than $25,000 consumed fruits less than once per day compared with those who live in a household with an annual income of $50,000 or more.

Table 20. Adults Who Consume Fruits Less Than One Time Daily by Selected Indicators, 2013

Indicator	Percent and 95% Confidence
Boston	37.5% (35.4-39.7)
Gender	
Female	34.6% (31.8-37.4)
Male	40.8% (37.6-44.1)
Race/Ethnicity	
Asian	41.5% (33.4-49.6)
Black	42.0% (38.0-46.0)
Latino	42.9% (37.9-47.9)
White	32.4% (29.3-35.6)
Employment Status	
Employed/Self Employed	36.5% (33.7-39.3)
Out of Work	41.9% (34.9-48.9)
Homemaker/Student/Retired	35.0% (30.6-39.3)
Unable to Work	51.5% (43.8-59.2)
Income	
<$25,000	46.0% (41.9-50.2)
$25,000-$49,999	36.8% (31.9-41.8)
$50,000+	30.9% (27.8-34.0)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

Food Insecurity

In 2013, 12% of Boston residents reported being often or sometimes hungry in the past 12 months, but not eating because they could not afford enough food. This is a higher percentage than the average for Massachusetts (10.6%).[63] A higher percentage of Black (18%) and Latino (28%) residents reported this compared to White (6%) residents. A higher percentage of residents who are out of work (24%) and unable to work (38%) reported this compared to residents who are employed (9%). Additionally, a higher percentage of residents who are living in a household with an annual income of less than $25,000 (28%) reported this compared to those living in a household with an annual income of $50,000 (2%) or more. Though Boston residents are faring better compared to national averages, food security inequities by race, ethnicity and income are still very prevalent. See Table 21.

Table 21. Percent of Adults Who Reported in the Past 12 Months Being Often or Sometimes Hungry, But Not Eating Because They Could Not Afford Enough Food (Hunger), 2013

Indicator	Percent and 95% Confidence
Boston	12.4% (10.9-13.9)
Gender	
Female	12.0% (10.1-13.9)
Male	12.9% (10.5-15.3)
Race/Ethnicity	
Asian	5.1% (1.5-8.8)
Black	18.2% (14.9-21.5)
Latino	27.7% (22.8-32.5)
White	6.0% (4.2-7.8)
Employment Status	
Employed/Self Employed	9.0% (7.2-10.8)
Out of Work	23.6% (17.8-29.4)
Homemaker/Student/Retired	9.2% (6.6-11.8)
Unable to Work	38.0% (30.0-45.9)
Income	
<$25,000	28.2% (24.3-32.1)
$25,000-$49,999	9.4% (6.6-12.3)
$50,000+	1.8% (0.8-2.8)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

In 2013, 27% of Boston residents reported that in the past 12 months it was often or sometimes true that the food they purchased did not last and they did not have enough money to get more. A higher percentage of Black (42%) and Latino (50%) residents reported this compared to White (14%) residents. A higher percentage of residents who are out of work (44%) and unable to work (64%) reported this compared to residents who are employed (21%). Additionally, a higher percentage of residents who are living in a household with an annual income of less than $25,000 (52%) reported this compared to those living in a household with an annual income of $50,000 (8%) or more. See Table 22.

"Okay I'm [going to] speak for myself - um there are times, I only get $100 dollars for food stamps and I have a 14 year old who is almost 6 feet and I have an 18 year old; they eat a lot. Um, I stress because there are times it's hard for me to find food for them. And if I do find it it's enough only for them to eat. I'd rather go to sleep without eating instead of having them [be hungry]."

-Focus Group Participant, 2015

Table 22. Percent of Adults who Reported in the Past 12 Months It Was Often or Sometimes True that the Food They Purchased Did Not Last and They Did Not Have Money to Get More (Food Insecurity), 2013

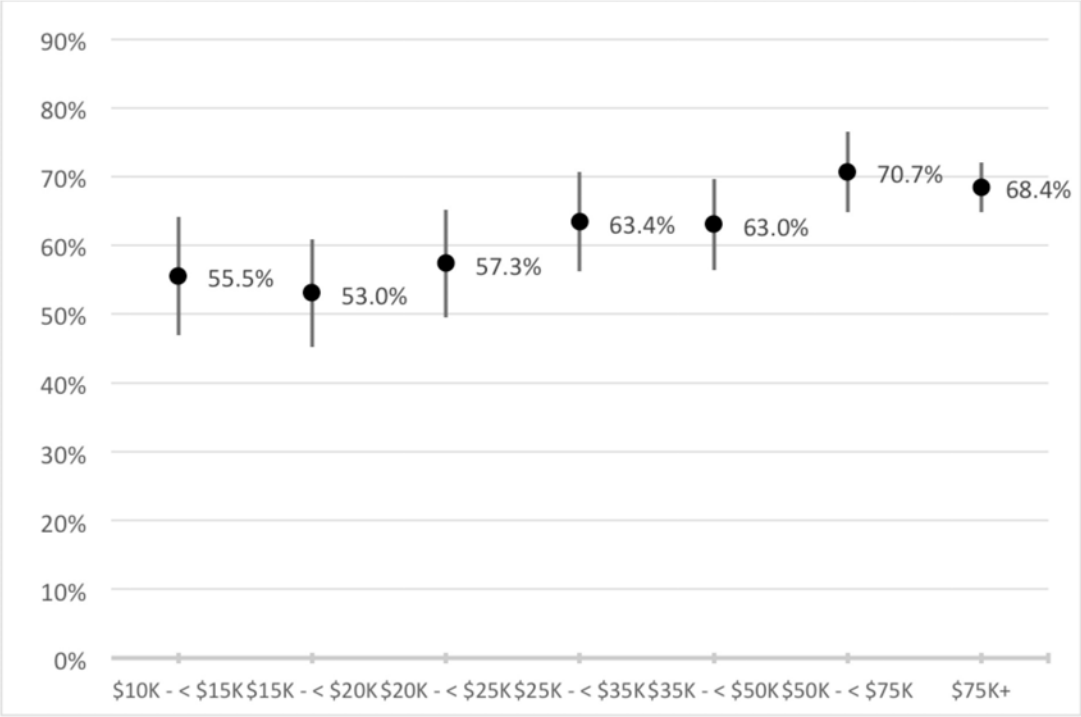
Indicator	Percent and 95% Confidence
Boston	26.9% (24.9-28.9)
Gender	
Female	27.4% (24.8-30.0)
Male	26.3% (23.2-29.4)
Race/Ethnicity	
Asian	15.6% (9.6-21.6)
Black	41.9% (37.8-46.1)
Latino	49.7% (44.6-54.8)
White	14.4% (11.7-17.0)
Employment Status	
Employed/Self Employed	21.2% (18.6-23.6)
Out of Work	43.5% (36.4-50.6))
Homemaker/Student/Retired	24.5% (20.6-28.4)
Unable to Work	63.9% (56.5-71.2)
Income	
<$25,000	52.1% (47.9-56.4)
$25,000-$49,999	26.2% (21.9-30.5)
$50,000+	8.3% (6.2-10.4)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

Overall, Boston residents are more likely to consume fruits and vegetables at least once a day as their income rises. We find that daily fruit consumption is higher for individuals with a household income of at least $50,000. Sixty-nine percent of these individuals report eating fruit at least once a day, whereas only 53-57% of individuals with less than $25,000 in household income consume fruit at least once a day. The trend for vegetable consumption by household income is similar in that the higher the household income the more likely an individual reports consuming vegetables once a day. When compared to lower income groups, individuals with at least $50,000 in household income are more likely to consume vegetables once a day and these differences are statistically significant for most categories. For example, we estimate that 83% of individuals with an income of $50,000 or more consume vegetables once a day compared to only 68% of individuals in the lowest income bracket (See Figure 7).

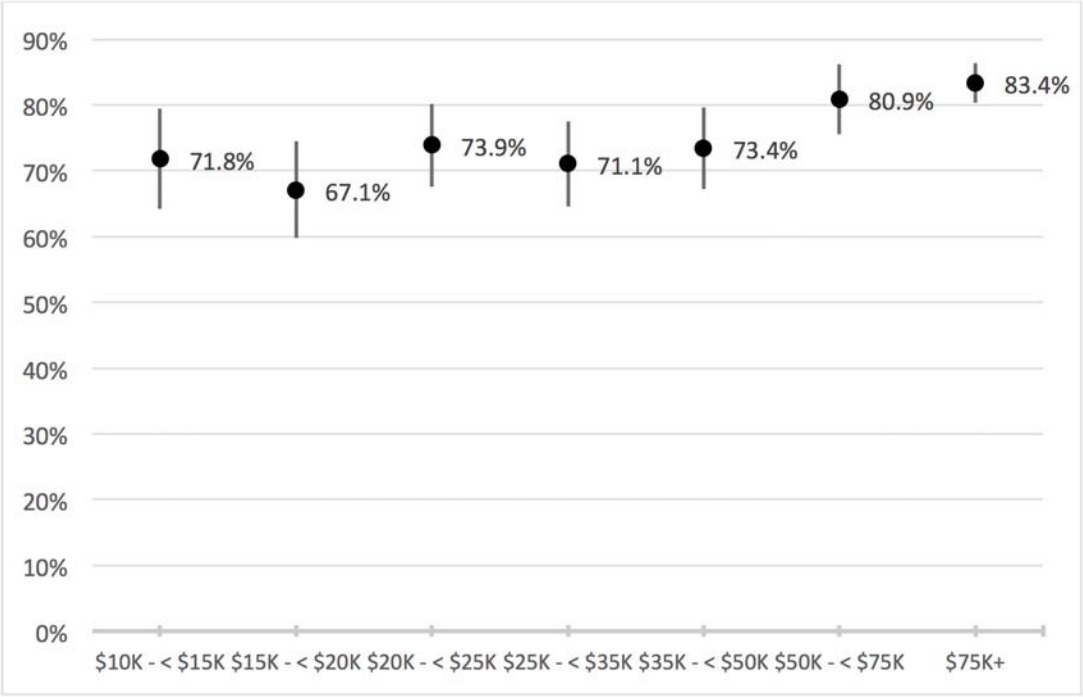
ESTIMATED IMPACT With an increase in the LWO from $13.89 to 16.96, we find there will be a slight increase in the proportion of people who will eat at least one serving of fruit or vegetables per day. If incomes rose above $50,000 with a larger hourly wage increase, the improvement in healthy eating choices would be much more pronounced.

Figure 6. Prevalence of Consuming Fruit at Least Once a Day among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

Figure 7. Prevalence of Consuming Vegetables at least once a Day among Boston Residents by Household Income, 2010 and 2013 Combined



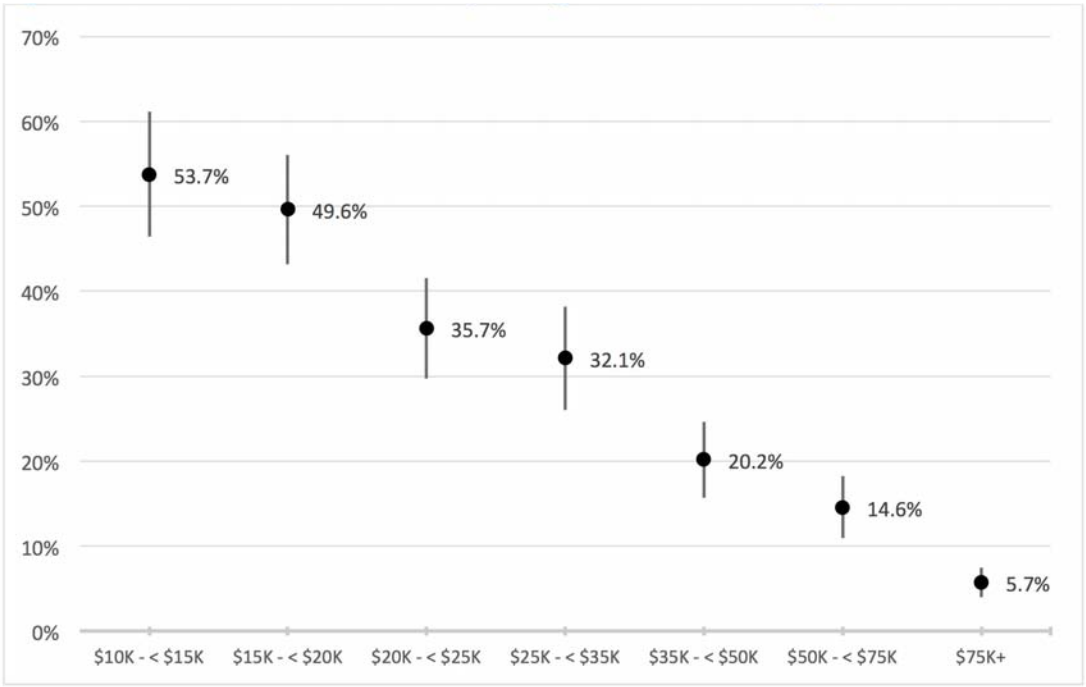
Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

The relationship between household income and food insecurity is an inverse relationship. Those surveyed were given the statement "The food that we bought just didn't last, and we didn't have money to get more" and then asked "Was that often, sometimes, or never true for you or your household in the last 12 months?" Those that responded with often or sometimes were considered to be food insecure (see Figure 9).

There is a strong relationship between the prevalence of hunger and household income. As household income increases, the prevalence of hunger decreases. Those surveyed were given the statement: "We were hungry but didn't eat because we couldn't afford enough food." Respondents were then asked: "Was that often, sometimes, or never true for you or your household in the last 12 months?" Those that answered with often or sometimes were included in the figure below (see Figure 10). Overall, measures of food insecurity peak at the two lowest household income levels, with about 50 percent of individuals surveyed with annual household incomes between $10,000 and $20,000 reporting that they could not afford to buy a sufficient amount of food. Although food insecurity decreases for individuals with a household income above $20,000 but less than $50,000, it is still significantly higher than the highest income group.

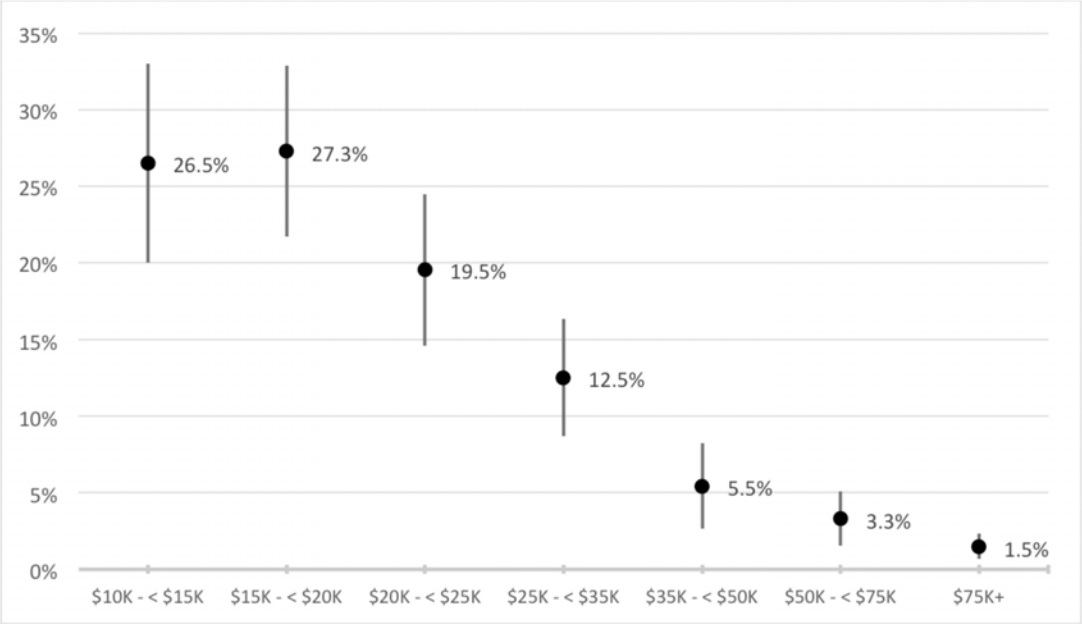
ESTIMATED IMPACT: Based on our analysis, raising the living wage to $16.96 would yield a decrease in both food insecurity and hunger among living wage workers most likely to be affected of 28 percent.

Figure 8: Prevalence of Food Insecurity among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

Figure 9: Prevalence of Hunger among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013, Combined

Adult Asthma

According to data from the Centers for Disease Control and Prevention, 7% of the US adult population reported having asthma in 2013.[64] Asthma is more common in women (8.6%) and among Black Americans (8.6%) and adults of Puerto Rican nationality (12.2%). Individuals with income below $25,000 are more likely

to be diagnosed with asthma (13.3%) compared to individuals with income greater than $50,000 (7.5%).[65] People with low income also report higher morbidity than individuals with higher SES.[66] National data suggest that cost of asthma treatment, including visits to specialists and medication, is a significant barrier to successful management of asthma symptoms. Black adults reported cost as a barrier to seeing a primary care physician (17.8%) when compared to White adults (11.4%). Similarly, Black adults were more likely to be unable to afford their medications than Whites.[66] This racial health inequity is even more troubling when looking at asthma mortality by race. Early and adequate treatment has made asthma deaths by and large preventable. In the US, however, Blacks (23.8 per million) were 2 to 3 times more likely to die as a result of asthma compared with Whites (8.4 per million), others (10.5 per million) and Hispanics (9.8 per million).[65]

As noted above, income plays a significant role in determining the severity of asthma among populations. Researchers found the incidence of asthma hospitalizations increases dramatically among neighborhoods with low median family income.[65] The reasons for this are numerous and largely linked to poor quality housing and other environmental conditions, including increased air pollution, pests, mold, dusty carpeting, and the financial challenges to addressing these issues.

Asthma can decrease quality of life and cause missed school or work days, which has significant economic costs. The estimated total cost of asthma to the US was $56 billion (2009 dollars) in 2007; this included medical expenses ($50.1 billion per year), loss of productivity resulting from missed school or work days ($3.8 billion per year), and premature death ($2.1 billion per year).[67]

Boston Data

These trends are reflected in asthma rates for adults in Boston. In 2013, 11% of Boston adult residents reported having asthma. A higher percentage of females reported having asthma compared to males. A lower percentage of Asian residents reported having asthma compared to White residents. A higher percentage (16%) of residents living in households with an annual income of $25,000 or less reported having asthma compared to residents living in households with an annual income of $50,000 or more (9%). A lower percentage of residents who were foreign-born reported having asthma compared to residents who were US-born. There were no significant differences among age groups or education levels.

Table 23. Reported Asthma among Adults by Selected Indicators, 2013

Indicator	Percent and 95% Confidence
Boston	11.1% (9.7-12.5)
Gender	
Female	13.4% (11.4-15.4)
Male	8.5% (6.5-10.6)
Race/Ethnicity	
Asian	2.8% (0.2-5.3)
Black	11.9% (9.4-14.4)
Latino	11.9% (8.8-15.1)
White	11.8% (9.5-14.2)
Employment Status	
Employed/Self Employed	9.6% (7.8-11.4)
Out of Work	11.1% (6.9-15.2)
Homemaker/Student/Retired	11.6% (8.6-14.5)
Unable to Work	23.5% (16.3-30.7)
Income	
<$25,000	15.5% (12.3-18.8)
$25,000-$49,999	12.0% (8.6-15.4)
$50,000+	8.9% (6.9-10.8)

Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2013

ESTIMATED IMPACT: With an increase in the living wage to $16.96 we find an 11% decrease in adult asthma prevalence among living wage workers most likely to be affected.

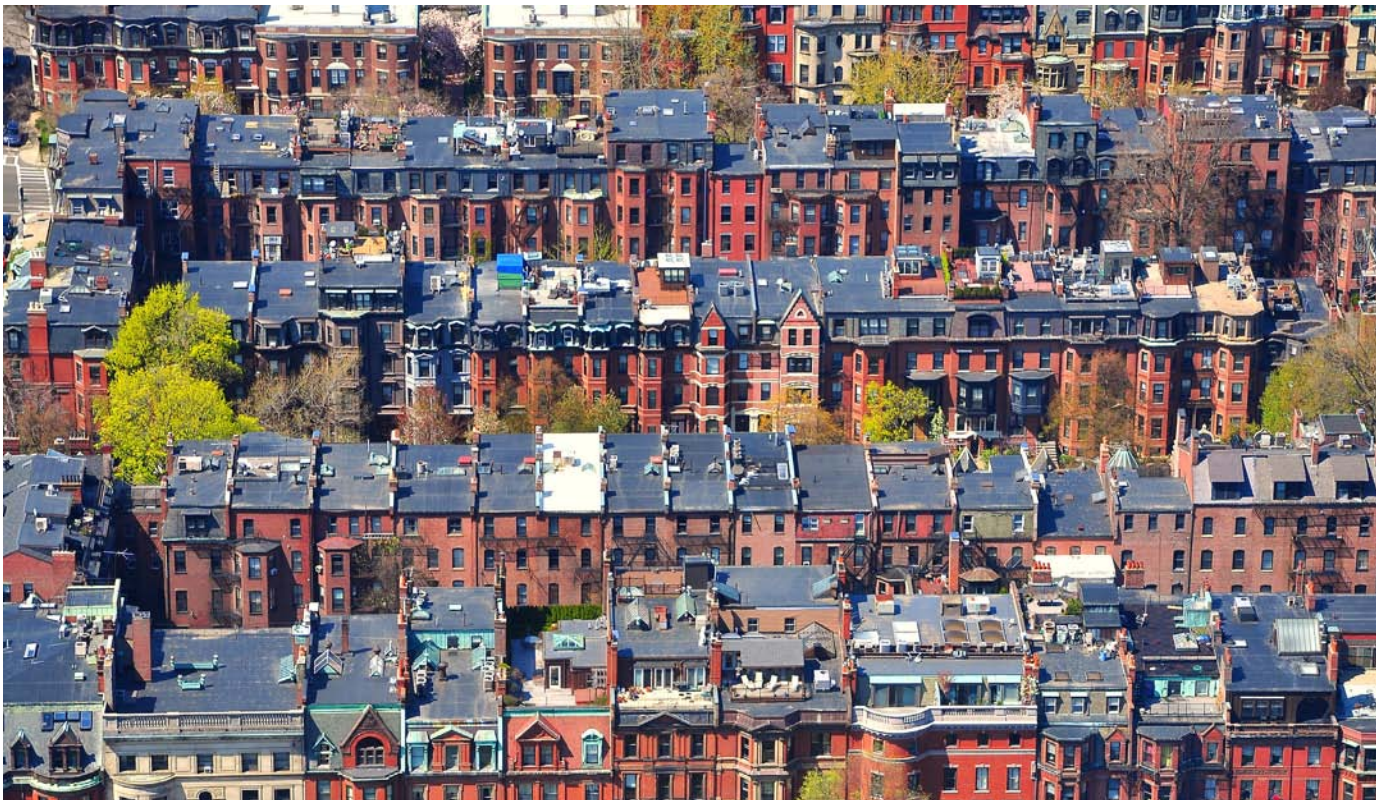
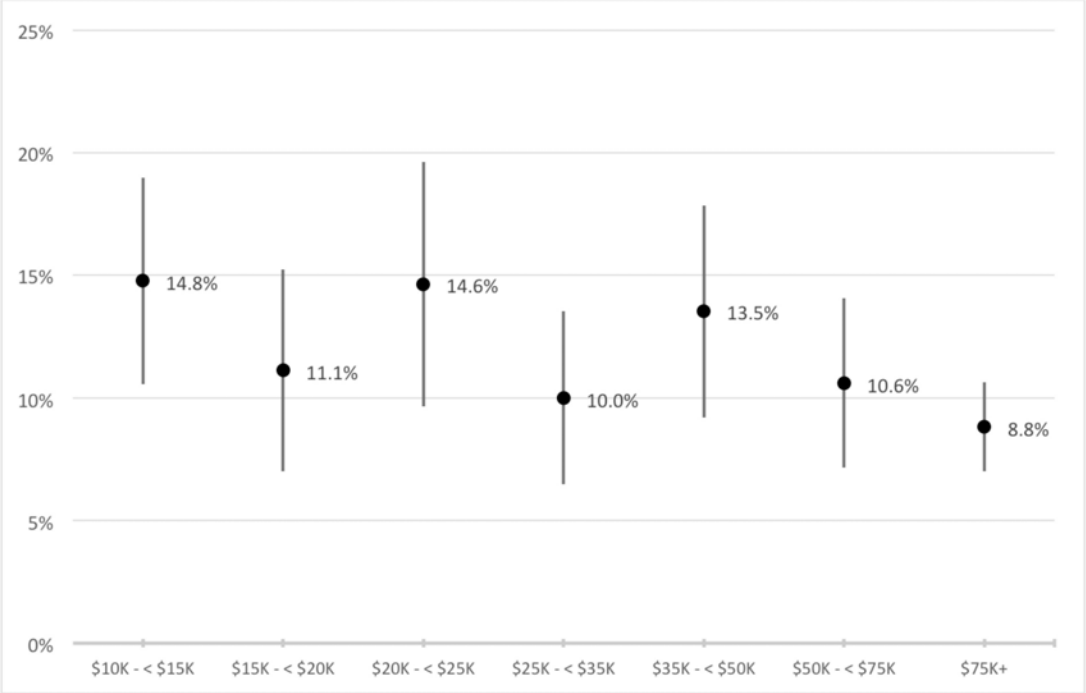


Figure 10: Prevalence of Asthma among Boston Residents by Household Income 2010 and 2013 Combined



Source: Boston Public Health Commission's Boston Behavioral Risk Factor Surveillance System (BBRFSS) survey, 2010 and 2013 Combined

Chronic Pain

Chronic pain is a condition experienced by 119 million Americans and its prevalence is increasing. The most common chronic pain is musculoskeletal, with 28% of American adults reporting chronic back pain in 2009.[68] As with other health conditions, prevalence, severity and treatment of chronic pain differs between populations by race, income, language proficiency and gender. Lower SES adults typically report higher incidence of pain than higher SES adults. In 2009, individuals with no high school diploma or GED were 1.33 times more likely than individuals with some college or more to report pain in the last 3 months.[68] Differences by income are also apparent – individuals living at or below 100% of the federal poverty level are 1.38-1.76 times more likely to experience various types of chronic pain than individuals at 400% or more of the poverty level.[69] A study by Portenoy et al. found that individuals making less than $25,000 a year or less and had less than a high school education were 1.7 times more likely to experience disabling pain than their higher SES counterparts.[70]

Physical pain is associated with work that is intense and physically demanding. A 2005 survey of Las Vegas hotel cleaners found that 63% of workers experienced severe low back pain and that those who had a more intense physical workload were 3 times more likely to experience severe pain.[71] Pain is also the likely outcome of workplace injuries, which cost workers and employers in lost work days, unemployment compensation and healthcare costs.[71] It is estimated that workers who experience a workplace injury lose approximately 15% of their earnings over

the 10 years following the injury.[72]

Boston Data

Data on the prevalence of pain in Boston are not routinely collected so it is difficult to understand the epidemiology of chronic pain in the city. This variable is included as a result of community meetings that were held with low-wage workers during the scoping phase of this project. The experience of chronic pain surfaced numerous times over the course of two meetings, with workers expressing the relationship between the long hours and physical demands of their jobs with the musculoskeletal pain that they experience on a daily basis. While we are not able to characterize the change in pain by income in Boston, we can say that as workers ascend the income ladder, they are less likely to report experiences of chronic pain.

ESTIMATED IMPACT: No prediction was made for chronic pain due to a lack of Boston specific data on the prevalence of chronic pain.

Table 23. Summary Table of Estimated Impacts

Health Outcome	Increase/Decrease in the Percent of Cases
Persistent Sadness	-61.9%
Persistent Anxiety	-29.8%
Consuming Fruit at least once a day	5.3%
Consuming Vegetables at least once a day	2.0%
Hypertension	-9.5%
Diabetes	-43.4%
Adult Asthma	-11.0%
Food Insecurity	-28.0%
Hunger	-28.0%

PART 3. ELIGIBILITY FOR PUBLIC BENEFITS

RESEARCH QUESTIONS:

- **How would a change in the number of hours worked impact a worker's eligibility for public benefits? How would this impact health outcomes related to access to benefits?**

One of the key arguments against increasing wages for low wage workers is that such a move will ultimately come back to punish the employee, either in the form of decreased hours or the loss of public benefits. We considered if workers who make more as a result of an increase in the living wage would lose an Earned Income Tax Credit as an example of a public benefit that is important to low income families. Our results are that some would lose a benefit as a result of an increase in the living wage, but that the proportion that would is very low.

Because of the way benefits are structured for most public supports, every additional dollar of earnings results in some decrease in benefit level. The amount

varies by benefit, but for SNAP, housing and TAFDC (cash assistance) it is about 30 cents for every dollar. So for workers that receive these benefits, an increase in the living wage would boost total resources for most affected workers, but not by as much as the full increase of the living wage. Given the constraints of our data and the study budget we were able to provide estimates of the potential change in all types of public benefits.

The one program that operates differently is the Earned Income Tax Credit (EITC). Workers with low and moderate incomes are often eligible for the federal and state Earned Income Tax Credit (EITC) and are very likely to use it. The EITC provides eligible earners with a lump-sum benefit administered through the federal income tax. Massachusetts piggybacks on the federal EITC. The amount of credit varies by income level and by marital status and presence of children. Initially as earners with no earnings start to earn income the EITC increases as income increases, it then flattens out at a maximum level and at some point begins to decrease as income rises. For workers without children the maximum amount of EITC is small (just under $500 in 2014) and phases out at relatively low levels of annual income (about $15,000 for unmarried workers and $20,000 for married workers.) For earners with children, the credit is more substantial (between $3,305 and as much as $6,143 in 2014) and income eligibility levels are higher, phasing out entirely between around $38,000 to around $52,000 depending on marital status and number of children (see Figure from the Tax Policy Center in Appendix 6).

Workers with initial income on the inclining portion of the EITC scale may see increases in the amount of EITC they receive with an increase in the living wage, while some of those on the flat portion or on the declining portion will see decreases in EITC. Using the family income distribution of workers most likely to be eligible for the living wage estimated using the ACS, we can provide rough estimates on the percentages of workers that might see increases or decreases in their EITC due to an increase in the living wage.

Unmarried single workers without children comprise 21 percent of likely living wage workers. Only about 15 percent of these workers have income that make them eligible for the EITC and therefore their receipt would be impacted by an increase in the living wage (assuming work at full-time). About one-third of the workers currently getting the EITC would see a slight increase or no change in their EITC, another one-third would still receive the EITC but at a lower level and about one-third would no longer be eligible. We estimate that married workers without children comprise 51 percent of all workers most likely to be eligible for the living wage. Only about five percent of married earners without children are eligible for EITC. After an increase in the living wage a small portion of these earners with the EITC may face slightly lower amounts due to the wage increase. Of the 72 percent of affected workers without children, most are not eligible for the EITC currently, so the increase in the living wage will have no impact on the EITC receipt of the vast majority of covered workers without children. We estimate about five percent of all workers without children might face a decline in the receipt of EITC due to an increase in the living wage.

Married earners with children comprise about 16 percent of all likely living wage workers. Currently about 35 percent have family income that makes them eligible for the EITC. An increase in the wage level (working full-time) would push about five percent of all married earners with children out of the eligibility range. About 10 percent would see an increase or no change in their EITC while about 20 percent would see a decrease. Just over 12 percent of all likely living wage earners are unmarried parents and about 65 percent are eligible for EITC. Of those, about half have incomes that place them on the rising or flat part of the EITC payment scale. An increase in the living wage would mean an increase in the EITC for about 10 percent of all unmarried earners with children, with another 20 percent remaining on the flat portion receiving the maximum payment. About 30 percent would see a decrease with about 5 percent losing eligibility. Overall we estimate that an increase in the living wage would reduce the level of EITC received for about 30 percent of parents. Still, because workers with children comprise 28 percent of all likely living wage workers, the total percentage of all living wage workers that might experience a decrease in EITC receipt due to higher earners is about 12 percent.

Most of the individuals who are currently covered by the LWO are single or married without children, so the risk of losing public benefits as a result of an increase in the living wage is low. As these groups tend to be eligible for fewer public supports, the risk of losing them as a result of an increase in the living wage is low.

While there was strong interest among the research team and other stakeholders to understand the impact that a change in wage would have on number of hours worked, we were unable to collect primary data on the relationship between an increase in wages and the number of hours worked. Fortunately, there are a number of studies that have examined the question of whether hours would be reduced as a result of implementation of a living wage ordinance. In Brenner and Luce's 2001 study of Boston's LWO, the researchers surveyed affected businesses and workers to understand changes in staffing that were implemented after passage of the LWO.[14] Data from this study showed that, instead of cutting hours or positions, covered firms actually increased the number of full-time employees, thus increasing hours for a number of positions. At the same time, the number of part-time employees decreased, suggesting a shift away from part-time to full-time work for covered employees.[14] Another, more recent, study of the Los Angeles Living Wage Ordinance found that overtime hours dropped and employers curtailed training, bonuses and some benefits instead of resorting to use of part-time employees.[73]

PART 4: IMPACT ON BUSINESSES

RESEARCH QUESTIONS:

- **What would changes to the LWO mean for businesses (including increased pay and potentially increased health insurance coverage)? Would a change to the LWO impact the number of full-time jobs available (would businesses not offer as many full-time jobs)? How would these changes impact the health of low wage workers?**

We conclude that while business leaders worry about the impact of changes to the living wage ordinance, in particular an increase in the living wage, studies of Boston's living wage and other living wage ordinances demonstrate that living wage ordinances do not contribute to either (a) a decrease in available jobs or hours or (b) a significant increase in contract costs. In fact, when Boston first implemented its living wage ordinance, costs for contracts actually went down. Part of the reason for this effect is that many of the city's contracts are controlled by state and federal funding sources which set the rate for service costs. The other reason is that personnel costs are far from the most significant factor in determining the cost of providing a contracted service, especially when a firm is using low wage workers.

Employers also expressed a strong desire to be involved in the policy discussion before it becomes a large public debate. Those who provide services under the living wage ordinance, who are primarily human service providers, expressed a strong interest in partnering with the city to better support their employees who are making low wages. One employer suggested that the city could provide case management for low wage staff, for example, or enhanced training opportunities for low wage workers so that they would have opportunities to move up their chosen career ladder.

Summary of Findings

In sum, our findings indicate that the health benefits of increasing the living wage from $13.89/hour to $16.96/hour were positive but affect only a small number of individuals.

- An increase in Boston's Living Wage of approximately $3.00/hour, from the current wage of $13.89/hour to a $16.96/hour "housing wage" would yield moderate anticipated improvements in health. The most significant, likely impacts are:
    - A reduction in rates of adult diabetes;
    - A reduction in rates of adult hypertension;
    - A reduction in rates of adult asthma;
    - A reduction in food insecurity and hunger;
    - A reduction in anxiety and persistent sadness; and
    - An increase in the number of individuals who consume fruit daily.
- In addition, we found that most of the individuals who are currently covered by the LWO are single or married without children, so the risk of losing public benefits as a result of increases in the living wage is low.

- Low-wage workers, in focus group interviews and in the literature, indicated that they struggle to pay for basic needs such as food, housing, childcare, and health care and often have to choose between paying for one basic need or another. When asked about whether higher wages would make a difference, many said that it would, but that they feared losing public benefits if their income was too high.
- Analysis of risk of losing the Earned Income Tax Credit finds that very few would outright lose this benefit, some would have a decrease in tax credit earnings, and most would have no change. Literature on the impact of other LWO also demonstrates that workers do not lose hours as a result of LWO or changes to the wage.
- Residents who are making very low wages would benefit from an increase in the living wage and would likely spend that excess income on basic needs such as food, shelter and medicine.
- Employers interviewed who would be subject to the increase in the living wage expressed an interest in having a better paid workforce, but also said that they would expect the city to contribute toward paying for the additional cost associated with an increase in the wage. However, studies of the LWO show that most businesses were able to absorb the costs without passing it along to the city or cutting staff.

Table 23. Summary Assessment of Expected Effects from increase in living wage

Health Impact or other Outcome of Increase in Living Wage	Likelihood	Direction of Effect	Strength of Quantitative Evidence	Strength of Lit Review Evidence	Strength of Qualitative Evidence
Adult Asthma Rates	Δ	Decrease	Weak	Moderate	N/A
Hypertension Prevalence	Δ Δ	Decrease	Moderate	Limited	N/A
Diabetes Prevlence	Δ Δ	Decrease	Moderate	Strong	Moderate
Access to Health Care	Δ Δ Δ	Increase	Strong	Strong	Strong
Access to Food	Δ Δ Δ	Increase	Strong	Strong	Strong
Fresh Fruit Consumption	Δ Δ	Increase	Weak	Moderate	Strong
Vegetable Consumption	Δ Δ	Increase	Weak	Moderate	Moderate
Persistent Sadness Prevalence	Δ Δ	Decrease	Moderate	Moderate	Moderate
Persistent Anxiety Prevalence	Δ Δ	Decrease	Moderate	Moderate	Moderate
Loss of Public Benefits	Δ	Increase	Weak	Moderate	Moderate
Cost of City Contracts	Δ	Increase	Weak	Weak	Moderate

KEY

Likelihood	Direction of Effect	Strength of Quantitative Evidence	Strength of Lit Review Evidence	Strength of Qualitative Evidence
Δ = Unlikely. There is limited evidence that effects will occur as a result of an increase in the living wage.	Increase: Data demonstrates that an increase in the LW will lead to an increase in the health outcome.	Strong: High quality data demonstrates a clear and strong association between an increase in the living wage and a particular outcome.	Strong: 10+ strong studies that indicate a link between low income and the outcome	Strong: Consistently mentioned as a theme by focus group participants.
ΔΔ = Possible. Evidence suggests that effects may occur as a result of increase in income, but not all of the evidence supports this conclusion.	Decrease: Data demonstrates that an increase in the LW will lead to a decrease in the health outcome.	Moderate: High quality data demonstrate an association between an increase in the living wage and the outcome, but the association is weaker.	Moderate: 5-10 quality studies, but some conflicting results	Moderate: Mentioned as a theme by 5 or fewer focus group participants.
ΔΔΔ = Likely. Evidence suggests that effects commonly occur when individuals receive increases in income.	Decrease: Data demonstrates that an increase in the LW will lead to a decrease in the health outcome.	Weak: There is limited data to suggest a relationship between the outcome and an increase in the living wage.	Weak: Studies are conflicting in their analysis of the relationship between low income and the health outcome.	Weak: Mentioned once or not at all by focus group participants.

SECTION III. RECOMMENDATIONS

Based on our estimated impacts that an increase in the living wage would have, the authors propose the following recommendations:

RECOMMENDATIONS

Changes to the Ordinance:

1. The City should alter the way that the Living Wage is calculated to ensure that it is equal to a family sustaining wage in Boston. This would mean a living wage of approximately $16.96 per hour for a family of four including two wage earners or $25/hour for a single working parent who needs to support him/herself and one toddler-age child in Boston. This would enable more individuals who are working in living wage-covered firms to afford their families' basic needs.
2. In order to have a greater impact, the city should expand the living wage ordinance to cover additional low wage workers who are not currently covered by the LWO. These expansions could include:
    - Application of the LWO to cover additional entities, including quasi-governmental agencies and businesses that have other legal relationships with the city, such as leaseholds executed by city departments.
    - Firms that receive business assistance from the city, which is already defined in the ordinance and includes grants, loans, tax incentives, bond financing and other subsidies in the amount of $100,000 or more.
    - Revisit and consider changing the 25-employee threshold. Other cities have successfully implemented living wage ordinances with a lower employee threshold. This would capture additional employers and contracts and may prevent firms from skirting LW responsibility by subcontracting work to smaller firms.

Partnerships:

1. The City should engage with business leaders and companies that provide services under the current living wage ordinance before proposing a policy change.
2. The City should look for opportunities to partner with human service and non-profit firms covered by the LWO to provide better services to their employees.
3. The City should partner with other large employers in Boston, including large healthcare and higher education non-profits as well as philanthropic organizations to implement living wage policies in their contracting and grant-making.

Changes to Enforcement:

1. The city should adopt an enforcement model that involves payroll review and spot checks to ensure that enforcement is effective.
2. The city should collect data in a way that enables the city to better under-

stand the demographic composition of the workers who are covered by the LWO. For example, collecting data on individual employees using a unique identifier would help us know the precise demographics on employees in particular sectors and would also help us know if LW employees are working under several LWO contracts at one time. Connecting the LWO to the city's procurement system would also lead to more seamless enforcement of the ordinance.

SECTION IV. MONITORING

The goal of this HIA is to contribute to the policy debate by offering analysis that was not previously available regarding the impact of proposed changes on health. The final step in the HIA process is monitoring – or tracking – the effect of the HIA on the process. In particular, the monitoring phase of this HIA will focus on (1) the impact that the HIA has on the decision; (2) implementation of that decision and (3) changes in health determinants that result from implementation of the decision.

BPHC, together with our partners in organized labor and members of the advisory committee, will track proposals as they make their way through Boston City Council. BPHC will work with the Office of Workforce Development to ensure that any amendments made to the LWO are properly enforced and will help make the public health case to newly covered firms. BPHC will also work with OWD to make amendments to their data collection forms so that progress on LWO implementation can be improved and worker demographics are better captured. Revised DWD forms can be found in Appendix 7. BPHC's Research and Evaluation Office will monitor the long term health impacts of any changes through their annual Health of Boston report.

CONCLUSION

We find that there is a strong relationship between income and health outcomes for Boston residents. In particular, individuals making under $50,000 a year in Boston experience much worse health outcomes than their upper-income counterparts. To a limited degree, Boston's current LWO provides an opportunity for some low-wage workers to receive better paying jobs and better health outcomes. Our analysis demonstrates that an increase in the living wage would improve the health of workers affected. However, we also find that only a small subset of workers would be affected, reducing the overall benefit to Boston and its residents. We find that a combined strategy of expanding the LWO and increasing the hourly wage to bring it in line with the true cost of living in Boston would have a marked impact on health, particularly in the areas of mental health, hunger, hypertension and diabetes. In turn, the city could expect to see lower morbidity and mortality among this population of low-wage residents.

Cited Literature

1. Walkscore Cities and Neighborhoods Web site. https://www.walkscore.com/cities-and-neighborhoods/. Accessed March 9, 2016.
2. Quinn G. Boston's tap water rated the best in the country by national water quality group. Mass Live. June 12, 2014. http://www.masslive.com/news/boston/index.ssf/2014/06/boston_tap_water.html. Accessed January 10, 2016.
3. Harris D. Boston's one of the '10 best cities for love,' according to Zillow. Boston Business Journal. September 8, 2015. http://www.bizjournals.com/boston/real_estate/2015/09/bostons-one-of-the-10-best-cities-for-love.html. Accessed January 4, 2016.
4. Reevy M. The 5 best sports cities in America. Sports Cheat Sheet. September 26, 2015. http://www.cheatsheet.com/sports/these-5-cities-are-the-greatest-sports-towns-in-the-country.html/?a=viewall. Accessed January 6, 2016.
5. Landry L. Boston ranked best city in the country for college students. BostInno. November 26, 2014. http://bostinno.streetwise.co/2014/11/26/qs-ranking-of-best-cities-for-students-2014-1/. Accessed January 5, 2016.
6. Berube, A, Holmes, N. City and metropolitan inequality on the rise, driven by declining incomes. Brookings Institution, January 14, 2016. http://www.brookings.edu/research/papers/2016/01/14-income-inequality-cities-update-berube-holmes. Accessed January 20, 2016.
7. Bluestone B, Tumber C, Lee N, Modestino A, Costello L, Davis T. Greater Boston housing report card 2014-2015: fixing an out-of-sync housing market. Boston Foundation, March 2015. https://www.tbf.org/~/media/TBFOrg/Files/Reports/2014%20-%202015%20Housing_Report.pdf. Accessed December 15, 2015.
8. Turchi, M. Boston rents remain No. 4 highest in the nation going into 2016. Boston Globe. January 6, 2016. http://realestate.boston.com/news/2016/01/06/boston-rents-remain-no-4-highest-in-the-nation-going-into-2016/. Accessed January 8, 2016.
9. Boston Redevelopment Authority Research Division, Boston Citywide Plan Trends in Poverty and Inequality, Boston Redevelopment Authority, October 2015. http://www.bostonredevelopmentauthority.org/getattachment/c93581ad-a7b3-4457-b1f0-c9c865f2ff70. Accessed March 9, 2016.
10. Quick Facts, Boston, MA. United States Census Bureau Web site. 2010 Decennial Census. http://www.census.gov/quickfacts/table/PST045215/2507000. Accessed March 11, 2016.
11. Boston Redevelopment Authority Research Division, Boston's Growing Economy, Boston Redevelopment Authority, September 2015. http://www.bostonredevelopmentauthority.org/getattachment/373246c7-540a-4614-a1c1-9254a1acdf54. Accessed March 1, 2016.
12. United States Census Bureau, American Community Survey, 2014.
13. Boston Redevelopment Authority Research Division internal analysis, 2015.
14. Brenner M, Luce S. Living wage laws in practice: the Boston, New Haven, and Hartford experiences. Political Economy Research Institute, 2005. http://www.peri.umass.edu/236/

hash/828cb127367263684c20f26ec3a4da27/publication/56. Accessed October 10, 2015.
15. Office of the Press Secretary, Text of speech by President Obama. White House, 2013. https://www.whitehouse.gov/the-press-office/2013/12/04/remarks-president-economic-mobility. Accessed November 26, 2015.
16. Desilver D. Global inequality: How the US compares. Pew Research Center, December 19, 2013. http://www.pewresearch.org/fact-tank/2013/12/19/global-inequality-how-the-u-s-compares/. Accessed November 26, 2015.
17. Bowman K, Marsico J. Income inequality: what the polls tell us. American Enterprise Institute, February 3, 2014. http://www.aei.org/publication/income-inequality-what-the-polls-tell-us/. Accessed November 10, 2014.
18. Boston 2014 Economic Development Working Group Transition Team Report. April 16, 2014. http://www.cityofboston.gov/images_documents/Economic%20Development_tcm3-44444.pdf. Accessed November 11, 2015.
19. Boston.com, Posted text of inauguration speech by Mayor Martin J. Walsh, delivered January 6, 2014. http://www.boston.com/news/source/2014/01/read_the_text_of_mayor-elect_martin_walshs_inauguration_spee.html. Accessed November 12, 2015.
20. Health of Boston 2014-2015. Boston Public Health Commission. Research and Evaluation Office. http://www.bphc.org/healthdata/health-of-boston-report/Documents/HOB-2014-2015/FullReport_HOB_2014-2015.pdf. Accessed March 9, 2016.
21. Martin J, Vance A, Hindley B, Meiser M. Shape of the city: making Boston America's upwardly mobile city: a summary of the Boston indicators report 2015. The Boston Foundation, 2015. http://www.tbf.org/~/media/TBFOrg/Files/Reports/INDICATORS%202015.pdf. Accessed March 9, 2016.
22. Johnston K. Most jobs added in Boston since recession called low-paying." Boston Globe. September 22, 2015. https://www.bostonglobe.com/business/2015/09/21/boston-low-wage-jobs-make-majority-jobs-added-since-recession/TZmK7p7izwICWX1YtptTeK/story.html. Accessed February 10, 2016.
23. U.S. Bureau of Labor Statistics. Labor Force Characteristics by Race and Ethnicity, 2014. Report 1057. http://www.bls.gov/opub/reports/cps/labor-force-characteristics-by-race-and-ethnicity-2014.pdf. Accessed February 10, 2016.
24. U.S. Bureau of Labor Statistics. A Profile of the Working Poor, 2013. http://www.bls.gov/opub/reports/cps/a-profile-of-the-working-poor-2013.pdf. Accessed February 10, 2016.
25. Munoz A, Kim M, Chang M, Jackson R, Hamilton D, Darity W. The color of wealth in Boston, Federal Reserve Bank of Boston, 2015. http://www.bostonfed.org/commdev/color-of-wealth/. Accessed February 10, 2016.
26. Boston Redevelopment Authority, Research Division, Boston's living wage and the cost of raising a family." Internal analysis and memorandum.
27. Health Impact Assessment Web site, World Health Organization. http://www.who.int/hia/en/. Accessed November 10, 2015.
28. Bhatia R, Farhang L, Heller J, Lee M, Orenstein M, Richardson M and Wernham A. Minimum elements and practice standards for health impact assessment, Version 3. September, 2014.
29. Boston's Living Wage Ordinance, Ord. 1998 c. 5§ 1.
30. Economic Independence Calculator. Crittenton Women's Union Web site. (2013). http://www.liveworkthrive.org/site/assets/docs/MASS%20INDEX%20FINALWEB.pdf. Accessed 4/13/15.
31. Brenner M. The economic impact of the Boston living wage ordinance. Industrial Relations. 2005; 44: 59-83. Id at 81.
32. Bhatia R, Katz, M. Estimation of health benefits from a local living wage ordinance. Am J Pub Health. 2001; 91: 1398-402.
33. Cole B, Shimkhada R, Morgenstern H, Kominski G, et al. Projected health impact of the Los Angeles city living wage ordinance. J. Epidemiol Community Health. 2005; 59:645-650.
34. Pickett, KE and Pearl, M. Multilevel analyses of neighborhood socioeconomic context and health outcomes: a critical review. J Epidemiol Community Health. 2001; 55:111-122.
35. Sternthal MJ, Slopen N, Williams, DR. Racial disparities in health: how much does stress really matter? Du Bois Review. 2011; 8: 95-113.
36. Bulatao R, Anderson N, Ed. National Research Council Panel on Race, Ethnicity, and Health in Later Life. Understanding Racial and Ethnic Differences in Health in Late Life: A Research Agenda. Washington DC: National Academies Press; 2004.
37. How stress affects your health. American Psychology Association Web site. February 14, 2014 https://www.apa.org/helpcenter/stress-facts.pdf. Accessed August 5, 2015.
38. Friedli L. Mental health, resilience, and inequalities. Copenhagen: WHO Regional Office for

Europe, 2009.
39. Bebenko O, Kovalchuk I, Metz GA. Stress-induced perinatal and transgenerational epigenetic programming of brain development and mental health. J Neurosci Biobehav Rev, 2015 Jan; 48: 70-91.
40. Evans GW, Brooks-Gunn J, Klebanov, P. Stressing out the poor: chronic physiological stress and the income-achievement gap. Pathways, Winter 2011. https://web.stanford.edu/group/scspi/_media/pdf/pathways/winter_2011/PathwaysWinter11_Evans.pdf. Accessed August 21, 2015.
41. Stein MB. Sweating away the blues. Am J Prev Med. 2005; 28: 140-141.
42. Popham F, Mitchell R. Leisure time exercise and personal circumstances in the working age population: longitudinal analysis of the British household panel survey. J Epidemiol Community Health. 2006; 60: 270-4.
43. Withall J, Jago R, Fox KR. Why some do but most don't. Barriers and enablers to engaging low-income groups in physical activity programmes: a mixed methods study. BMC Public Health. 2011; 11: 507. doi:10.1186/1471-2458-11-507.
44. James A. Levine. Poverty and obesity in the U.S. Diabetes. 2011; 60: 2667–2668.
45. Drewnowski A, Spector SE. Poverty and obesity: the role of energy density and energy costs. Am J. Clin Nutr, 2004, 79(1): 6-16.
46. Block JP, He Y, Zaslavsky AM, Ding L, Ayanian JZ. Psychological stress and change in diet among US adults. Am J Epidemiol. 2009; 170: 181-92.
47. Oliver G, Wardle J. Perceived effects of stress on food choice. Physiol Behav. 1999; 66: 511-5.
48. Dietz WH. Does hunger cause obesity? Pediatrics, 1995; 95: 766-767.
49. Colhoun HM, Hemingway H, Poulter NR. Socio-economic status and blood pressure: an overview analysis. J. Hum Hypertens. 1998; 12: 91-110.
50. Bell AC, Adair LS, Popkin BM. Understanding the role of mediating risk factors and proxy effects in the association between socio-economic status and untreated hypertension. Soc Sci Med. 2004; 59: 275-283.
51. Luepker RV, Rosamond WD, Murphy R, et al. Socioeconomic status and coronary heart disease factor trends: the Minnesota heart study. Circulation, 1993, 88: 2172-2179.
52. Robbins J, Vacarino V, Zhang H, Kasl S. Socioeconomic status and type 2 diabetes in African American and non-hispanic white women and men: Evidence form the Third National Health and Nutrition Examination Survey. Am J Public Health. 2001; 91: 76-84.
53. Booth GL, Hux JE. Relationship between avoidable hospitalizations for diabetes mellitus and income level. Arch Intern Med. 2003; 163:101-106.
54. Feinstein JS. The relationship between socioeconomic status and health: a review of the literature. Milbank Quarterly. 1993; 71: 279-322.
55. MacIntyre S. The Black Report and beyond: what are the issues? Soc Sci Med. 1997; 44: 723-745.
56. Burke JP, Williams K, Narayan KM, Leibson C, Haffner SM, Stern MP. A population perspective on diabetes prevention: whom should we target for preventing weight gain? Diabetes Care. 2003; 26:1999-2004.
57. Laraia BA. Food insecurity and chronic disease. Adv Nutr. 2013; 4: 203-212.
58. Why Low-Income and Food Insecure People are Vulnerable to Overweight and Obesity. Food Research and Action Center Web site. http://frac.org/initiatives/hunger-and-obesity/why-are-low-income-and-food-insecure-people-vulnerable-to-obesity/. Accessed September 19, 2015.
59. Lin B, Ploeg MV, Kasteridis P, Yen S. The roles of food prices and food access in determining food purchases of low-income households. J Pol Model. 2014; 32: 938-952.
60. Morrissey TW, Jacknowitz A, Vinopal K. Local food prices and their associations with children's weight and food security. Pediatrics. 2014; 133: 422-430.
61. Jetter KM, Cassady DL. The availability and cost of healthier food alternatives. Am J Prev Med. 2006; 30:38-44.
62. Coleman-Jensen A, Gregory C, Singh A. Household Food Security in the United States in 2014. USDA Economic Research Report No. (ERR-194), September 2015.
63. State-Level Prevalence of Food Insecurity (2013). Prepared by ERS using data from the December 2011, December 2012, and December 2013 Current Population Survey Food Security Supplements. http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#foodsecure. Accessed September 15, 2015.
64. National Current Asthma Prevalence. Centers for Disease Control and Prevention Web site.

2013. http://www.cdc.gov/asthma/most_recent_data.htm. Accessed September 10, 2015.
65. Asthma Facts – CDC's National Asthma Control Program Grantees. Centers for Disease Control and Prevention. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, 2013.
66. Akinbami L, Moorman JE, Bailey C, Zahran HS, King M, Johnson C, Liu X. Trends in Asthma Prevalence, Health Care Use, and Mortality in the United States, 2001-2010. NCHS Data Brief No. 94, 2012.
67. Claudio L, Tulton L, Doucette J, and Landrigan PJ. Socioeconomic factors and asthma hospitalization rates in New York City. J Asthma. 1999; 36: 343-50.
68. Institute of Medicine Committee on Advancing Pain Research, Care, and Education. Relieving pain in America: a blueprint for transforming prevention, care, education, and research. Washington (DC): National Academies Press (US); 2011.
69. National Center for Health Statistics. Health, United States, 2010. Hyattsville, MD; 2010.
70. Portenoy RK, Ugarte C, Fuller I, Haas G. Population-based survey of pain in the United States: differences among White, African American and Hispanic subjects. J Pain. 2004; 5:317-328.
71. Krause N, Scherzer T, Rugulies R. Physical workload, work intensification, and prevalence of pain in low wage workers: results from a participatory research project with hotel room cleaners in Las Vegas. Am J Ind Med. 2005; 48: 326-37.
72. Michaels D. Adding inequality to injury: the costs of failing to protect workers on the job. Occupational Safety & Health Administration, US Department of Labor. Washington DC: 2015.
73. Seabury SA, Scherer E, O'Leary P, Ozonoff A, Boden L. Using linked federal and state data to study the adequacy of workers' compensation benefits. Am J Ind Med. 2014; 57: 1165-1173.
74. Fairris D, Runsten D, Briones C, Goodheart J. Examining the evidence: the impact of the Los Angeles living wage ordinance on workers and businesses. University of California at Los Angeles; 2015. http://www.irle.ucla.edu/publications/documents/LivingWage_fullreport.pdf. Accessed February 10, 2016.

APPENDICES

APPENDIX 1: FULL SCREENING SUMMARY

Timeliness

Boston's new mayor, Martin J. Walsh, city agencies and the City Council are considering an expansion of the Boston Jobs and Living Wage Ordinance. Passed in 1998, the ordinance was created to ensure that city contractor employees earn an hourly wage that allows a family of four to live on or above the poverty line. It applies to city contracts that are in excess of $100,000 and employ more than 25 hourly employees. The current wage is $13.89 per hour. Since the ordinance was passed, it has covered over 2,000 contracts and 21,000 employees.

Mayor Walsh's Economic Development Transition Team recommended that the administration undertake "an examination of the current impact and enforcement of the Living Wage ordinance and [assess] the feasibility of its expansion to ensure that all residents have access to good jobs that allow them to provide for their loved ones." The proposal would expand the ordinance to cover employees of businesses receiving city subsidies and employees of subcontractors and tenants, and strengthen enforcement for those already covered.

Since that time, the Mayor's Office and the Boston City Council passed legislation to reconstitute the Living Wage Advisory Committee to bring it up to date last month. Although the group has yet to reconvene, the goal is to evaluate enforcement of the ordinance and to look at opportunities for extending scope of the Ordinance. The hope is that further legislation will be filed and moved in 2015.

The Mayor, his Chief of Economic Development and the City Council will make the decisions on the proposed changes in the Living Wage ordinance. We expect they will be influenced by a variety of local stakeholders, including other city officials, unions, employers and residents. Although we are not aware of specific opposition to the changes yet, we anticipate concern among some employers about how a potential increase could impact their bottom line.

We expect to inform the development of the proposed changes, and potentially also the City Council's review of the legislation.

Health Considerations

Key social determinants of health – such as unsafe neighborhoods and lack of affordable housing – are closely tied to employment and income. Boston's high costs of living and severe housing shortages make it hard for many lower income residents to afford other necessities like food, fuel and healthcare.

Despite strong evidence linking health and income, health rarely plays much of a role in local discussions of employment and income. Some stakeholders have sought to bring health into the conversation based on models from other cities, but have not done a detailed assessment of local impacts.

The health sector is a large economic force in Boston, and concern with health equity and social determinants of health figures into the goals of these organizations. Linking health to wage decisions could bring many more stakeholders from the health sector into the discussion. If an HIA demonstrates a specific link between higher wages under consideration and better health, this could be an important way to link this to Massachusetts' current focus on health care cost control policies.

Receptiveness of Decision-Making Process

Mayor Walsh ran for office on a platform that prioritized changes that would better support working class Boston residents. Through the informal stakeholder interviews that we held with the Mayor's Office and labor rights activists, it was seen as critical that health issues be a part of the public discussion in this time of local political transition, especially concerning "non-health" policies like employment and income, which can have such an impact on health equity.

EXISTING RESOURCES AND CAPACITY

Capacity

There are four key BPHC staff members who will be allocating staff time to moving this HIA forward. Megan McClaire and Aliza Wasserman are co-leads for existing Health in All Policies (HiAP) efforts and will serve as co-leads for the project. Lisa Conley, Director of Intergovernmental Relations and Policy Development, will provide general oversight and organizational leadership on strategic direction of stakeholder engagement and serve as convener of the advisory group. Shannon O'Malley, Research Associate, will support the scoping, assessment, and evaluation phases by assisting in the development of data collection tools, protocols, data cleaning, entry, and analysis. BPHC will also rely on additional support from the internal HiAP workgroup throughout the pro-

cess.

To help us further address analytical challenges, we have contracted with the University of Massachusetts Boston Center for Social Policy, which will provide content expertise on labor and economic issues, including experience in developing research methods that analyze policies addressing poverty, joblessness and low wages.

Data

Quantitative data: We will summarize available labor statistics on current wage rates, employment status and earnings for major sectors of workers, and analyze the relationship between these categories and the burden of illness by income, race and ethnicity, also looking at intermediate factors like housing status that impact health. We will assess the baseline impact of the current living wage ordinance on wages by using data from vendor RFA language that illustrates the current penetration of the living wage to low wage workers in Boston. Data may be available from the health fund of a self-insured Boston union representing low wage workers in the janitorial, cleaning and service industries, which could help determine the relationship between wages, health outcomes and other demographics for a convenience sample of a similar population. The Boston Redevelopment Authority is conducting studies to revise the formula by which the city calculates the living wage rate. This research will be used to better understand the bundle of goods that are impacted by wage rates, which in turn affect the ability for households to afford those factors that will keep them healthy.

Qualitative data: The research plan will gather qualitative data about the experiences of low-wage workers in Boston who would be impacted by this policy change. Personal stories about health challenges, both physical and mental, and access to health care, will help illustrate the potential health impacts of the policy change. These stories will be collected through key informant interviews and two community meetings, working with organizations representing low wage workers and their families and organizations representing immigrants. This partnership will support our health department's community engagement strategies and build a stronger case for the need for sectors to collaborate to incorporate health into all policies. In addition, we will interview business sector representatives to garner their views on how a possible wage hike would impact jobs.

APPENDIX 2: FULL SCOPING SUMMARY

In scoping this project, the Research Team, including BPHC representatives and partners at the Center for Social Policy and the University of Massachusetts – Boston reviewed existing literature, consulted with the project's Advisory Board and held two community meetings with low-wage workers.

The Research Team began with a brainstorming session about health outcomes that could be connected to income, with a specific focus on areas where BPHC collects health data stratified by income. The health determinants included in the preliminary scope were: asthma, low birth weight, obesity, hypertension, stress and preventable injuries. While these outcomes are mostly focused on adult health, we also discussed the importance of considering low-wage workers in the context of their family environment and the impact of low income on children's health. To the preliminary list, we added

child health outcomes, including childhood asthma and childhood obesity.

We used this data to complete preliminary pathway diagrams and shared this information with the Advisory Board. During a two-hour Advisory Board Meeting, BPHC, with support from our technical assistance provider, Human Impact Partners, led the Advisory Board through the proposed pathway diagrams and draft research questions. We also discussed the importance of defining a clear scope for the project, given the limited time and resources available to the team. As part of this meeting, Advisory Group members were given an opportunity to ask questions about the draft scope and to add boxes or arrows to the pathway diagrams. As part of this exercise, Advisory Board members suggested new connections between income and health.

The other part of the meeting focused on draft research questions, which were created with feedback from the first meeting of the Advisory Board. Advisory Board members completed a dot-voting exercise during which they were asked to place dots next to the research questions that were most important to them. Though Advisory Board members expressed a strong interest in issues such as working conditions and hours, the Research Team ultimately had to exclude these questions from consideration due to a lack of available data. Other priorities of the Advisory Board, such as work-related stress, eligibility for benefits, and housing circumstances remained within the scope of the project.

In addition to consulting with the Advisory Board, BPHC, with help from our partners at 32BJ, MassCOSH and East Boston Neighborhood Health Center, convened two stakeholder meetings to discuss the scope of the project. Two meetings were held: one on March 14 at the offices of SEIU 1199 in Dorchester and the other on March 21 at the East Boston Neighborhood Health Center in Maverick Square, East Boston. There were a total of 32 low-wage workers who participated in these meetings. Participants were offered a meal for participation and also were able to be entered into a raffle for a Target gift card. The meetings were facilitated by BPHC staff with assistance from individuals from 32BJ and MassCoSH.

The focus on the community meetings was on the broad relationships between health, work and income. Participants were given an overview of the project and were asked to split into two groups and draw a tree where income/work is the root of challenges that individuals face and the leaves are the outcomes. Participants populated the "tree diagrams" with health outcomes that they or their families were facing as a result of their low-wage work. These outcomes included many physical health outcomes, including asthma, obesity, high cholesterol, high blood pressure, diabetes, cancer and physical pain. In addition, participants noted stress, sleeping disorders and depression as mental health outcomes that were related to their work. Participants were then asked to connect these outcomes to conditions in their workplaces that contributed to their poor outcomes. These conditions included long hours, poor safety equipment/advice, insufficient wages, lack of time off, lack of access to adequate food, and discrimination.

The community meetings helped to validate the Research Team and Advisory Board's initial assessment of relevant health issues that impact low-wage workers. However,

there were some areas that workers raised that the research team had not considered - specifically, physical pain brought on by repetitive work, long hours and lack of time off. While we do not have Boston-level data available to analyze changes in prevalence of musculoskeletal pain, we decided to add this outcome to the analysis because it came through as such a clear and important concern among the affected population of residents.

Following the Advisory Board meeting and community meetings, the Research Team met and made adjustments to the research questions and pathway diagrams. The final versions of these two work products are provided below.

APPENDIX 3: FOCUS GROUP DEMOGRAPHICS

- 14 participants\Average age: 34 years (range 20-57 years)
- 8 females and 6 males

Race/Ethnicity	%	n
Hispanic/Latino	36%	5
non-Hispanic Black	21%	3
non-Hispanic Asian	21%	3
non-Hispanic Other	14%	2
non-Hispanic More Than One Race	7%	1

Residence

- 13 of the 14 participants live in Boston
- 64% (n= 9) of people have lived in their zip code for 1-5 years

Neighborhood/City	%	n
Roxbury (Boston)	21%	3
Dorchester (Boston)	14%	2
Hyde Park (Boston)	14%	2
Jamaica Plain (Boston)	14%	2
Mattapan (Boston)	7%	1
Quincy	7%	1
South End (Boston)	7%	1
Brighton (Boston)	7%	1
East Boston (Boston)	7%	1
Total	**100%**	**14**

Household

- The average number of people in a household was 3 (range 1-6 people)
- 64% (n= 9) of participants reported people under the age of 18 years living in their household.

Work

- 4 people are not working, attend school at JVS

- 9 people have 1 job, and attend school at JVS
- 1 person has 2 jobs, and attends school at JVS

Hours per Week and Benefits
Of the 10 individuals who are working…

- 2 people work <20 hrs per week
- 2 people work 20 hrs per week
- 2 people work 21-31 hrs per week
- 4 people work 32-40 hours per week
- 3 people report being in a union
- 3 people report having sick time
- 3 people report having vacation time

APPENDIX 4: SUMMARY OF FOCUS GROUP FEEDBACK

Key themes emerged through the focus group (bolded below). The respective participant responses provide a fuller understanding of the impact of low income on access to health promoting resources.

Overarching Themes

- Not making enough to pay bills/live (living paycheck to pay check as a result, sometimes paycheck doesn't last through week)
- Medical needs, healthy food, and housing are expensive
- Hard to make healthy choices due to low income
- Not enough hours given at job to pay bills
- Sick time can be difficult to take, employers not supportive
- Stressed due to being low-income
- Grew up and work in Boston, yet can't afford to live in Boston
- Expensive childcare is a barrier to work
- With more income would be less stressed, healthier, save more, could pay for basic needs

Not Able to Make Healthy Choices Due To Low Income/ Healthy Food is expensive

"Food is expensive. Vegetables cost a lot of money."
"Okay I'm speak for myself um there are there are times, I only get $100 dollars for food stamps and I have a 14 year old who is almost 6 feet and I have an 18 year old, they eat a lot. Um, I stress because there are times it's hard for me to find food for them. And if I do find it it's enough only for them to eat. I'd rather go to sleep without eating instead of having them [be hungry]. I cry a lot. I don't sleep because I think about everything and how it's gonna go for the next day. It's really really hard. I'm not healthy because of that."

Medical Needs Are Expensive

"I've got to choose between which medicine I buy that month, because the money just isn't enough. My check isn't enough for the food, all the medications…"
"One medicine can cost you, with the co-pay, from $1-$100. You might have a $30 co-pay for your prescriptions. I have to choose for which medicine I'm going to choose for that week or that month to pay for my food or phone. The money is just not enough.

Do I eat or take my medication?"

Not Enough Hours Given At Job To Pay Bills

"For my family alone, it's $13 dollars an hour but, I'm only working 20 hours a week..."

Sick Time Can Be Difficult To Take

"You have the sick time but they don't want you to use it. You can't take it. You can't use it. If you call out sick then when you come in, [they ask] "Why were you out sick?" When you call on the phone it's like, "Why are you sick? And, "Make sure you bring a doctor's note in" I'm like, "I'm sick! I can't make it today!"

Stressed Due To Being Low-Income

"The stress that we go through. Because we can't function because we can't afford to function. Smetimes we're so frustrated so depressed aggravated and mad because of the fact that we don't have five dollars to just go to the pharmacy to get something that we need so desperately. And we can't afford it."

"It doesn't matter if you can't give it to yourself, but when you can't give it to your child. That's very it's very stressful."

Grew Up And Work in Boston Yet Can't Afford To Live in Boston

"The minimum wage I think it's just ridiculous, they need to raise minimum wage because it's not doing nothing now. The rent has been raised so high. Now it's basically forcing a lot of people who use to reside or grew up in Boston to go on the outskirts which is another unfair thing to us. Because this [Boston] is what we know. What we're use to. It's not fair."

"The rest of it goes to my rent, so I can't afford to take care of my son with my paycheck. So I have to live from pay check to pay check. So in order for me to live I have to commute to Boston in order to survive. Because I can't afford to live out here, so I have to travel an hour just to get to work."

Expensive Childcare Is A Barrier To Work

"I have the experience if you working minimum wage as a single mother needing to get daycare in order to work to get that money to pay for the bills it's a struggle cause it costs day care costs and if you're late you are paying a dollar a minute. So that's even extra. One day I was late for my kid I had to pay over 60 something dollars and I was actually in the emergency room. It's hard when you're a working parent, single parent or not day care is that factor."

"And you have social service welfare they not even game to pay for especially you working they want a percentage of you pay part of the daycare they pay half you pay half but then they don't realize the but then the half you putting out for day care you still have to subsidize that for you know that transportation and food and what not coming out of your check too. Plus paying for daycare, they don't want, the government doesn't want to pay for the other part of the day care. So that makes you stop working because you don't have no way of getting the daycare paid for."

APPENDIX 5: EXAMPLE OF PREDICTION METHODOLOGY

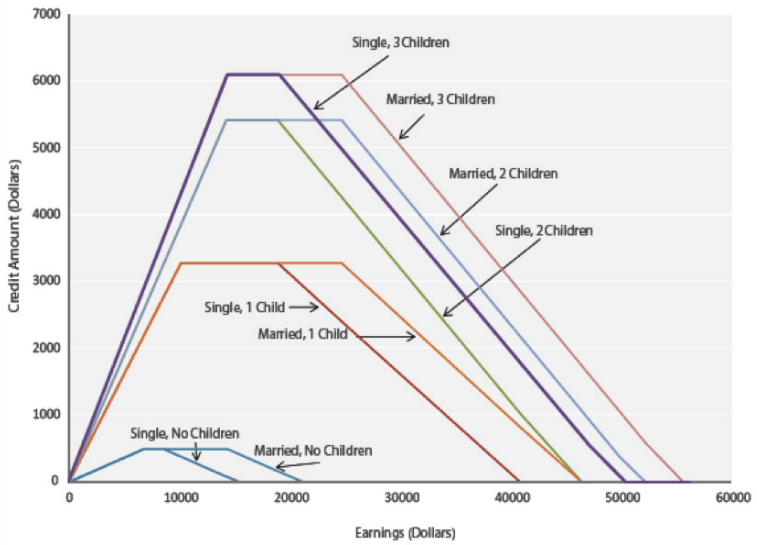
The formula we use to predict potential improvements in health is: Change in health impact = (Average change in health prevalence/$1000) x (change in family income in $1000s due in increase in living wage) x (number of workers potentially affected by an increase in living wage). To get the average change in health prevalence, we calculate the average change per change in income for each of the seven income categories and take an average of those.

For example, average change in the prevalence of persistent sadness is -0.575 per $1000. This is the average of the number in the last column divided. We multiply this by 6.14, which is the change in family income (in $1,000) due to an increase in the living wage for someone working 2,000 hours per year. Then we multiply by the estimated number of living wage workers most likely to be impacted by an increase in the living wage (617). This calculation (-0.575/$1000 x $6.14 x 617) results in a decrease of persistent sadness cases of 22. To get the average change in prevalence of persistent sadness, we calculate the average change per change in income for each category between $10,000 and $75,000. So for example, the change in persistent sadness moving from the $15K -<$20K category of income to the $20-K<$25K of income is -1.494. That is determined by calculating the difference in reported prevalence in the two income ranges in column B (9.7-17.2) and reported in E (-7.468), and then divided by the change in income midpoints ($5,000). The midpoints are recorded in column C and the change in the midpoint is reported in column D. The table below provides the calculation of the average change in the prevalence of persistent sadness.

Income Range A	Percent Reporting Persistent Sadness B	Mid-Point of the Income Range C	Change in income from Previous Mid-Point D	Reporting Persistent Sadness E	Change in Persistent Sadness due to an increase of $1,000 Income
<$10,000	26.5	$5,000	---	---	---
$10K-<$15K	26.6	$12,500	$7,500	.041	.005
$15K-<$20K	17.2	$17,500	$5,000	-9.395	-1.879
$20K-<$25K	9.7	$22,500	$5,000	-7.468	-1.494
$25K-<$35K	11.6	$30,000	$7,500	1.922	.256
$35K-<$50K	9.9	$42,500	$12,500	-1.758	-0.141
$50K-<$75K	6.3	$62,500	$20,000	-3.554	-0.178
$75K+	5.8	$101,412	$38,912	-0.482	-0.012
Average of the average change between $10K and $75K+					**-0.575**

APPENDIX 6: EARNED INCOME TAX CREDIT BY NUMBER OF CHILDREN & FILING STATUS, 2014

Figure 1: Earned Income Tax Credit by Number of Children and Filing Status, 2014



Source: 2014 EITC parameters taken from http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=36

APPENDIX 7: DRAFT REVISED OFFICE OF WORKFORCE DEVELOPMENT FORMS

The form below is a draft revised version filled out with an example of question #5 on the OWD LW9 form, which requires quarterly reporting of employees who are on a city contract. The new form gives each employee a unique ID # so that demographic data can be collected in a way that is individualized.

Example Employee Name	Unique ID#	Gender	Race Please indicate all that apply: 1) American Indian or Alaska Native 2) Asian, Native Hawaiian or other Pacific 3) Black or African-American 4) White	Hispanic/ Latino	Zip code of residence	Percent of time worked on this contract	Hourly Wage Rate	Total Weekly Hours*	Please indicate: 1) Administrative and Support Services 2) Educational Services 3) Healthcare 4) Other Industries 5) Professional, Scientific, and Technical Services 6) Repair and Maintenance Social Assistance
Jane Doe	123456	F	Black	Yes	02130	75%	$15	40	Educational Services

*Total hours worked at company/organization, including this contract and other work