



***Understanding the Impacts of Displacement and the Use of Public
Transportation on Access to Health Care***

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This report represents the work of four WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, please see <http://www.wpi.edu/Academics/Projects>

Abstract

Gentrification in Boston is causing low-income residents to be displaced into areas that are more affordable, possibly exacerbating health disparities that minority groups already face. The goal of this project was to understand the impacts and challenges of displacement and public transportation usage on access to community health centers in Boston. We hope to help our sponsor, Alternatives for Community and Environment (ACE), with advocacy efforts on transportation policy in Boston. We inquired of patients of one health center and commuters at T stations in Roxbury about their access to health care. We found that people may prefer to travel long distances to their community health centers and commutes are worsened when patients allocate additional time to account for the unpredictability of public transportation.

Executive Summary

New architecture, businesses, and attractions make neighborhoods in Boston desirable to live in. As new residents seek places to live, housing prices can soar, which marginalizes low-income residents who can no longer afford to live in these areas. Forced to move away to find cheaper housing, low-income residents may need to commute to enjoy the same amenities and social bonds they did before displacement, including to preferred health centers. However, this increased distance away from their health center in their previous community causes a longer commute in order to attend health appointments. This proves to be a barrier and contributes to health disparities among low-income residents.

Despite the relevance of displacement and the problems it causes for low-income residents in Boston, there have been few studies that look carefully at how displacement directly impacts reliance on the public transportation system. According to the Centers for Disease Control, due to affordable fares, people of low income are more likely to use the public transit system as their primary mode of transportation (Schor, 2010). Thus, displacement may cause an increased reliance on the public transit system in order to reach desired destinations (Pollack, 2013).

The relationship between use of the public transit system and access to health care is unclear. Understanding why patients attend a particular health center after displacement, what barriers stand in the way of accessing health care, and how a resident's form of transportation directly affects their access, are important to help achieve our goal.

The goal of this project was to build an understanding of the impacts and challenges of displacement and public transit usage on the access of low-income residents to community health centers in Boston. This information will support Alternatives for Community and Environment (ACE), our sponsor, to understand the effects of the public transportation system on low-income individuals.

To accomplish our project goal, we completed three objectives:

1. Identified the choice of health care centers attended by patients before and after displacement.
2. Identified the barriers to health care access that patients encountered.
3. Determined how displacement and transportation affected how often patients visit their health centers.

We achieved these objectives by collecting and compiling Boston patients' experiences about their displacement, use of transportation, and health



Figure A: Thyagarajan and Kelsey talking with a commuter at Ruggles station

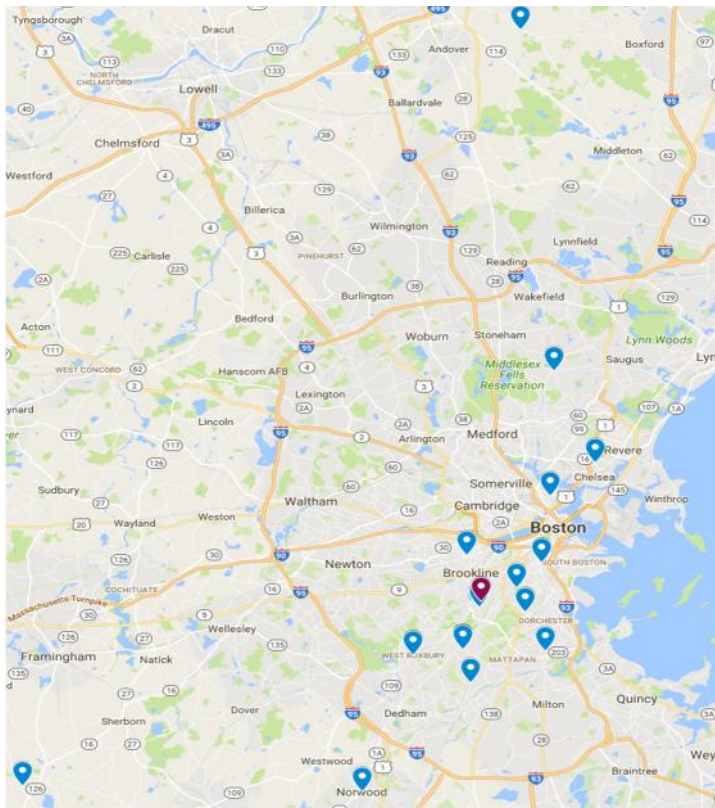
care access. We had two separate, but similar, approaches to obtain this information. First, we conducted surveys on subway platforms and bus stops at MBTA (T) stations at Ruggles, Roxbury Crossing, and Dudley Station, with commuters waiting for their train or bus (as shown in Figure A). Second, we conducted surveys with patients waiting for their appointments in the waiting room of the Southern Jamaica Plain Community Health Center (SJPHC).

Findings

After analyzing the data we collected, we were able to reveal a number of underlying factors to the health care access problem.

Finding 1: After facing displacement, people preferred the health center in the neighborhood where they previously lived.

Out of all of the respondents who said they were displaced due to being priced out, 64% of them did not change health centers after displacement. While some people cited the difficulty and annoyance of switching health care providers as the reason why they did not switch health centers after moving, the most common reason was that they like their current health care center and do not want to change.



71% of respondents said that they would still go to their health center if they were sick despite the amount of time it took to take transportation. Survey responses revealed that it did not matter how long it took to get to the respondents' health centers. These respondents were willing to make the commute despite the availability of closer and more convenient options, such as urgent care facilities and emergency rooms. As shown in Figure B, the blue pinpoints are where patients live in comparison to the red pin, which is Southern Jamaica Plain Health Center.

Figure B: 14 Locations of Patients' Homes in Comparison to the SJPHC

***Finding 2:** People who use public transportation budgeted more time to get to their health care appointments than those who do not take public transportation.*

There was a difference in our data between the responses of those who took public transportation and those who did not. Patients who took public transportation budgeted 60 minutes on average while those who did not budgeted 43 minutes on average. The higher amount of budgeted time for those who took public transportation stood out because those who used the public transportation system were confined within the geographical limits of the MBTA subway and bus systems, while those who drove often came from towns outside of the City of Boston, and even from locations as far away as Woonsocket, RI.

***Finding 3:** Efforts to budget extra time into commuting via public transportation appeared to help people avoid missing or being late to health care appointments.*

As shown in Figure C, a total of 87% of people who took public transportation to their appointment at a community health center said they were never late or only late once in a while to their appointments due to the public transportation system. The high percentage of people rarely or never being late to or missing health appointments appears to be a result of respondents budgeting extra time into the commute in order to guarantee they would not be late or miss an appointment. In fact, on average, people who were rarely or never late to appointments because of public transportation budgeted 26 more minutes into their commute than the suggested time it would take to get from their home to their community health center.

***Finding 4:** Unpredictable public transportation schedules caused people to be late or missed appointments.*

As mentioned in Findings 2 and 3, there is a great deal of uncertainty and unpredictability with the public transportation system in Boston. Nearly all respondents who were always or almost always late to appointments because of public transportation referenced problems with the schedules of trains and buses, stating that delayed transportation was detrimental to their commute. Four respondents mentioned the MBTA app, a resource that is supposed to provide real time updated schedules of bus and train arrivals; however, these individuals mentioned faults in the app being a problem when commuting.

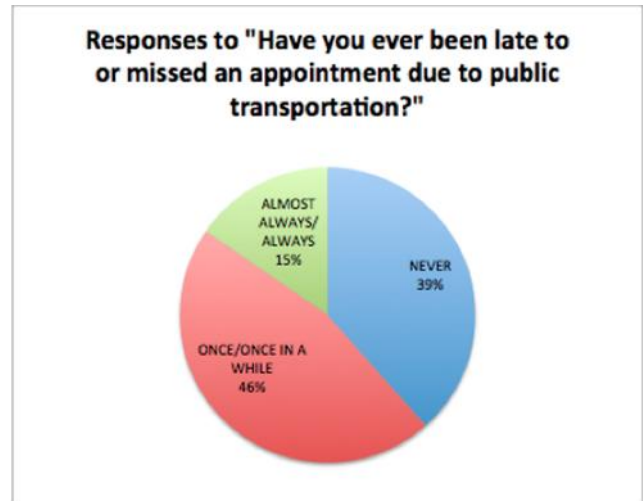


Figure C: 45 Responses to "Have you ever been late to or missed an appointment due to public transportation?"

Recommendations

We proposed several recommendations for ACE in order to expand upon insights gained within our project. We also developed a digital survey tool that will be handed over to ACE to use for future purposes. The recommendations are:

Recommendation 1: Community health centers throughout Boston should build a closer network with each other that encourages patients to visit alternative centers.

We found that people are returning to health centers even after being displaced. Patients are willing to travel great distances to go to a particular health center despite the length of the commute. If a patient is unable to make it to their preferred health center on short notice, a network of various community health centers could work together to provide service to displaced patients in case of emergency. If this network between community health centers is strongly developed, patients might be more willing to visit a health center other than their usual one. This could ensure patients' wellbeing while preventing any late arrivals to appointments because of short notice.

Recommendation 2: The city should provide better public transportation service between where people newly reside and their old communities.

People who took public transportation to get to their health care center often cited the unpredictability of MBTA scheduling as a problem. The unreliability of the subways and buses influenced the way patients, especially those traveling great distances, accessed their health care. To help with the way public transportation and access to health care are related, we recommend that new public transportation routes be implemented that have the ability to take residents from their current neighborhoods to their desired locations in other neighborhoods. New routes could cut down on the uncertainties in people's commutes when trying to get to their appointments, reducing the amount of time patients take out of their day. Providing transportation would allow people to still attend their health center of choice, but would lessen problems associated with commuting.

Recommendation 3: ACE should conduct research that focuses on the connection between public transportation usage and health disparities among low-income residents.

A possible approach that could help provide a better understanding of how the reliance on the public transportation system is related to health disparities is by gathering information from patients in multiple health centers around Boston. Useful data to collect includes questions regarding the time it takes to get to a health center, why particular health centers are chosen, and how commutes impact health care decisions of the patient. This survey could help identify if people who travel longer have worse health, suggesting the public transportation system is a barrier to health care that causes health disparities among patients.

Recommendation 4: ACE should create relationships with realtors around Boston.

Our research showed no trends or patterns of where people being displaced were moving to or where people moving into gentrified areas were coming from. We recommend that our sponsor develop connections with realtors throughout Boston. If our sponsor had closer relations with realtors, they may be able to obtain information regarding:

1. The price of housing in certain areas throughout Boston
2. Where rents are increasing drastically
3. Where low-income people are moving to and where they are coming from
4. The development and revitalization of new housing in specific areas of Boston.

This information could greatly increase the understanding of development in Boston and how it is affecting the residents in those areas. Having a better understanding of the people moving into certain areas, allows ACE to understand how the incomers moving into this specific area will access health care.

Conclusion

One of the most disheartening impacts of displacement is when long-time residents of a community are now forced to live elsewhere. Long time residents of a neighborhood have to sever their deep social ties due to a rent increase. Our most meaningful finding exemplifies this strong relationship people have with their previous communities: patients continue to commute from other communities to health centers even after being displaced. John Walkey, Development Manager at Alternatives for Community and Environment, gave the analogy of finding a car mechanic or a barber. Once someone has found one that they trust, the individual will prefer to come back to that same service rather than try to find a new one. Similarly, having familiar and trustworthy doctors and staff is tough to toss away when compared to a longer commute.

We hope that our findings and our recommendations highlight the complexity of the health care access problem rooting within the social ties people feel to their community. These social ties prove a more complex health care access problem than what can be fixed by simply moving health centers closer to patients. We hope that our work contributes to making the residents' voices heard and the ability to build awareness of the implications deep social ties can have on individuals.

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Chapter 1: Introduction

Sixty years ago the South End was one of the poorest neighborhoods of Boston and the area was in a physical decline. The South End underwent a rapid urban renewal in the 1980s which introduced new businesses, architecture, and attractions, making the area more desirable, and prompting young adults to move there. Over the last decade, it has become a sought-after area, with high-end restaurants, newly developed buildings and skyrocketing rents (Mandl, 2015). As new residents sought places to live within the neighborhood, housing prices soared, which marginalized low-income residents who could no longer afford to live in those areas. This process is called gentrification. Much like the South End in the late 20th century, other neighborhoods in Boston, such as Roxbury, have begun to experience gentrification, causing the low-income community to move out of their neighborhoods.

The low-income community now faces a longer commute to places within their previous neighborhood they still want to visit. According to the Centers for Disease Control, people of low income are more likely to use the public transit system as their primary mode of transportation (Schor, 2010). When displacement causes increased distance between people and their preferred community health centers, this new distance may present challenges. This begs the question as to if relying on public transportation is hindering patients' access to health care.

There have been few studies that look carefully at how displacement directly impacts access to health care. Understanding why patients attend a particular health center after displacement, what barriers stand in the way of accessing health care, and how a resident's form of transportation directly affects their access provides the necessary data to better understand the social problem.

The goal of this project was to build an understanding of the impact and challenges of displacement and public transit usage on access to Boston's community health centers for low-income residents. To do this, we have completed three objectives. First, we identified the choice of health care centers attended by patients before and after displacement. Second, we identified the barriers to health care access that patients encountered. Lastly, we determined how displacement and transportation affected how often patients visit their health centers. We achieved these objectives through interview-style surveys about residents' experiences pertaining to their displacement, use of public transportation, and health care access. We were able to reveal a number of relationships and disconnects in the health care access problem. Our sponsor, Alternatives for Community and Environment (ACE) can use this research to further investigate this social problem of the low-income community.

Chapter 2: Background

This chapter seeks to explain the current health care access problem for low-income residents and outline possible contributing factors. By first explaining various health disparities, the method of how community health centers have tried to counteract these disparities is discussed. Later, the chapter explains how gentrification has caused displacement and how the reliance on public transportation only worsens the low-income community's access to health care. The chapter highlights literature about displaced patients accessing preferred community health centers and the need of further investigation.

2.1 Factors Causing Health Disparities

Inequalities and injustices among minorities can cause health disparities, a term defined by the Office of Minority Health as "differences in health outcomes that are closely linked with social, economic, and environmental disadvantage" (Office of Minority Health, 2011). Examples of such health disparities include the inability of low-income residents to afford medication or being denied medical attention based on ethnicity.

Income, age, ethnicity, and lack of access to health care are just some of the many elements contributing to health disparities among people. The existence of such disparities can be evidenced by looking at the overall health trends of Americans. As medical advances improved overall life expectancies, Americans of racial minority groups benefited less from advances than their white counterparts (MassGov, 2012). For example, in 2003, the life expectancy of whites was 5.3 years longer than the life expectancy of blacks. Similarly, black adults are 10 times more likely to contract AIDS than white adults (Mead, 2008).

The same disadvantages affect people of lower income. For example, low-income adults are almost five times more likely to be in fair or poor health than adults at or above the poverty level. Lower income adults also have higher rates of chronic disorders, such as heart disease, diabetes and stroke, than wealthier Americans (Woolfe, 2015). In addition to factors such as ethnicity and income, many researchers believe that health disparities occur because of a lack of health care providers within travel distance of patients (Mead, 2008).

2.2 Location of Health Centers

In order to counteract health disparities of low-income minorities, in 1965, a team of Physician-Activists began strategically building health centers in Boston, specifically in locations convenient for low-income residents (Massleague, 2016). The location of community health centers in Boston and nationally was based on this model. For example, in the 1950s, Roxbury became the center of the African-American community in Boston and is now home to many well-known community health centers (Cohen, 2014). The location of health centers has allowed the low-income community more convenient access to services; however, current data reveals patients are traveling outside of their neighborhood to go to health centers.

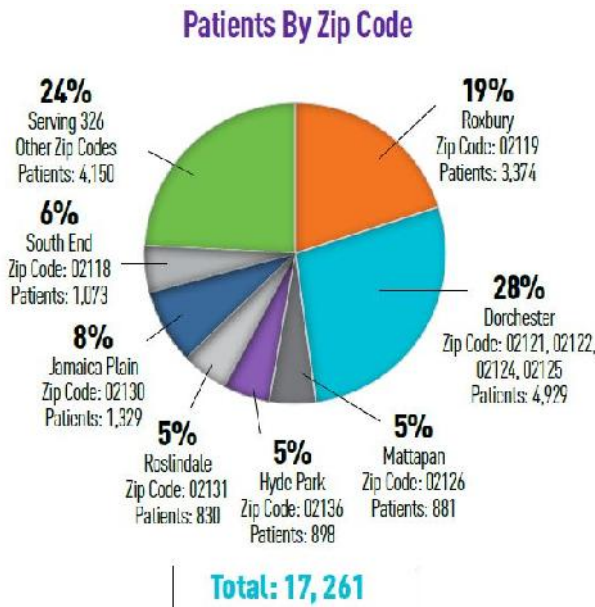


Figure 1: Patients by Zip Code, FY 2015

Many patients commute longer distances instead of going to community health centers located nearby. For example, The Dimock Center in Roxbury only receives 19% of its patients from Roxbury itself, as shown in Figure 1. The remaining 81% of patients travel from other neighborhoods of Boston despite having community health centers in their own neighborhood (The Dimock Center, 2015). This begs the question of why such a choice is made.

2.3 Gentrification and its Effect on Boston Neighborhoods

Lower income residents of an increasingly desirable neighborhood are often displaced due to increased costs. Since 2000, Boston has increasingly become a place to migrate to due to its low crime rate, strong industries, and a rise in median income. The dramatic influx of people during the past two decades encouraged many developers to construct new houses and redesign existing residences in order to supply the housing demand (Bhatta, 2010). An increase in demand for housing, and an increase in newly constructed and renovated residences has contributed to a tighter housing market and a rise in gentrification in Boston. For example, the average rent in Boston rose 42% from 2009 to 2014, and by 2014, only 3% of Boston housing was vacant and available to rent (Boston Rent and Residential Rents and Rental Statistics, 2014).

Residents who are no longer able to live in gentrified areas often leave in order to find affordable housing elsewhere. Meanwhile, wealthier people who can afford the high rents take their place. For example, a 2015 study of Boston's gentrified South End concluded that among the members of the community, the majority were owners of renovated houses with yearly incomes of \$100,000-\$400,000, while nearly all were white (Mandl 2015). Gentrification causes a shift in the demographics of a neighborhood; affluent people and white incomers push out the low-income and the minority groups. For example, from 2000-2010, the number of white residents increased by 18.2% in the South End. Meanwhile, the number of black residents decreased by 17% (Rocheleau, 2011).

The people moving out of communities due to an inability to afford to live there, are the same low-income population vulnerable to facing health disparities. As low-income residents move out of neighborhoods, the original attempt to offset health disparities by positioning health centers among lower-income communities is no longer applicable. Despite the upward shift in average income of the neighborhoods where community health centers are located, 90% of community health center patients still have incomes below 200% of the federal poverty level (Massleague, 2016). As a result of the target clientele moving away, the mission of keeping community health centers easily accessible for low-income residents is no longer met.

2.4 Reliance on Public Transportation

When looking at public transportation usage based on demographics, there is an overlap between the people who tend to use public transportation and those who face health disparities and displacement. A combined 47.4% of public transportation riders nationally are Black/African American or Hispanic/Latino. This is compared to 40.6% of

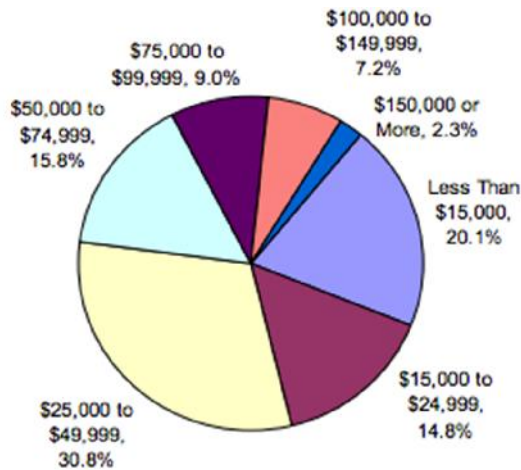


Figure 2: Public Transit Usage by Household Income, FY 2007

transit riders identifying as White/Caucasian (American Public Transportation Association, 2007). Similarly, the national average income of those who commute on their own to work was about \$4,000 higher than those who take public transportation (Maciag, 2014). As shown in Figure 2, about one-third of public transportation riders had an average household income below \$25,000, while about two-thirds had an average household income below \$50,000 (American Public Transportation Association, 2007).

The Massachusetts Bay Transportation Authority (MBTA) is crucial to the way people travel throughout the city of Boston. On a typical weekday in 2014, approximately 500,000 people rode the subway and about 400,000 rode buses (Massachusetts Bay Transportation Authority, 2014). This was to serve the city's population of nearly 700,000 (U.S. Census Bureau, 2014). The alarmingly large number of passengers who use these services on a daily basis emphasizes residents' reliance on the MBTA. The reliance on the MBTA within Boston and the demographics of people who use public transportation nationally, suggests that public transportation could be a contributing factor to the health care access problem.

2.5 Conclusion

One group trying to understand challenges in health care for low-income individuals is our sponsor, Alternatives for Community and Environment (ACE). When low-income residents are displaced due to gentrification, the distance between their new location and preferred community health center increases; however, there are still certain unanswered questions regarding this social problem. Firstly, the reasons why some people live so far from the health center they attend is still unknown. We believe displacement may be a factor contributing to the long commutes of patients to their health care centers. Second, if displacement is a driving factor behind people traveling significant distances to health centers, why they are doing so is unknown. Thirdly, if displacement is directly causing a reliance on the public transportation system remains unclear. Lastly, there is a lack of literature about whether or not public transportation negatively impacts patients' access to health care. These gaps in our research provided the foundation for our project.

Chapter 3: Methodology

The goal of this project was to build an understanding of the impacts and challenges of displacement and public transit usage on access to community health centers in Boston. Fulfilling this goal expanded upon what was known about health disparities from previous research. By collecting both quantitative and qualitative data from the residents of Boston, we improved understandings of the direct effects public transportation and displacement have on access to health care. In order to accomplish our goal we:

1. Identified the choice of health care centers attended by patients before and after displacement
2. Identified the barriers to health care access that patients encountered
3. Determined how displacement and transportation affected how often patients visit their health centers

To complete these objectives we had two separate, but similar, approaches. We conducted surveys on subway platforms and bus stops at MBTA (T) stations in Roxbury with commuters waiting for their train or bus and in waiting rooms of the Southern Jamaica Plain Community Health Center (SJPHC) with patients waiting for their appointment. We surveyed a total of 50 commuters at Ruggles, Roxbury Crossing and Dudley Square Stations and 30 patients at SJPHC. We explain the survey procedure and design in more detail in Appendices A (survey process) and B (survey design). In this chapter, we discuss how each objective was completed using our survey process.

3.1 Objective 1: Identified the choice of health care centers attended by patients before and after displacement

The first step in achieving this objective was determining if displaced patients were returning to their health centers (Question 12, Appendix F)/(Question 13, Appendix G). Determining if and why displaced patients returned to their old health center after moving, revealed the direct effects of displacement on access to health care. Through responses to our survey questions, we were able to understand why people attend the health center they do, even if it is far away, and if distance influences their decision.

The second step in achieving this objective was to understand if public transportation affects patients' choice of health care (Question 7, Appendix F). Understanding if time was a factor in health care decisions showed if patients are choosing health centers based on convenience alone. Obtaining information regarding commute times and satisfaction towards public transportation was vital in analysis of public transportation's influence on the health care choices of patients.

3.2 Objective 2: Identified the different barriers to health care access that patients encountered

The purpose of this objective was to identify various factors that create challenges for people going to their health care centers. To identify the barriers, we first focused on the connection between public transportation and health care access (Question 8, Appendix F)/(Question 10, Appendix G). We were able to distinguish whether or not public transportation caused people to be late to or miss health care appointments. Understanding the impacts of public transit on appointments revealed if, and to what extent, using public

transportation created barriers to health care. Analyzing responses about why public transportation caused missed or late appointments (Question 9, Appendix F)/(Question 11, Appendix G) provided insight into what specific aspects of public transportation caused challenges.

Through our survey, we were also able to gain insight into barriers to health care that were not necessarily related to public transportation (Question 13, Appendix F)/(Question 14, Appendix G). If a survey respondent had a personal experience with difficulties accessing health care that was not public transportation, those difficulties were exposed.

3.3 Objective 3: Determined how displacement and transportation affected how often patients visit their health centers

In order to achieve this objective, we first needed to determine if displacement directly influenced whether or not people tried to go to their health care centers (Question 16, Appendix F)/(Question 16, Appendix G). Specifically, we were interested to see if the frequency of patients' visits decreased after displacement, and, if so, why the number of visits decreased. If it was revealed that the number of visits decreased, a direct connection could be made between the influence of displacement and the amount of times patients are going to their health care centers.

In addition to displacement, we needed to know how transportation affects the frequency of patients' health care visits (Question 7, Appendix F). Determining whether or not the amount of time it took to use public transportation influenced if people went to health care appointments was revealed. This aided in understanding if public transportation kept people from trying to go to health care centers in the first place.

3.4 Conclusion

After conducting surveys, we analyzed the data by categorizing responses in three categories: health care choices, public transportation, and displacement. We were able to take responses from various questions and determine how they would be the most helpful and meaningful to completing our goal. Organizing our data in this way aided in uncovering our findings. In the next chapter, we discuss each of our findings and provide evidence to support them.

Chapter 4: Findings

Our analysis of the survey data led to the development of four major findings. This chapter outlines each finding and discusses the data supporting the findings in detail.

4.1 Finding 1: After facing displacement, people prefer the health center in the neighborhood where they previously lived

Through surveys with people, their individual stories revealed a common theme of

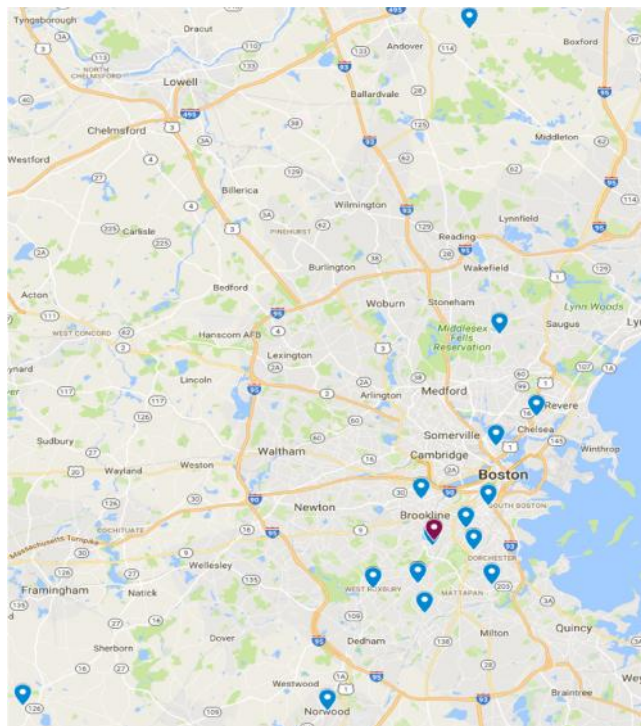


Figure 1: 15 Locations of Patients' Homes in Comparison to the SJPHC

preference to return to their old health center after facing displacement. Out of eleven respondents who said they were displaced due to being priced out, eight of them did not change health centers after being displaced. While some people cited the difficulty and annoyance of switching health care providers, the most common reason was that patients like their current health care center and do not wish to change.

When one person was asked why she did not change where she goes for health care, she simply responded with “I love my health center.” Other respondents gave more detailed accounts of their attachments to their health centers. For example, one woman at the Southern Jamaica Plain Community Health Center (SJPHC) said about the center, “It’s excellent. I love it. I’ve been coming here many years and I know all of the nurses and doctors.” This person, along with other respondents, did not cite distance as a nuisance when commuting. While surveying in the SJPHC, we were able to collect data about where patients live. Using the zip codes patients provided, we were able to map the locations of these residences (blue pins) in comparison to the SJPHC (red pin) as shown in Figure 3. Patients traveled from South Boston, Roxbury, Dorchester, Mattapan, Roslindale, and Jamaica Plain, all neighborhoods near the SJPHC. However, six patients live in areas more than 10 miles away and still traveled to the SJPHC.

One man who now lives 50 miles away from SJPHC, after being priced out of Jamaica Plain, still returns to the health center. Despite a 90 minute drive from Woonsocket, RI he cited his familiarity with the center, as well as liking the staff as his reasons for returning. He stated “I’ve been going here for 20 years and I know all of the nurses and doctors. There is no way I would ever go to another health center.”

In addition to distance not being a factor in where people go for health care, the time needed to take public transportation did not impact whether or not patients attended

health care appointments. From our survey, 80% of 35 respondents said they would still go to their health center when sick, despite the amount of time it took to use public transportation.

On average, patients at the SJPHC who used public transportation budgeted 52 minutes to get to their health care appointment the day the survey was conducted. One woman from Chelsea who commuted 90 minutes via public transportation to get to SJPHC stated, “It’s worth the ride [to SJPHC] even though I live near MGH [Massachusetts General Hospital] in Chelsea”. This same woman also stated that she really enjoyed maintaining the relationships with staff at this particular health center.

The appeal of familiarity and social connections to previous communities were key themes driving people to return to health centers from far distances. The connections displaced patients have to their previous health center prevent them from changing their health care provider when they move. This large amount of time sacrificed emphasizes that people are willing to commute further distances in order to visit preferred health centers.

4.2 Finding 2: Public transportation users budgeted more time to arrive at health centers than those who did not rely on public transportation

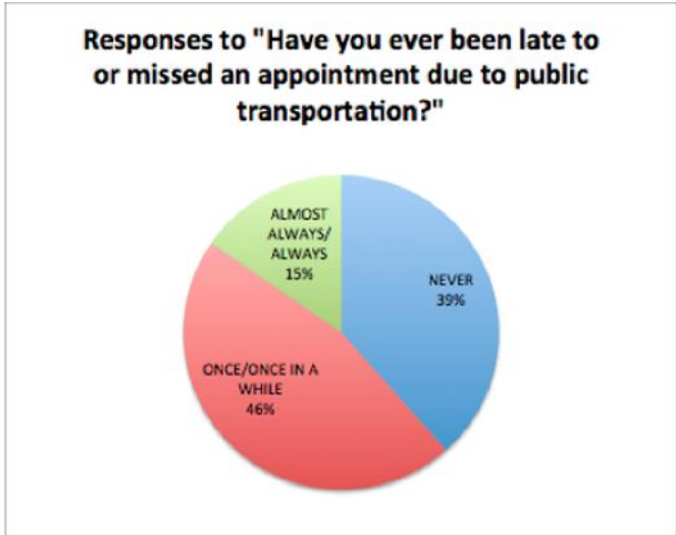
There was an obvious difference in our data between the responses of those who took public transportation and those who did not. People who relied on public transportation to get to a community health center budgeted 60 minutes on average while those who did not, budgeted 43 minutes on average. The higher amount of budgeted time for those who took public transportation stood out because those who used the public transportation system, lived in nearby areas and traveled less distances, while those who drove often came from towns outside of the City of Boston and even from locations such as Woonsocket, RI.

When talking to those who took public transportation, many reasons for budgeting extra time were revealed. The uncertainty of MBTA buses getting stuck in traffic was often cited as a motivation behind leaving early for health appointments. One person said “If I take the bus, I leave 45 minutes before [my appointment]. Sometimes the traffic is very bad.” Another respondent said “[When I leave] depends on traffic. That’s why I leave 10 minutes earlier than I need to sometimes.”

4.3 Finding 3: Patients budgeted additional time commuting via public transportation to arrive on time for health care appointments

Despite initially believing patients were late to or missing health care appointments because of issues with commuting via public transportation, survey responses actually revealed that people were rarely or never late to appointments because of public transportation. As shown in Figure 4, a total of 87% of 26 people who took public transportation to their appointment at a community health center said they were never late or only late once in a while to their appointments due to the public transportation system.

In addition to the risk of traffic, issues with the scheduling of MBTA services caused people to be aware of a need to budget extra time to arrive on time. One person said, “I leave early because the buses are usually off or the schedule is off”, which sums up a common theme among many respondents who took public transportation to get to their health care appointments.



Patients who used the MBTA to get to health centers consistently cited reasons for leaving early and needing to budget more time in order to make it to their appointment on time. The 60 minute average time MBTA users budgeted and the personal accounts of public transportation riders' commutes led to the conclusion that the time budgeted was a strategic and conscious decision made by the patient in order to avoid the uncertainties of the public transportation system.

Figure 2: 26 Responses to "Have you ever been late to or missed an appointment due to public transportation?"

appointments because of public transportation budgeted 26 more minutes into their commute than the suggested time it would take to get from their home to their community health center. This suggested time was found by taking the zip code of the respondent's home and the location of their community health center and entering them into Google Maps in order to obtain a commute time based on MBTA schedules and distance traveled. Figure 5 shows the budgeted commute time compared to the actual commute time of a sample of respondents who live in Dorchester and commute via public transportation to their respective community health centers.

On average, people who were rarely or never late to

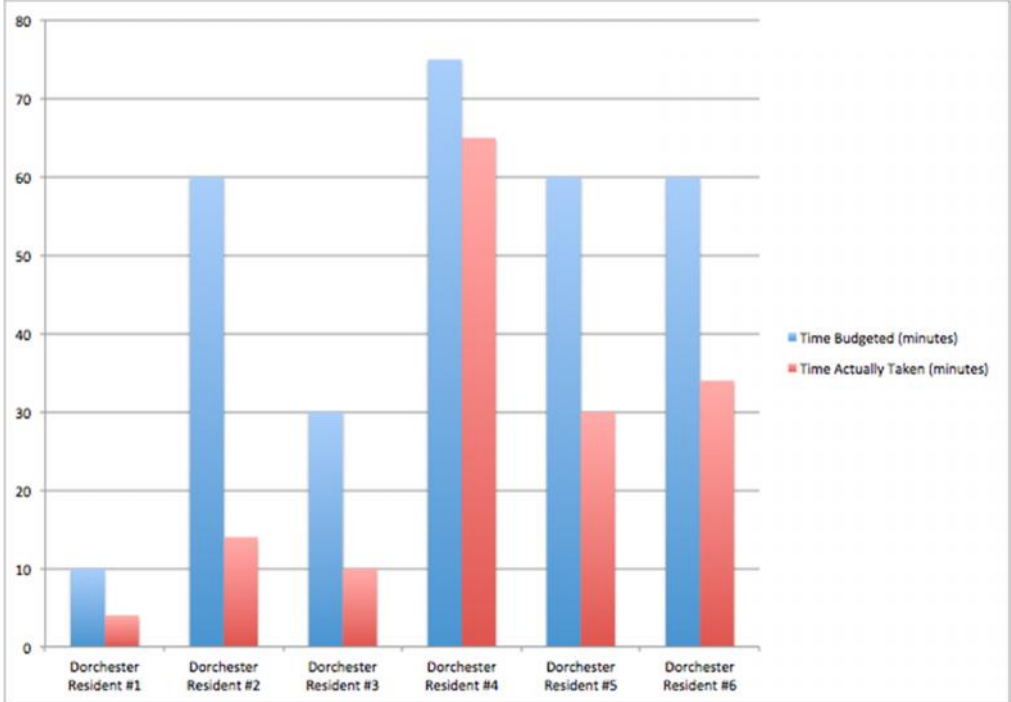


Figure 3: Time Budgeted vs. Time Actually Taken to Travel to Six Respondent's CHC

The differences between budgeted and actual commute times range from a reasonable 6 minutes to a more drastic 46 minutes; however, the discrepancies between these times for various respondents is evident. For budgeted times and actual commute times of all respondents who said they were rarely or never late to appointments because of public transportation, refer to Appendix H. Based on the amount of people who were rarely or never late to appointments because of public transportation and the amount of extra time these same people budgeted to get to their appointment, it is clear that the budgeting of extra commute time helped people avoid being late to or missing health care appointments due to the unpredictability of public transportation highlighted in Finding 2.

4.4 Finding 4: When people were late or miss appointments, it was primarily due to unpredictable public transportation schedules.

Although only 15% of respondents who took public transportation to their community health center reported always or almost always being late to or missing health appointments due to public transportation, the people who faced this challenge shared their individual experiences. As mentioned in Findings 2 and 3, there is a great deal of uncertainty and unpredictability with the public transit system in Boston. Even though most people budgeted enough time for travel in order to avoid late or missed appointments, those who did not budget the time and were late to appointments blamed the unreliability of the MBTA.

Nearly all respondents who were always or almost always late to appointments because of public transportation referenced problems with the schedules of public transportation, stating that delayed trains and buses were detrimental to their commute. One man said “The buses are never on time. They are always late and you have to wait for them without knowing when they will come.” Four respondents also mentioned issues with the MBTA app, a resource that is supposed to provide real time updated schedules of bus and train arrivals. One person said “I have the [MBTA] bus app and it will sometimes be way off from when the bus actually comes.” Another person had similar experiences and said “I use the [MBTA] app and sometimes it will say a bus is coming in 1 minute, but it actually comes in 5.”

While trains and buses running late was the most widespread issue, one woman even explained an experience where she was the only person waiting at a bus stop and, because she was the only one, was ignored by the bus driver as he drove the bus right past her. The uncertainty of what problems will arise when commuting via public transportation has been what caused patients who did not budget an adequate amount of time to be late to or completely miss health care appointments. As one resident put it, “There is no telling how the [MBTA’s] service will be.”

4.5 Limitations in Findings

We acknowledge that there are potential limitations to all of our findings. Firstly, due to not gaining access to survey in health centers until the fifth week of our project, we were only able to survey at a single health center, the SJPHC. The potential for strengthening our current findings while possibly discovering new ones would be stronger if we were able to go to other health centers. There would likely be differences in demographics from health center to health center, creating a more diverse sample and balanced data. In order to address the lack of diversity in our sample, we conducted surveys at T stations with commuters waiting at subway platforms and bus depots. However, this

method's effectiveness in resulting in relevant data proved to be a challenge as not every individual fell into our target audience, namely in their attendance of community health centers.

Secondly, we were able to successfully conduct a total of 80 surveys between T stations and the SJPHC. However, the sample size limited us from making other claims we intended to understand through various questions. We asked respondents from where they've been gentrified or if they are worried of being gentrified in the future. From the collected data, there were no clear zip code areas where people evidently were being displaced from or zip code areas where a majority of the people were worried about being gentrified. Hence, claims such as "there are specific neighborhoods of Boston that show clear indications of being gentrified or having been gentrified" or "there are specific neighborhoods of Boston where people are worried or are not worried about being gentrified", cannot be stated with full confidence due to the limited data that was collected.

Chapter 5: Recommendations and Conclusions

After completing our project objectives and achieving our project goal, we have developed four recommendations in order to expand upon concepts within our project. This chapter first discusses the development of a survey tool that can be used to help ACE in further research and then explains each recommendation and how each will enhance our research. The recommendations are as follows:

Recommendation 1: Community health centers throughout Boston should build a closer network with each other that encourages patients to visit alternative centers

Recommendation 2: The city should provide better public transportation service between where people newly reside and their old communities

Recommendation 3: ACE should conduct research that focuses on the connection between public transportation usage and health disparities among low-income residents

Recommendation 4: ACE should create relationships with realtors around Boston

Digital Survey Tool

One of our deliverables for this project was to develop a survey tool for our sponsor. Google Forms was a suitable tool for us as it allowed us to branch our survey in a more efficient way to survey respondents. ACE can use this survey tool to further expand upon our research and incorporate the branching technique into their surveys. Using Google forms as their survey tool will also make it easier for them to export their data and contact information gathered from respondents into one excel file, making it more efficient to analyze their data.

5.1 Recommendation 1: Community health centers throughout Boston should build a closer network with each other that encourages patients to visit alternative centers

It was found that people return to health centers even after being displaced and that the amount of time a commute takes does not inhibit a patient going to the community health center they are most comfortable with. The social ties displaced residents have to their previous neighborhoods are so strong that the sacrifices made to budget enough time out of their day are worth it. Some sacrifices a patient might make in order to commute to the health center are taking time off of work, hiring sitters for children, and cancelling personal plans. These sacrifices may be increasingly detrimental in the cases of emergency or short-notice appointments.

To lessen the impacts of a long commute on patients, we recommend that community health centers throughout the City of Boston are made aware of the loyalty of their patients in the development of a network between various health centers. Patients' familiarity and comfort with their community health centers should not have to be a challenge for them, especially during emergencies when access to health care is needed most. If community health centers are able to form a reliable network with each other, the centers could encourage their patients to acknowledge and visit other health centers within the network in times of need. For example, if a person was ill and needed a health care appointment on short notice, their usual health center could recommend another community health center that not only is closer to the sick patient, but also within the network of community health centers. If the health center a patient trusts and has a relationship with is able to confidently refer the patient to another health center, the patient

may be more inclined to let their familiarity with their preferred center go and trust the center they are being referred to.

Creating the network of community health centers could allow for reduced commute times for patients faced with emergent health care needs, therefore, improving the patient's well-being. Use of the community health center network could be reserved specifically for emergencies and short-notice appointments, when the wishes of patients to attend a particular center can be sacrificed.

5.2 Recommendation 2: The city should provide better public transportation service between where people newly reside and their old communities

People who took public transportation to get to their health care center often cited the unpredictability of MBTA scheduling as a problem. The unreliability of the subways and buses influenced the way patients, especially those traveling far distances, accessed their health care. In neighborhoods outside of Greater Boston, where public transportation lacks, subways do not come as often and there is a limited bus line. People who live in areas like these who depend on the public transportation to get to their health appointments may face more difficult commutes than those who live in areas within Greater Boston.

To help with the way public transportation and access to health care are related, we recommend that a transportation option be implemented that has the ability to take residents from their current neighborhoods to their desired locations in other neighborhoods. A bus or shuttle service that stops in areas where displaced residents reside could be used to bring residents to locations where they were displaced from, benefitting those without their own vehicle at an affordable price. This service would also allow displaced residents to benefit from other social and economic opportunities in Boston. For example, residents utilizing this service could access preferred stores and areas around Boston more easily. If this system was incorporated, residents would not have to rely on the limited transportation in their area, and be able to use this transportation system to access the more prominent T lines in order to get to their appointment more efficiently. This transportation system would cut down on the uncertainties in people's commutes when trying to get to their appointments, reducing the amount of time patients take out of their day. Not only will a service like this help keep people connected to their old health centers, but it would also help keep people connected to their previous community as a whole from which they were displaced from.

5.3 Recommendation 3: ACE should conduct research that focuses on the connection between public transportation usage and health disparities among low-income residents.

The conclusion of our project has left unanswered questions of how reliance on public transportation directly affects the health of patients. A possible approach that could help provide a better understanding of how the reliance on the public transportation system is related to health disparities is by gathering information from patients in multiple health centers around Boston. Useful data to collect from low-income patients includes questions regarding details about their commute to the health center, why particular health centers are chosen, and how commutes impact health care decisions of the patient. Other useful data can be collected from health centers such as current residences of patients, how often do they reschedule appointments and how does this affect the workflow of the day. Interviewing staff members of health centers was initially an idea for our project and a draft of questions prepared is shown in Appendix I. The data collected could help identify if people who travel

longer distances have worse health, suggesting the public transportation system is a barrier to health care, causing health disparities among patients.

5.4 Recommendation 4: ACE should create relationships with realtors around Boston

Our research showed no trends or patterns of where people being displaced were moving to or where people moving into gentrified areas were coming from. We recommend that our sponsor develop connections with realtors throughout Boston. If our sponsor had close relations with realtors, they may be able to obtain information regarding:

1. The price of housing in certain areas throughout Boston

Understanding the price of housing in certain areas throughout Boston will greatly help ACE achieve a better understanding of specific areas of Boston where rents are increasing drastically. Realtors could help pinpoint specific driving forces that caused prices of rents to skyrocket. This can help ACE move forward to detect gentrification in a neighborhood before the displacement of low-income residents occurs. By noticing gentrification of a neighborhood earlier, ACE could help prevent more people from being displaced.

2. Where low-income people are moving to and where they are coming from

Understanding what areas of Boston low-income residents are being displaced to can help ACE concentrate on that certain neighborhood and help build relationships with those residents. This can help these residents build a support network among their new community. By also understanding where they are moving from, ACE can go to that neighborhood as well and help any residents who are being threatened by displacement. This can help ACE understand if the low-income residents moving to a new area, are moving to a specific area with a community health center nearby. This can help aid in the understanding of health care access and how moving to a certain area can affect the availability of community health centers for people of lower income.

3. The development and revitalization of new housing in specific areas of Boston

Identifying which areas are developing new housing can help ACE keep tabs on who is moving into those communities as well as the kinds of people already living there. They can also keep track of the prices of the neighborhood before and after new housing is developed, hoping to notice if gentrification is occurring in that neighborhood and to be aware of it before displacement begins to occur. Something ACE should keep in mind while studying areas that new housing is being developed in is the state of the neighborhood before development, as well as after.

4. The influx of new companies in a community

New stores, restaurants, hotels, banks and jobs are all indicators of a neighborhood undergoing gentrification. Identifying specific areas in which an influx of new companies is evident is important in seeing if an area is in the process of being gentrified. If realtors helped ACE stay updated on the major developments of a community and the kinds of companies moving in as well as the communities at risk of gentrification, this could help ACE understand at what level the neighborhood is being gentrified.

The information provided by realtors throughout Boston could greatly increase the understanding of the development and how it is affecting the residents in those areas. Future projects can use this information to focus their research in gentrifying neighborhoods in order to further investigate the health care access problem. Realtors get a first-hand look at the housing in Boston and having someone with that knowledge connected with ACE would be extremely beneficial to them.

Conclusion

One of the most disheartening impacts of displacement is when long-time residents of a community are now forced to live elsewhere. Residents who have lived in a neighborhood now have to sever their deep social ties due to a rent increase. Our most meaningful finding exemplifies this strong relationship people have with their previous communities. This explains the large number of patients who commute from other communities to health centers even after being displaced. John Walkey, Development Manager at Alternatives for Community and Environment gave the analogy of finding a car mechanic or a barber. Once someone has found one that they trust, the individual would come back to that same service rather than try to find a new one. Similarly, having familiar and trustworthy doctors and staff is tough to toss away when compared to a longer commute.

The survey tool designed to survey will be handed over to ACE to use for future purposes. In addition to providing the survey tool, we hope our research will open more doors for further expansion in future studies. We hoped that our findings and our recommendations highlight the complexity of the health care access problem rooting within the social ties people feel to their community. These social ties prove a more complex health care access problem than what can be fixed by simply moving health centers closer to patients. We hoped to make the residents' voices heard and be able to build awareness of the implications deep social ties can have on individuals.

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Appendix A: Description of Survey Procedure

For the T station surveys, we positioned ourselves at the Ruggles and Roxbury Crossing subway stations as well as the Dudley Square bus depot. These three stations are close to the Whittier Street and Dimock Community Health Centers. By locating ourselves at stations near community health centers, we believed we would have a higher chance of surveying people who attend those health centers. At the T stations, we surveyed 50 residents in total. To get respondents for our survey, we approached people waiting for their train or bus and explained that we were students working with Alternatives for Community and Environment and asked if they were willing to speak with us about public transportation and access to health care. Once the person agreed to take our survey, one team member asked them the questions from the survey while another person took notes. At the end of the survey, we provided the respondent some information about ACE by handing them a flyer, in English and Spanish, highlighting information about our project, about ACE as an organization, and contact information for the organization (See Appendices C and D). Verbally asking the questions benefitted us by being able to conduct an interview-style survey with the respondents. By conducting these interviews, we also exercised the ability to ask more follow up questions based on how the survey respondent was answering. For example, if the person revealed that he or she had been going to the same health center for many years we asked them why exactly they did not switch, despite the fact that the question was not on our survey. These surveys allowed us to gain more data about individual stories from survey respondents than if they were filling out the survey themselves.

For the surveys conducted in the SJPHC, we surveyed 30 patients in two locations within the health center. The first location was the pediatric waiting room on the first floor and the second location was the general waiting room for adults on the second floor. Having two locations to survey within the health center greatly increased the number of patients we were able to ask to participate. Much like we did on the T platforms, we approached patients waiting for their appointment, provided them the necessary background of our project, and asked them if they were willing to answer a few questions. Once the patient agreed to take the survey, one of the team members asked the questions while the other took notes.

Through conducting surveys, a number of limitations became apparent. The first was the amount of time that we had with each survey respondent. This was a problem particularly when surveying at subway platforms, because we had a maximum of seven minutes with each person until their train arrived. We had more time at the Dudley Square bus depot and in the SJPHC, but still had surveys that were cut short due to bus arrivals and patients being called to their appointments. To address this, we designed our survey in a way which put important questions at the beginning of the survey and less important ones at the end, allowing us to gain the information we were most interested in before the survey respondent needed to leave.

Appendix A (continued): Description of Survey Procedure

Language barriers between our team and our survey respondents proved to be challenging. When surveying at subway platforms and the Dudley Square bus depot, we encountered a number of individuals that did not speak English, preventing us from conducting the survey with them. However, when we surveyed at the SJPHC, we were accompanied by a Spanish translator, permitting us to survey with Spanish speaking patients. Having a translator allowed us to get as much information as possible from patients while also increasing the size of our sample. The final limitation in our procedure was the limited availability of surveying in SJPHC. In order to survey, we needed to gain permission from the health center and also be accompanied by someone with an authorization badge. We were granted permission in the fifth week of our research, limiting the amount of days that we could collect data. Many of the employees that we worked with could only chaperone our team on limited days and times as well, preventing us from surveying more patients.

Appendix B: Description of Survey Design

We designed the survey on Google Forms, a program that allowed us to conduct the survey electronically to collect the data, and then organize it in Microsoft Excel. The survey was designed in such a way that the questions a respondent answered were suitable to his or her situation. For example, if the person used public transportation to get to health appointments, he or she was asked a different set of questions than someone who said they did not use public transportation. The chart in Appendix E shows how the branching method works with our questions. The branching strategy collected certain data from the people who would provide the most useful answer in the shortest amount of time (i.e. people who have been displaced and take public transportation) without excluding people who are not part of the target audience but could provide important insight nonetheless. Our survey ranged from 12-20 questions varying in styles from multiple choice to open ended.

We created virtually the same survey for both locations, however, we needed to construct the wording and number of questions in slightly different ways for each respective location and audience. Patients in waiting rooms were asked more open ended questions than residents on subway platforms because we had more time with them. We also knew that they attended and traveled to a community health center that day so we were able to ask more questions related to their specific travel and transportation experiences. Since we had more time with the people in waiting rooms, we were able to have them elaborate on certain questions that the people at T stations did not have time to discuss. For example, we asked participants at both locations if they took public transportation to get to appointments; however, we were able to ask the patients in waiting rooms additional questions about what form of public transportation (bus, subway, commuter rail train, etc.) they used and how many transfers they had to make.

When interviewing residents at T stations, we had to ask more screening questions. Because we needed to filter our target audience out of a broad audience of people, we needed to screen for people who attended community health centers and those who did not. The survey questions for each of the two surveys are located in Appendices F and G. Although the wording and number of questions differed between the two surveys due to different audiences and settings, the two surveys shared the same goal, ultimately completing our three objectives.

Appendix C: Flyer handed out to survey participants, English Version



**ALTERNATIVES FOR COMMUNITY & ENVIRONMENT
BUILDING BETTER ACCESS TO HEALTH CARE**

ACE'S MISSION
ACE builds the power of communities of color and low-income communities in Massachusetts to eradicate environmental racism and classism, create healthy, sustainable communities, and achieve environmental justice.

FROM 2000 TO 2010, THE PERCENTAGE OF BLACK RESIDENTS IN ROXBURY DECREASED FROM 54.5% TO 45.2%

FROM 2009 TO 2012, RENTS IN BOSTON INCREASED BY MORE THAN 31%

CHANGING THE WAY COMMUNITIES ACCESS HEALTH CARE

This project hopes to shine a light on the impacts displacement and public transportation has on residents' access to health care.

Gentrification and displacement are hitting Roxbury hard and at an alarming rate. We believe that displacement combined with public transportation problems affects a patient's ability to access health care. This can have a negative affect on their health.

By listening to the voices of the community, we hope to be able to advocate for environmental justice in the Roxbury community and put an end to these issues.

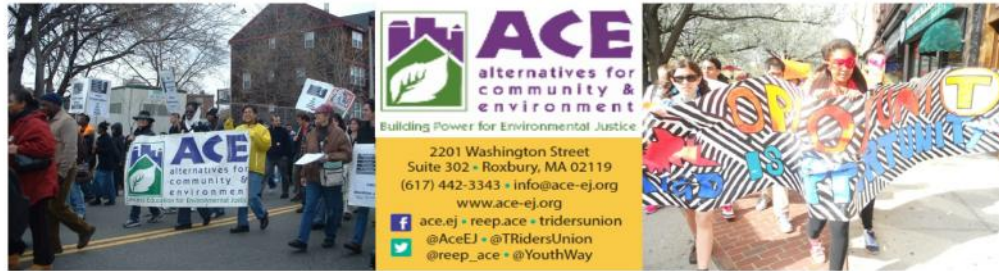
ACE HAS ACCOMPLISHED...

- A MBTA Youth Pass, a reduced price monthly pass for ages 12-25
- An **Environmental Justice Policy**, a policy to increase outreach and resources to environmental justice communities

DISPLACEMENT HAS MANY HEALTH IMPLICATIONS THAT CONTRIBUTE TO DISPARITIES AMONG CERTAIN POPULATIONS, INCLUDING THE LOWER-INCOME, WOMEN, CHILDREN, THE ELDERLY AND PEOPLE OF COLOR



Appendix D: Flyer handed out to survey participants, Spanish Version



ALTERNATIVAS PARA LA COMUNIDAD Y EL CONSTRUYENDO MEJOR ACESO A LA SALUD

LA MISION DE ACE
 ACE contruye el poder de las comunidades de color y de recursos bajos en Massachusetts para erradicar el racismo del ambiente, clasismo y crear comunidades sostenibles y saludables y lograr justicia ambiental.

DEL 2000- 2010 EL PORCENTAJE DE RESIDENTES DE AFRO AMERICANOS DISMINUYO DE 54.5% TO 45.2%

DEL 2009 - 2012, LA RENTA EN BOSTON AUMENTO POR MAS DE 31%

CAMBIANDO LA MANERA EN QUE COMUNIDADES ACCESAN LA ATENCION MEDICA

Este proyecto quiere llamar la atencion a las implicaciones de desplazamiento y el transporte publico que tiene a los residentes y su acceso a la atencion medica.

ACE HA LOGRADO...

- Un **Pass de MBTA Para los jovenes**, un precio reducido para los de la edad 12-25.
- Reglamentos para la **Justicia del ambiente** para aumentar el outreach y recursos a comunidades para la justicia ambiental.

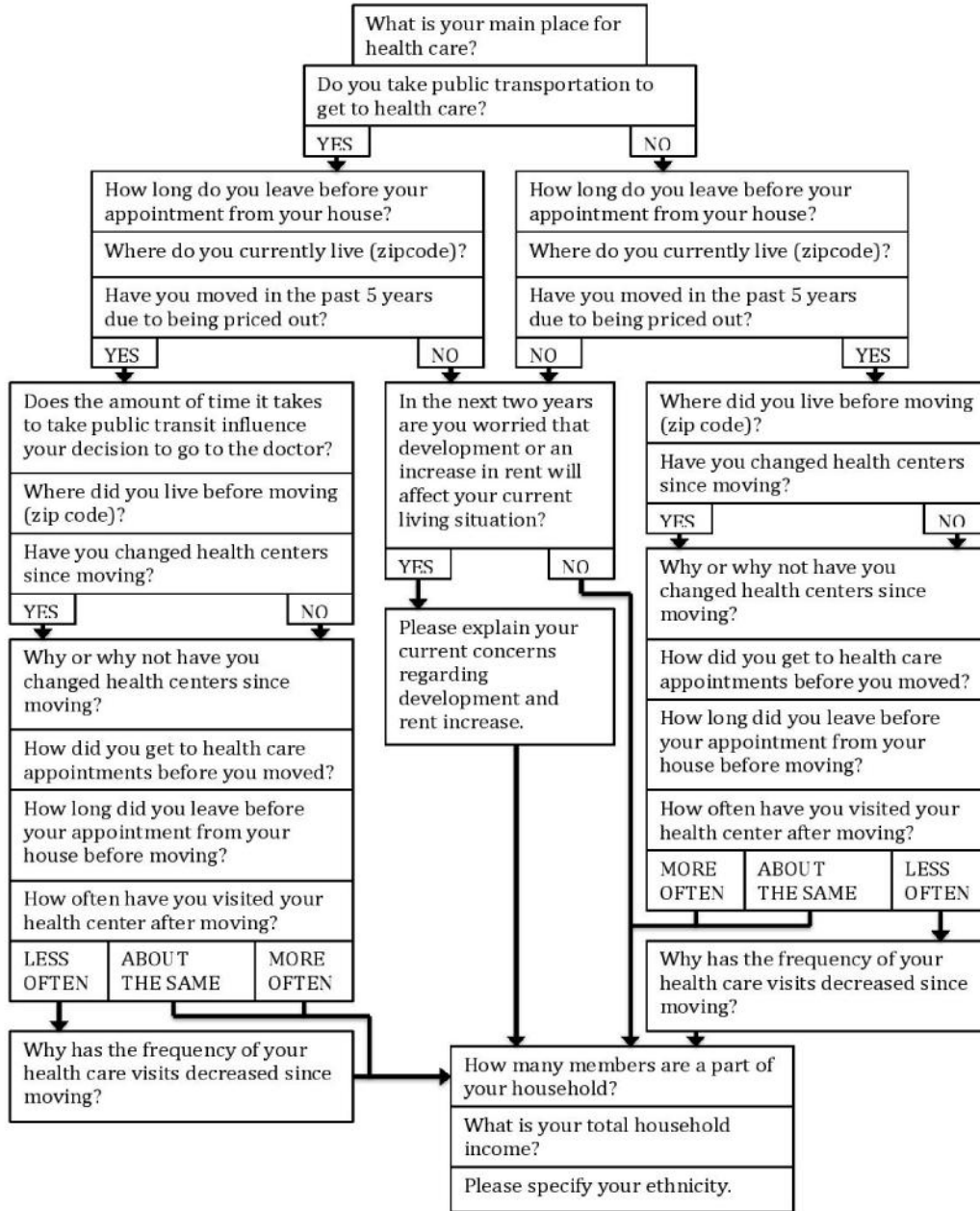
DESPLAZAMIENTO TIENE MUCHAS IMPLICACIONES PARA LA SALUD QUE CONTRIBUYE A LA DESIGUALDAD ENTRE POBLACIONES DE PERSONAS CON RECURSOS BAJOS, MUJERES, NIÑOS, LAS PERSONAS MAYORES Y PERSONAS DE COLOR

Aburguesamiento y desplazamiento estan afectando a Roxbury muy duro y a un porcentaje muy alto. Creemos que desplazamiento combinado con problemas del transporte afecta la habilidad de un paciente acceder la atencion medica. Esto puede tener un afecto negativo a la salud de uno.

Escuchando a las voces de la comunidad, queremos poder advocar para al justicia ambiental de la comunidad de Roxbury y parar estos problemas.



Appendix E: Branching Method for T Station Surveys



Appendix F: Complete List of Survey Questions for T Station Surveys

This is a list of all survey questions asked within this survey. These questions do not appear in any particular order due to the branching design. Not every question was asked of every respondent and this list is provided to demonstrate wording and types of questions asked.

1. What is your main place for health care?
 - Community Health Center
 - Private Doctor
 - Urgent Care
 - Emergency Room
 - I don't go anywhere
 - Other
2. How long do you leave before your appointment from your house?
3. Do you take public transportation to get to health care?
 - yes
 - no
4. Where do you currently live? (zip code)
5. Which community health center do you attend?
6. Have you moved in the past 5 years due to being priced out?
 - yes
 - no
7. Does the amount of time it takes to use public transit influence your decision to go to the doctor?
 - yes
 - no
8. Have you ever been late to or missed an appointment due to public transportation?
 - never
 - once
 - once in a while
 - almost always
 - always
9. If you have been late, why?
10. In the next two years are you worried that development in your neighborhood or an increase in rent will affect your current living situation?
 - yes
 - no
11. Where did you live before moving? (zip code)
12. Have you changed health centers since moving?
 - yes
 - no
13. Why or why not have you changed health centers since moving?

Appendix F (continued): Complete List of Survey Questions for T Station Surveys

14. How did you get to health care appointments BEFORE you moved?

- car
- walk
- bike
- got a ride
- public transportation
- other

15. How long did you leave before your appointment before you moved?

16. How often have you visited your health center after moving?

- more often
- about the same
- less often

17. Why has the frequency of your health care visits decreased since moving?

18. Please explain your current concerns regarding development and rent increase.

19. How many members are part of your household?

20. What is your total household income?

21. Please specify your ethnicity.

Appendix G: Complete List of Survey Questions for Health Center Waiting Room Surveys

This is a list of all survey questions asked within this survey. These questions do not appear in any particular order due to the branching design. Not every question was asked of every respondent and this list is provided to demonstrate wording and types of questions asked.

1. Are you a patient here today?
 - yes
 - no
 - no, but parent or guardian of one
2. What is your primary way to get to health care centers?
 - car
 - walk
 - bike
 - got a ride
 - public transportation
 - other
3. How long do you leave before your appointment from your house?
4. How much travel time does it actually take to get here?
5. Where do you currently live? (zip code)
6. What form of public transportation did you use to get here today?
 - bus
 - subway
 - commuter rail
7. How many transfers did you have to make to get here today?
8. Have you moved in the past 5 years?
 - yes
 - no
9. Please specify your reasons for moving.
 - work/school
 - rent increase/lower rent elsewhere
 - need for more space
 - preferred location
 - evicted
 - couldn't renew lease
 - job loss
 - other
10. Have you ever been late to or missed an appointment due to public transportation?
 - never
 - once
 - once in a while
 - almost always
 - always

Appendix G (continued): Complete List of Survey Questions for Health Center Waiting Room Surveys

11. If you have been late, why?
12. Where did you live before moving? (Zip code)
13. Have you changed health centers since moving?
 - yes
 - no
14. Why or why not have you changed health centers since moving?
15. How did you get to health care appointments BEFORE you moved?
 - car
 - walk
 - bike
 - got a ride
 - public transportation
 - other
16. How often have you visited your health center after moving?
 - more often
 - about the same
 - less often
17. Why has the frequency of your health care visits decreased since moving?
18. In the next two years are you worried that development or an increase in rent will affect your current living situation?
 - yes
 - no
19. Please explain your current concerns regarding development and rent increase.
20. Please specify your gender
21. Please specify your ethnicity.
22. What is your total household income?
23. How many members are part of your household?
24. What is your age?

Appendix H: Budgeted Time, Suggested Time, and Extra Time Taken for Respondents Rarely or Never Late to Appointments

Patient's Home	Community Health Center	Time Budgeted (minutes)	Suggested Time (minutes)	Extra Time Budgeted (minutes)
Chelsea	Jamaica Plain	90	80	10
Dorchester	Bowdoin	10	4	6
Dorchester	Dimock	60	14	46
Dorchester	Dimock	30	10	20
Dorchester	Jamaica Plain	75	65	10
Dorchester	South End	60	30	30
Dorchester	Whittier	60	34	26
Dorchester Center	Uphams Corner	60	24	36
Hyde Park	Mattapan	30	30	0
Jamaica Plain	Jamaica Plain	45	15	30
Jamaica Plain	Jamaica Plain	30	30	0
Jamaica Plain	Jamaica Plain	60	30	30
Jamaica Plain	Jamaica Plain	30	10	20
Jamaica Plain	Jamaica Plain	60	30	30
Mattapan	Whittier	90	36	54
Randolph	South Boston	90	16	74
Roxbury	Dimock	60	14	46
Roxbury	Harvard Street	90	20	70
Roxbury	Jamaica Plain	20	20	0
Roxbury	Uphams	40	26	14
Roxbury Crossing	Dimock	45	18	27
West Roxbury	Jamaica Plain	60	60	0

Appendix I: Draft Interview Questions for Surveys with Health Center Staff

1. How often do you have to reschedule patients' appointments?
2. Do patients discuss why they are late?
3. Can you provide common reasons for why patients are late?
4. Can you think of any specific patients whose number of visits have changes in the past few years?
5. In the past 5 years, have you noticed a lot of patients changing addresses?
6. What form of transportation do you use to get to work?
7. Have you ever been late to work because of public transportation?
8. Do you have one really good story about displacement affecting one of your patients?
9. When people are late to their appointments, how does this affect the flow of the work day?
10. Have you noticed patterns or trends of where people are moving in from and where they are going?
11. How have patients missing or being late to appointments impacted the clinic as a whole?