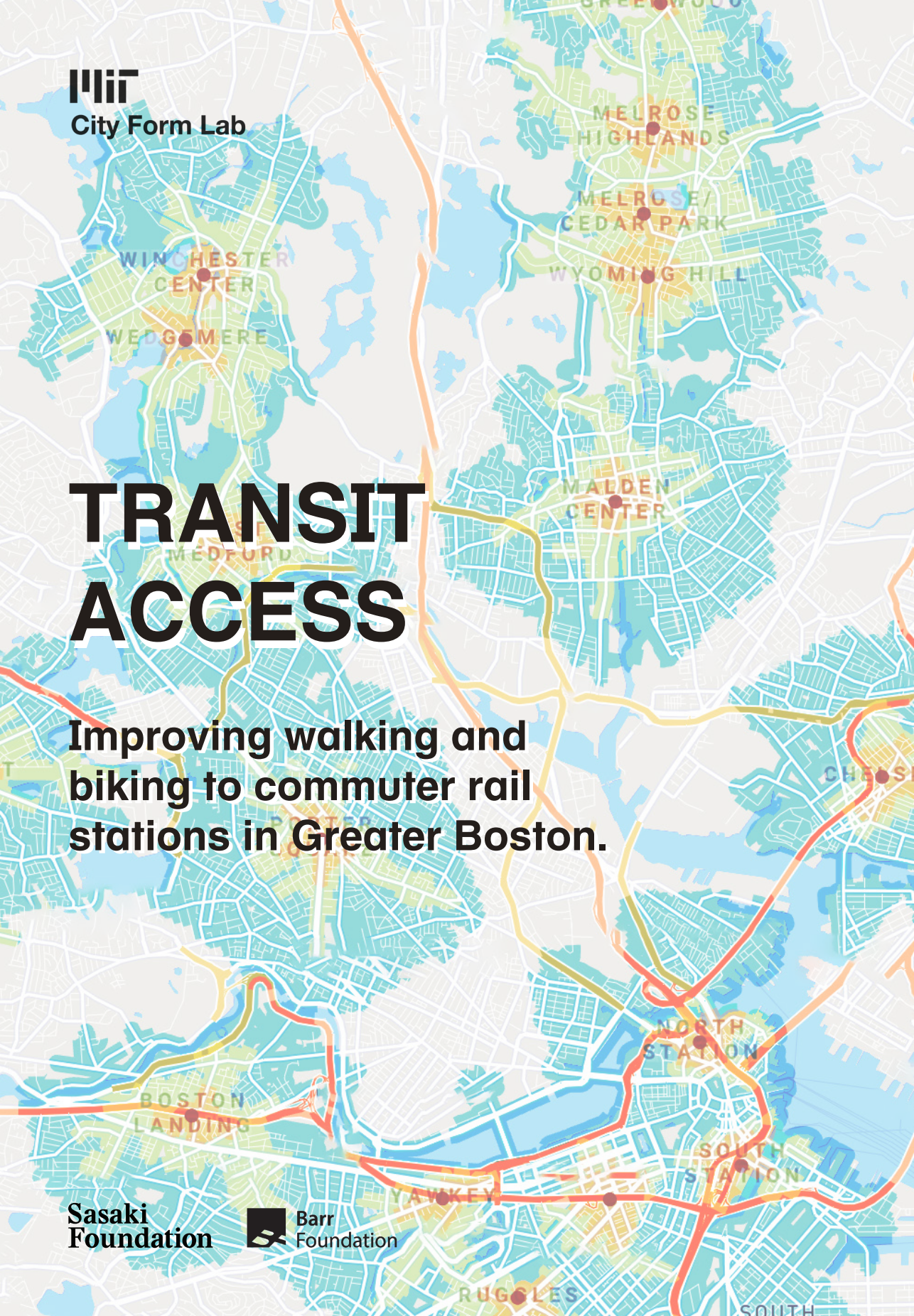

City Form Lab

TRANSIT ACCESS

Improving walking and biking to commuter rail stations in Greater Boston.

Sasaki Foundation

Barr Foundation

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Acknowledgments

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Accompanying website:
http://boston.transit-access.com

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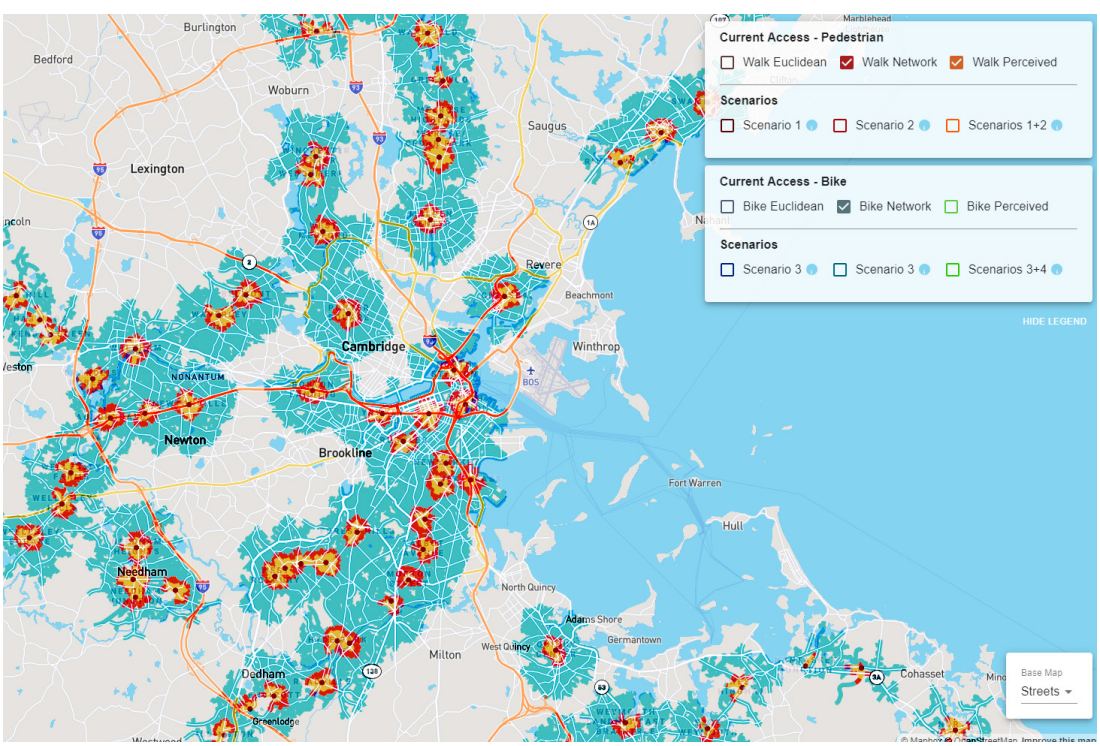
Executive Summary

Accompanying website:
http://boston.transit-access.com

This study examines the transit oriented development (TOD) potential of commuter rail stations in the Greater Boston area. The MBTA has announced plans for major improvements in commuter rail service and connectivity. However appreciated and overdue, transit oriented development that will likely accompany a system-wide commuter rail upgrade may also usher in hazards and blind-spots for planners and policy-makers to address. With TOD come improved amenities, higher land values and more competition for real estate, which in turn could lead to displacement, unaffordability and unequal access for intended beneficiaries. Yet, with coordinated land-use planning, street design and rail planning, there is nevertheless potential to not only enhance access equitably, but to also unlock a large quantity of affordable space that is presently perceived to be outside commuter rail catchment areas, and to shift Greater Boston's growth trajectory from the 20th century car-oriented path to a more sustainable 21st century rail-oriented path.

Building on prior efforts to evaluate the TOD potential of the commuter rail network, this study delineates in greater detail what the ten-minute "perceived" walksheds (as opposed to network or circular) for both walking and biking are around each station in the network. This



enables decision-makers to understand more accurately how much development, population, jobs or open land there is in areas that could truly function as commuter-rail catchment zones. We show that, system-wide, the "perceived" ten-minute walksheds are substantially smaller and only contain about 24% of the residents and 38% of the jobs that are typically shown in the "objective" half-mile radius around stations. For biking, larger catchment areas make the difference even more pronounced. The "perceived" one-and-a-half mile travel-sheds contain about 23% percent of the residents and 33% of the jobs contained in the "objective" one-and-a-half-mile circular catchment zones around stations. The opposite trend is found for vacant, and potentially developable TOD land parcels, which are systematically more abundant as distance from stations increases. If the "perceived" half-mile walksheds could be extended through street improvements to capture the full half-mile "network" walksheds, vacant land within walking range of rail-stations would double from 8.2 to 17 million square feet. Similarly, if the "perceived" one-and-a-half mile bike sheds could be extended to capture the actual one-and-a-half mile "network" bikesheds, vacant land within biking range of rail-stations would triple from 30.9 to 99.9 million square feet. To capture this potential, many more access routes to commuter rail stations need to be safe, comfortable and pleasant to walk and bike. We show that targeted policy interventions, such as a) reducing traffic speed limits within half a mile around stations, b) increasing ground floor amenities along key walking routes, c) implementing safe bike lanes and bike routes within a mile-and-a-half around stations and d) removing one-way street deterrents for cyclists could notably increase the perceived ten-minute walk and bike catchment areas around stations. Though each of these approaches comes with relatively low capital costs and has the potential to be implemented within a year, we also argue that it is important to set aside some of the commuter rail upgrading budget to support better access to stations, especially in areas where poor walking and biking conditions presently discourage a disproportionately large number of residents and workers from accessing the station on foot or by bike.

Source: The Boston Globe

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01

INTRODUCTION

Source: Commonwealth Magazine, 2018

Introduction

Commuter rail plays an important role in connecting both daily commuters as well as weekend travellers to opportunities in the Greater Boston region. Around 616,000 people live and 715,000 work within a half-mile radius of a commuter rail station in Massachusetts. In 2018, the commuter rail system served approximately 32 million trips per year. But due to a number of factors, ridership has been declining, down from about 40 million trips in 2002. This decline is, in part, related to increasing wealth in the region that has led to more car sales, and in part to the poor service quality and relatively high price point of commuter rail fares. Furthermore, while Boston and its surrounding towns have gone through a significant economic and real-estate boom in the last decade, relatively little of that growth has occurred near existing commuter rail stations. Recent urban developments have shifted potential riders away, rather than towards commuter rail stations.

To address these challenges, the MBTA has announced plans for significant service improvements to the commuter rail system (Stout 2019). These improvements promise to deliver 15-minute headways service headways system-wide, and more frequent "subway-like" service in denser core areas, generally within Route 128 around Boston. They also suggest system-wide station upgrades, a collective fare system with other transit service and partial electrification, which could help reduce the state's greenhouse gas emissions, transportation energy consumption and noise levels near tracks.

MBTA's Rail Vision proposed six alternative scenarios in which commuter rail could operate more effectively in the future, ranging in service frequency, vehicle technology and a level of operational investment (MBTA 2019). All alternatives aimed to improve the service provided by commuter rail by primarily increasing the frequency and operational hours, with options five and six being most ambitious and calling for an extensive, $10-30 billion overhaul for the system as a whole. These improvements have yet to secure financing and could take decades to complete. But they recognize Greater Boston's unique and fortunate position among major American metro areas for already possessing the most difficult to obtain and expensive asset for metropolitan rail service – the rail right-of-ways and stations – which have consolidated and evolved over a century and offer under-exploited potential for channeling the region's economic and cultural growth for decades to come.

Relatively little public discourse on commuter rail upgrading has focused on transit oriented development near stations or on how both existing and future riders will be able to access the stations using non-motorized ways, on foot or by bike. Mass Inc's report "The Promise and Potential of Transformative Transit-Oriented Development in Gateway Cities" was produced by an interdisciplinary research team to construct detailed

real estate and transportation models for selected Gateway Cities which were characterized with varied market contexts. The study focused on how many new housing units and jobs can be located on vacant and underutilized TOD land surrounding commuter rail stations, using a common, but potentially overly optimistic definition of half-mile catchment areas based on circular buffers around stations (Mass Inc 2018). By incentivizing TOD's within a half-mile radius of stations, reductions in vehicular commuting could result in a 40 percent drop in greenhouse gas emissions, the authors suggest.

Vacant land, underutilized buildings and parcels within walking range of stations offer an ideal setting for transit-oriented development (TOD). If policies, regulations and enhanced access could attract future development into transit-connected Gateway cities, commuter rail improvements will generate more inclusive and economically productive growth and open up housing supply well beyond Boston and its suburbs.

Another study entitled "Growing Station Areas" by the Metropolitan Area Planning Council (MAPC 2012) also highlights the opportunity for increased development near transit stations, within the similar half-mile circular radius as the Mass Inc study above. MAPC's regional plan presents TOD as a key ingredient for sustainable, diverse

The Promise and Potential of Transformative Transit-Oriented Development in Gateway Cities

and equitable growth in the region (MAPC 2012).The MAPC study developed an area typology that identifies ten Transit Station Area Types, depending on population and employment characteristics. All in all, the study estimates that TOD areas could accommodate 76,000 new housing units and more than 130,000 new jobs by 2035.

Building on these prior efforts, this study investigates pedestrian and bicycle access to commuter-rail stations in the greater Boston area by comparing three definitions of catchment areas—1) as a crow-flies distance, 2) network distance and 3) "perceived" distance to the nearest station. Pedestrian- and bicycle path-choice studies have shown that people's perception of distance can substantially differ from objectively measured distance. For instance, walking along routes with high traffic volumes and speeds tends to make the walk feel longer than it is, while passing by ground-businesses or greenery makes distance feel shorter. Similarly, having quality bike paths makes biking distances feel shorter, while having to bike against traffic has the opposite effect. Using behavioral findings from prior studies (Hood et al 2011; Sevtsuk et al. 2020), the analyses below illustrate how much smaller the perceived ten minute walk- and bikesheds are compared to the "network" and "as-a-crow-flies" catchment areas around current commuter rail stations in the system. All walk-sheds are mapped

Alternative 5

What if you could catch an electrified Commuter Rail train every 15 minutes at any inner core station at any time of day?

Cost: $10.6 billion*

**$14.9 billion adjusted for 2030 inflation*

Station Type	Typical Frequency[1]
Inner Core Stations	Every 15 min
All Other Stations	Every 30 min peak Every 60 min off peak

Inner Core stations are located in dense areas directly surrounding Boston, generally within Route 128.

[1]In both directions

RAIL VISION

Massachusetts Bay Transportation Authority

Alternative 6

What if you could catch an electrified Commuter Rail train at nearly any station every 15 minutes at any time of day?

Cost: $28.9 billion

**$40.7 billion adjusted for 2030 inflation*

Station Type	Typical Frequency[1]
Inner Core Stations	Every 15 min
Key Stations	Every 15 min
All Other Stations	Every 15 min where possible

[1]In both directions

RAIL VISION

Massachusetts Bay Transportation Authority

using a ½ mile distance, bike-sheds using a 1½ mile distance. It is within the "perceived" catchment areas—particularly the "perceived" ½-mile walking zones—that people "feel" they can get to stations within ten minutes with non-motorized transportation, delineating critical areas for transit oriented development and transit-improvement impacts.

Summary statistics indicate what percentage of residents, jobs, gross floor area (GFA) and vacant land are contained within the "perceived" and network catchment areas, compared to the as-a-crow-flies walk (½-mile) and bike (1½-miles) zones around each station.

Four potential policy options are also presented. To improve walking conditions, the map explores how a) a 20-mph maximum speed limit on all roads that currently have speed limits below 45-mph and b) a 50% increase in ground-floor amenities could impact the "perceived" ½ mile walksheds around stations. To improve bike access to stations, we explore how c) allowing two-way biking on all one-way streets within ½ miles of stations and d) implementing protected bike lanes on all streets within ½ miles of stations, and bike routes (bikes mixed with traffic, with painted signs on roadways) within the rest of the 1½ mile bike sheds around stations. The summary charts describe how each of these scenarios could reduce the "perceived" distance to the nearest commuter rail station, improving access to residents, jobs, GFA and unbuilt parcels in the commuter rail system as a whole. Tables at the end of the report, as well as the interactive map online, can be used to explore potential impacts at particular stations.

The report is structured as follows. We first present a brief history of commuter rail developments connecting Boston and other Massachusetts cities. We then describe some of the contemporary challenges that face both commuter rail service provision and the towns that depend on it. We then describe the methodology we used to examine "perceived" access to stations on foot and by bike. The results section describes our findings in the system as a whole, while the tables in the last section report station-specific access statistics to residents, jobs, amenities, gross floor area and vacant land. The accompanying website http://boston.transit-access.com shows the findings interactively and also provides Excel and GIS shapefiles for downloading, which can enable different municipal governments, scholars or stakeholders to run their own analyses based on our results.

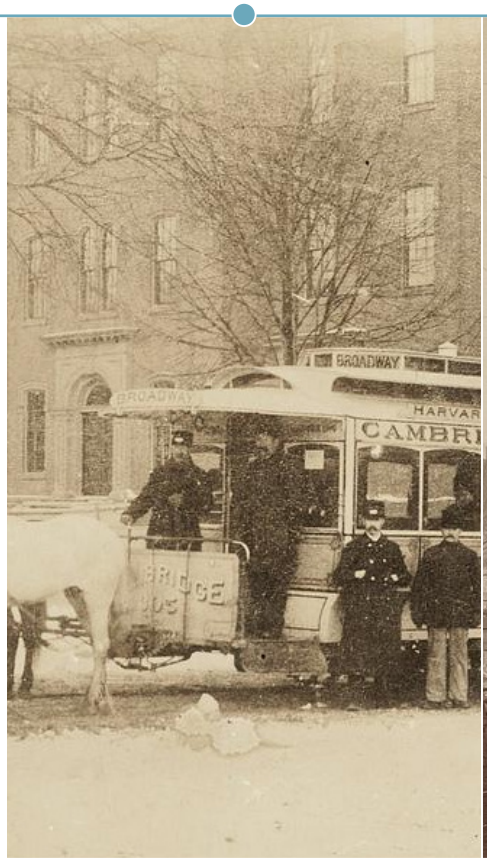
Source: MBTA Commuter Rail

02

HISTORIC BACKGROUND

Brief History: Overview of Commuter Rail Towns

1850's



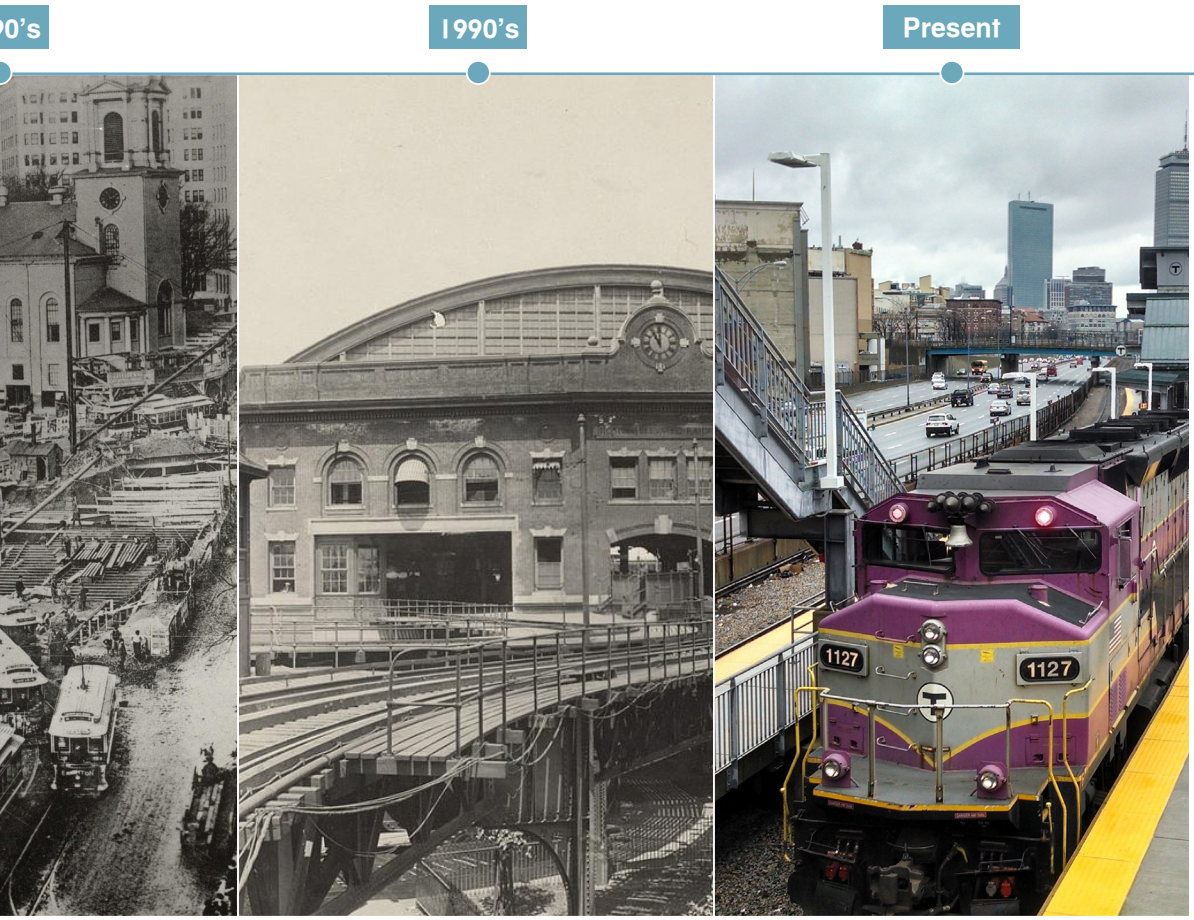
1880's

189

Commuter rail has played an integral role in the development and evolution of Greater Boston, linking a whole network of Massachusetts cities and towns into an interdependent cultural and economic web.

Before the industrial revolution, Massachusetts's economy was primarily based on agriculture, maritime shipping and fishing. After the industrial revolution began in England in the late 18th century, the Embargo Act of 1807 cut US imports off from Britain, leading Americans to increase the amount of locally manufactured goods. In addition to the expansion of the cotton-yarn mills, textile mills in Massachusetts played a pivotal role in the industrial revolution of the United States. During this period, the textile mills – the first industrial sector to use modern industrial production methods in the United States – came to dominate New England's economy.

One of New England's most prominent mill towns – Lowell, MA, established in 1822 – became known as "the cradle of the American Industrial Revolution" for being

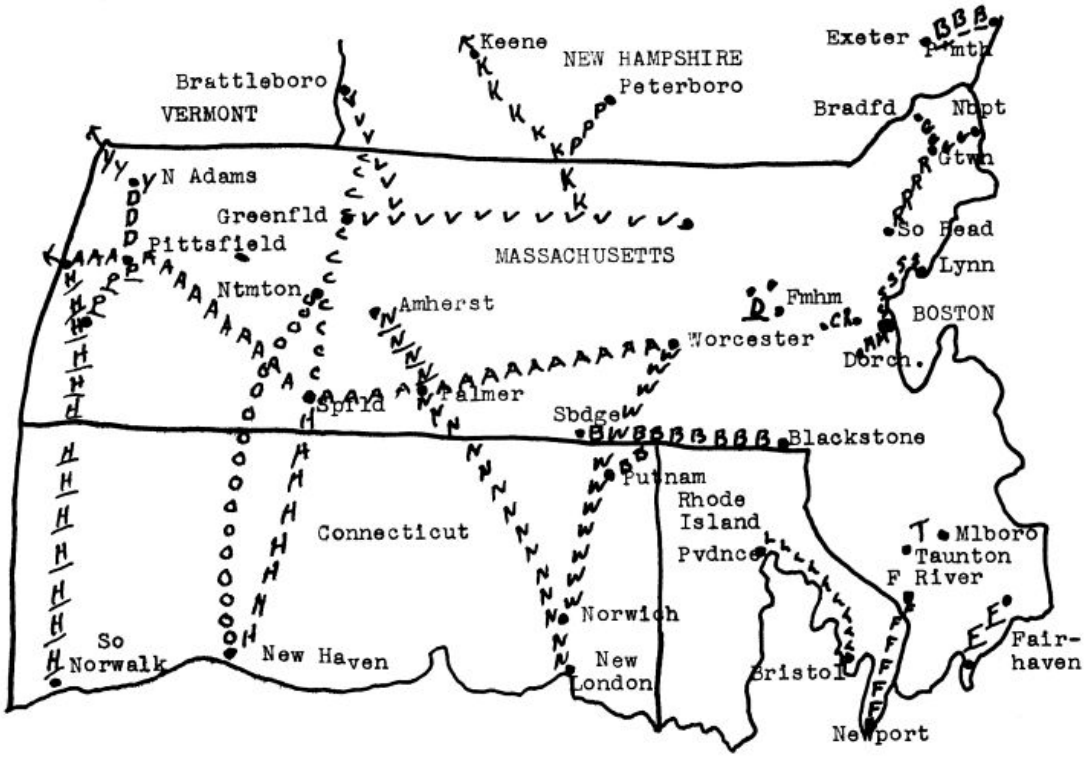


Sorce Images: Boston Elevated Railway at Sullivan Station. Photo courtesy Boston Public Library, MBTA

the first large scale factory in the country. The Boston and Lowell Railroad was established in 1835 as one of the earliest railroads in the country and the first major rail line to operate in Massachusetts. The success of the Lowell company led to its expansion into other New England towns such as Chicopee, Lawrence and Manchester in New Hampshire.

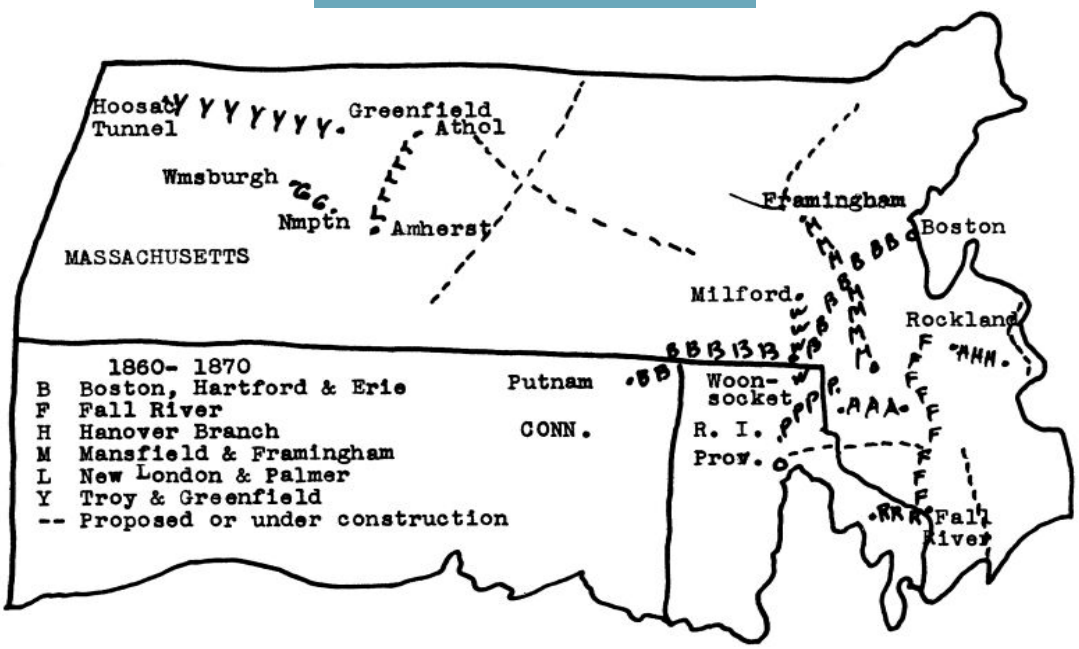
The cities of Providence and Worcester were also major hubs for manufacturing in the 1830s, leading to further rail expansions, including the first commercial line between Boston and Worcester. By 1887, freight transportation services also ran extensively between Boston and Maine until their bankruptcy in 1970. New England's industrial revolution progressed hand-in-hand with a transportation revolution, where the construction of roads, bridges, railroads and canals helped increase trade by mobilizing people and goods more freely. While during the industrial revolution and the rise of the textile and manufacturing industry railroads were primarily used for transporting goods, they quickly evolved

Railroads built: 1850 - 1860



Source: Maps of Commuter Rail from http://www.catskillarchive.com/rrextra/abnere1.Html

Railroads built: 1860 - 1870



Source: Source: Maps of Commuter Rail from http://www.catskillarchive.com/rrextra/abnere1.Html

to also serving commercial passengers between Boston and surrounding industrial centers. Rail travel came to dominate all other modes for inter-city travel by the late 1800s and remained unrivalled in its share till the Second World War.

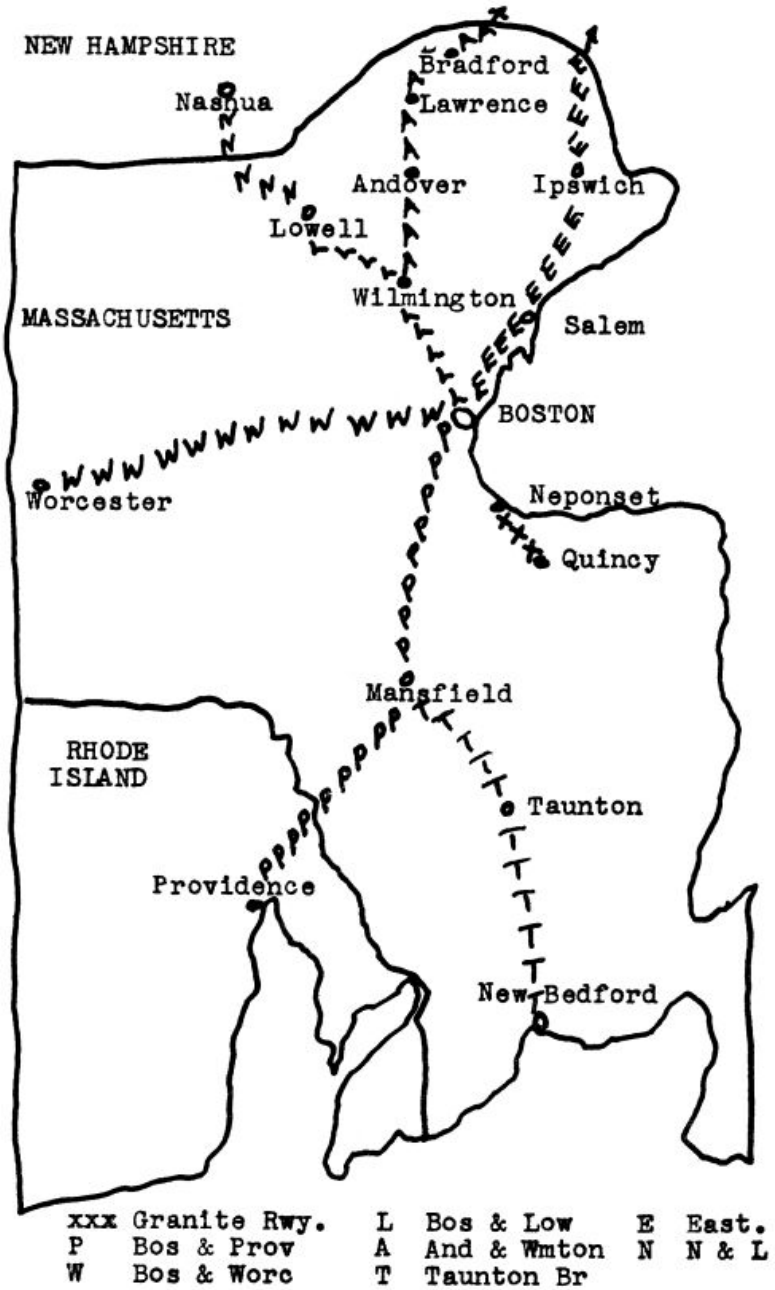
James O'Connel (O'Connel 2013) has categorized urban growth in New England into five distinct phases, illustrated in the timeline on p. 28-29. In addition to historic urban cores, there were **Village Centers and Proto-Suburbs (1800–1860)** – surrounding communities that were accessed by horse and carriage and considered a hinterland that traded and interacted economically and politically with larger towns, such as Boston. Major trade activities included farming goods. **Country Retreats (1820–1920)** included residences established by wealthy Bostonians seeking time away from the city. Then, following the rise of textile manufacturing, came **Suburban Mill Towns (1820–present)** and **Railroad Suburbs (1840–1920)**. While railroads were originally constructed for transporting goods, commercial passenger transport followed suit, giving rise to new development in intermediary areas between Boston, Worcester, Providence and other mill towns. The emergence of street-cars – originally horse drawn and later motorized – gave rise to **Streetcar Suburbs (1870–1930)**. Streetcars were much cheaper to establish than heavy railroads, and opened up larger land areas on the urban edge for middle-class housing at a reduced cost.

Up until this point, urban growth outside of historic core cities was largely directed by either heavy or light rail lines. But the invention, and subsequent mass production of the automobile quickly started to challenge this model. The **Metropolitan Parkway Suburbs (1895–1945)** illustrate the early car-oriented development model that promised more access to open space and untapped natural landscapes than the already popular rail lines were able to provide. The famed landscape

KEY:

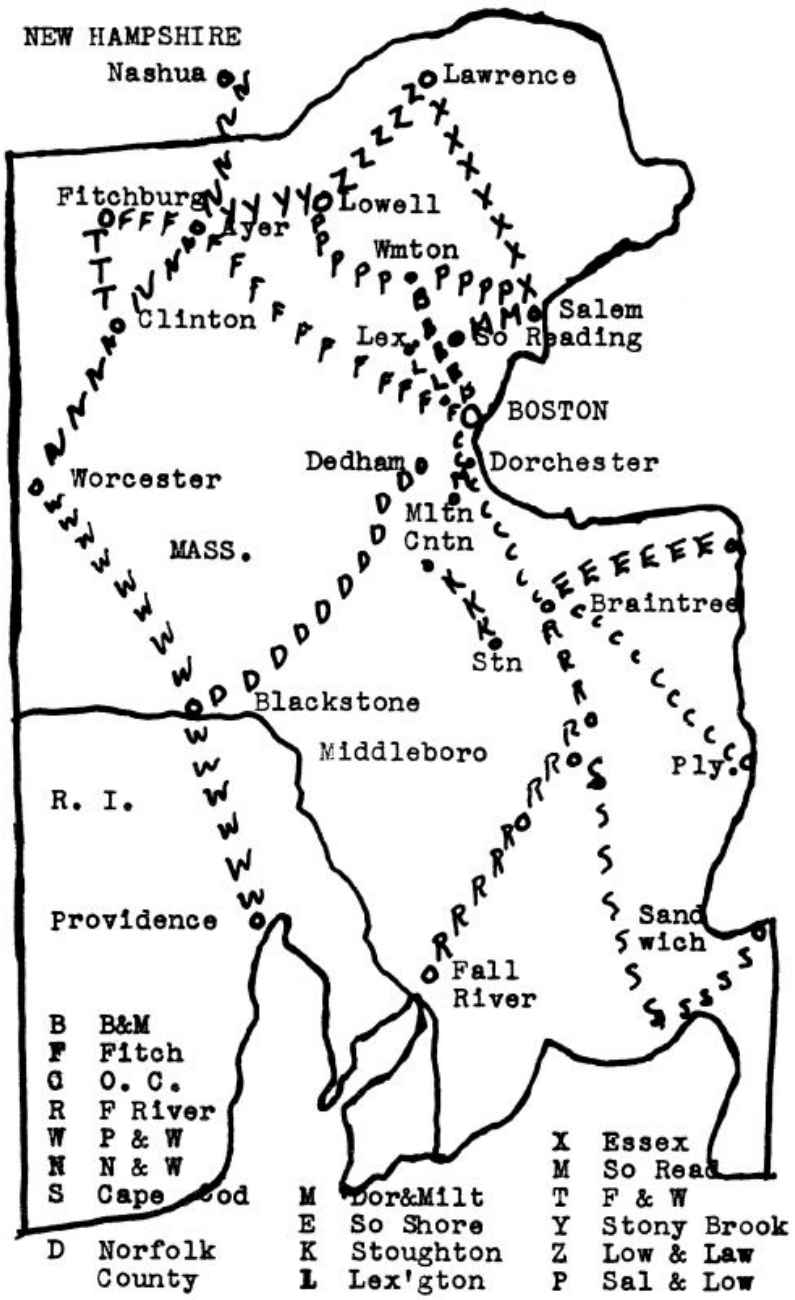
W Norwich and Worcester
A Western
B Boston and Maine, (in New Hampshire)
H Hartford and New Haven (Conn)
V Vermont and Massachusetts
C Connecticut River
K Cheshire
P Peterboro and Shirley
D Pittsfield and North Adams
N New London, Willimantic & Palmer(CT)
N Amherst and Belchertown
H Housatonic (Conn) Berkshire (Mass)
P Pittsfield and Stockbridge
S Saugus Branch
G Newburyport, Georgetown and Bradford
R Gergetown, Danvers and So. Reading
M Midland
B Southbridge and Blackstone
CR Charles River
F Fall River
L Providence, Western and Bristol (RI)
T Taunton to Middleboro

Railways built with connections to Rhode Island and New Hampshire (1830's)



Source: Source: Maps of Commuter Rail from http://www.catskillarchive.com/rrextra/abnere1.Html

Railways built with connections to Rhode Island and New Hampshire (1850's)



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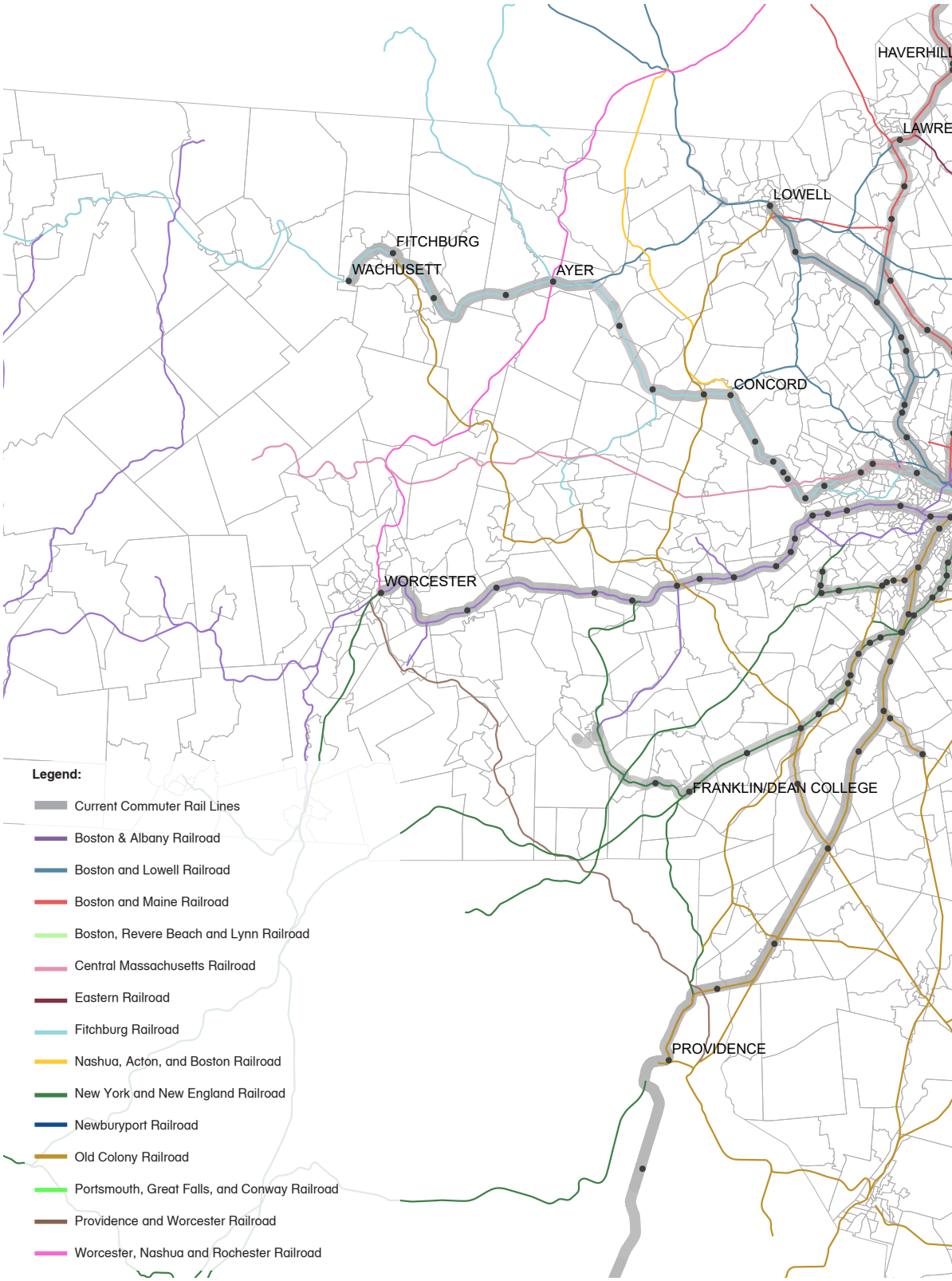
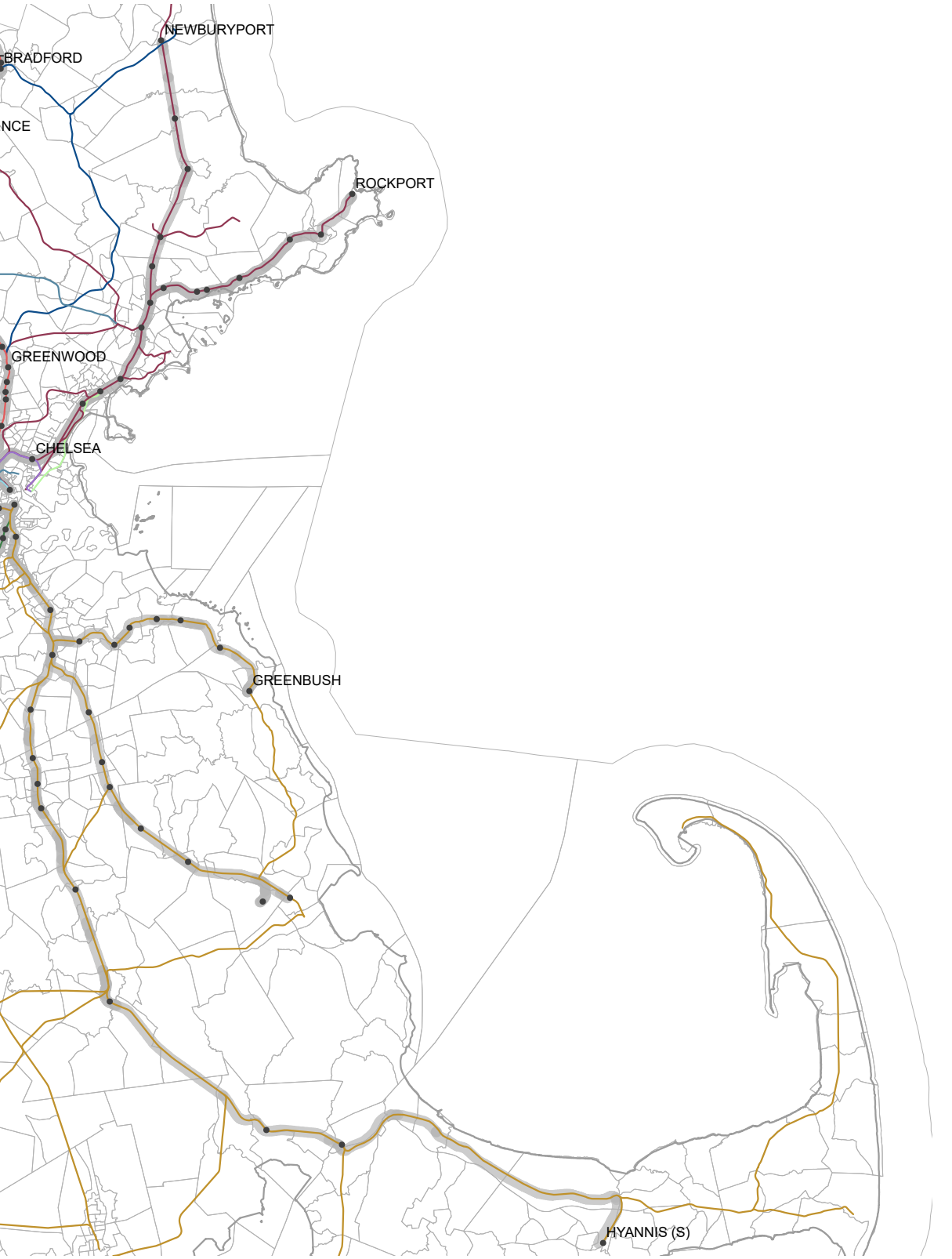
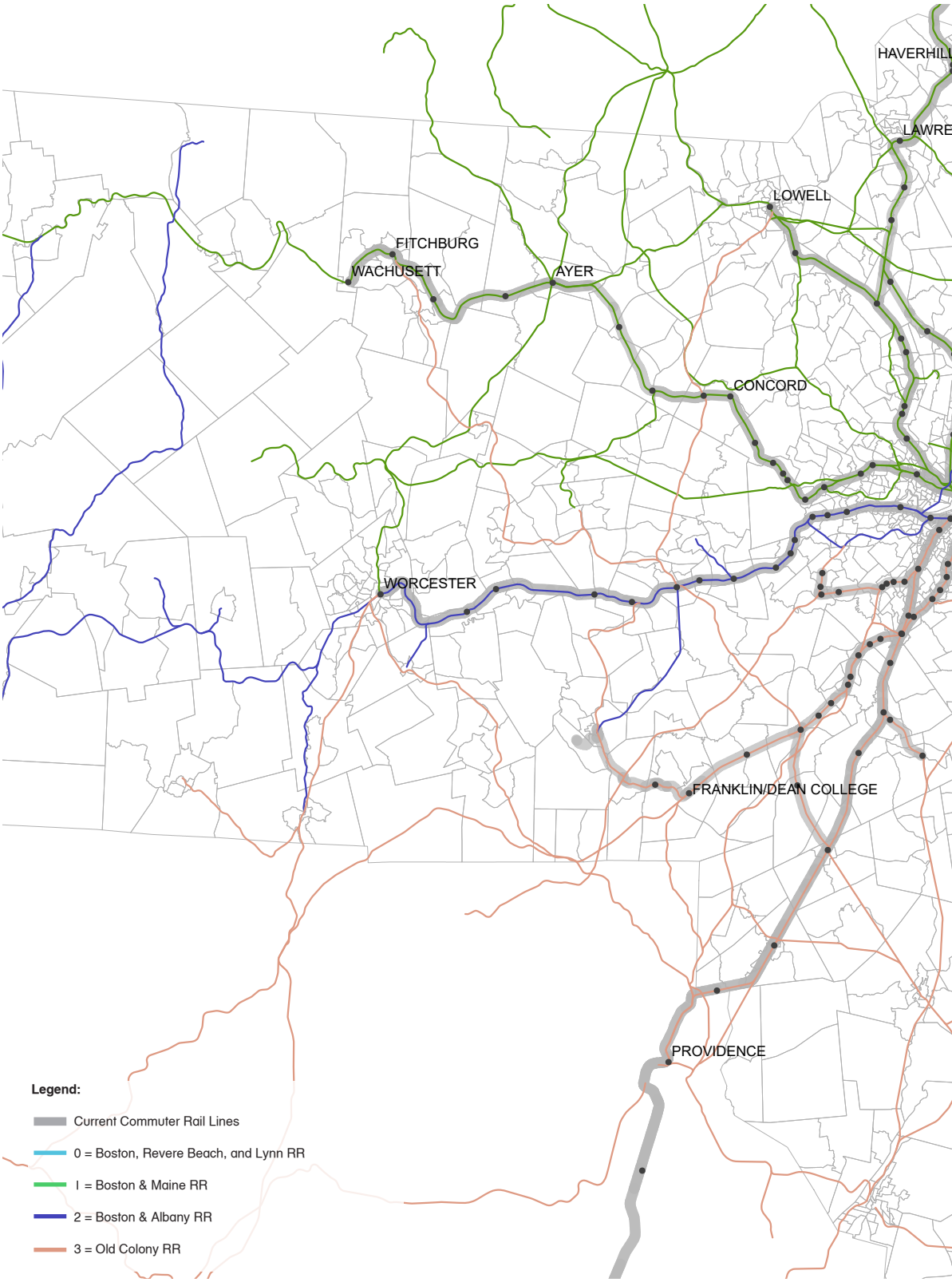
Rail Ownership (circa 1880)



Source: John Moody using historical USGS topographic maps

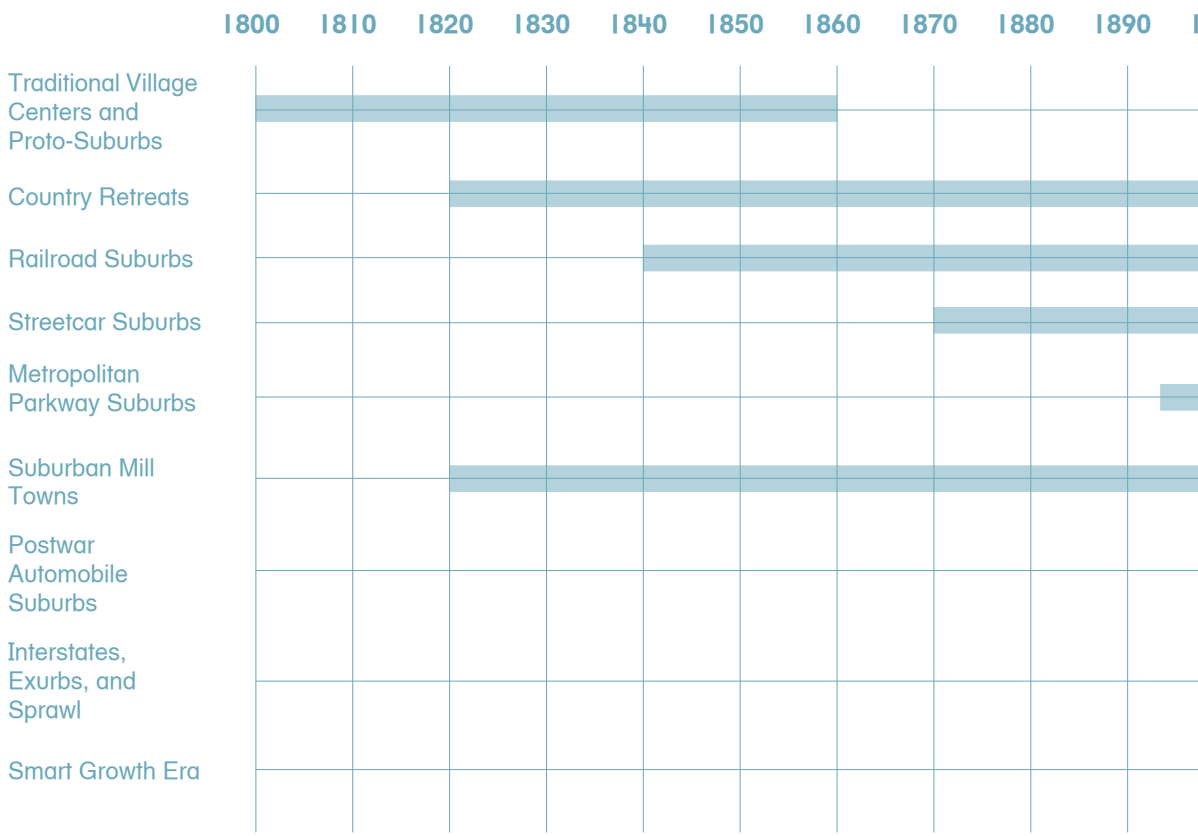

NEWBURYPORT
BRADFORD
NCE
ROCKPORT
GREENWOOD
CHELSEA
GREENBUSH
HYANNIS (S)

Rail Ownership (circa 1910)

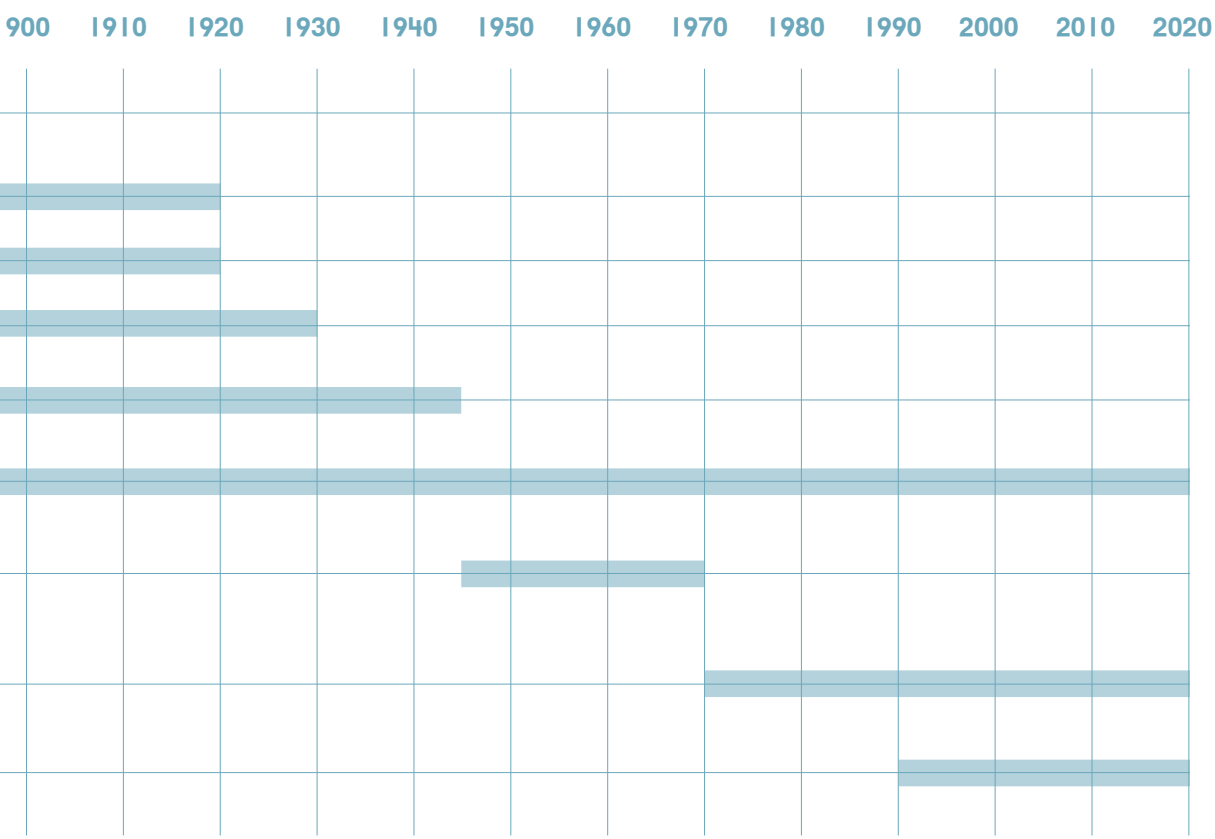


Source: John Moody using historical USGS topographic maps


NEWBURYPORT
BRADFORD
NCE
ROCKPORT
GREENWOOD
CHELSEA
GREENBUSH
HYANNIS (S)



architect Frederick Law Olmsted designed a number of parkways to provide access to new suburban communities primarily by automobile. Car-oriented urban development really took off after WW2, when American industry was able to produce automobiles at a massive and rapid scale for life in **Postwar Automobile Suburbs (1945–1970)**. In part fuelled by the flight of white middle class families away from what were perceived as more dangerous and crowded urban cores, car-oriented suburbs, mostly separate from old rail towns, became emblematic of middle class life in postwar America. Zoning laws emerged as a municipal tool to restrict multi-family or otherwise lower-income dwellings from being co-located with single-family homes. As the US economy rapidly expanded in the 1950's and 1960's, interstate roads started to take shape and drove development outwards from the city. Massive subsidies for car-based infrastructure, propelled by the Federal Highway Act of 1956, helped connect not just the state of Massachusetts, but the whole of continental United States with a vast web of interstate highways. These highways gave rise to new **Interstates Exurbs, and Sprawl (1970–present)**, which still characterize a large part of Greater Boston today. The map on pages 30-31, which shows building ages in the Greater Boston area, illustrates how post-1960s urban growth has largely occurred along the Interstate 95 and 495 ringroads



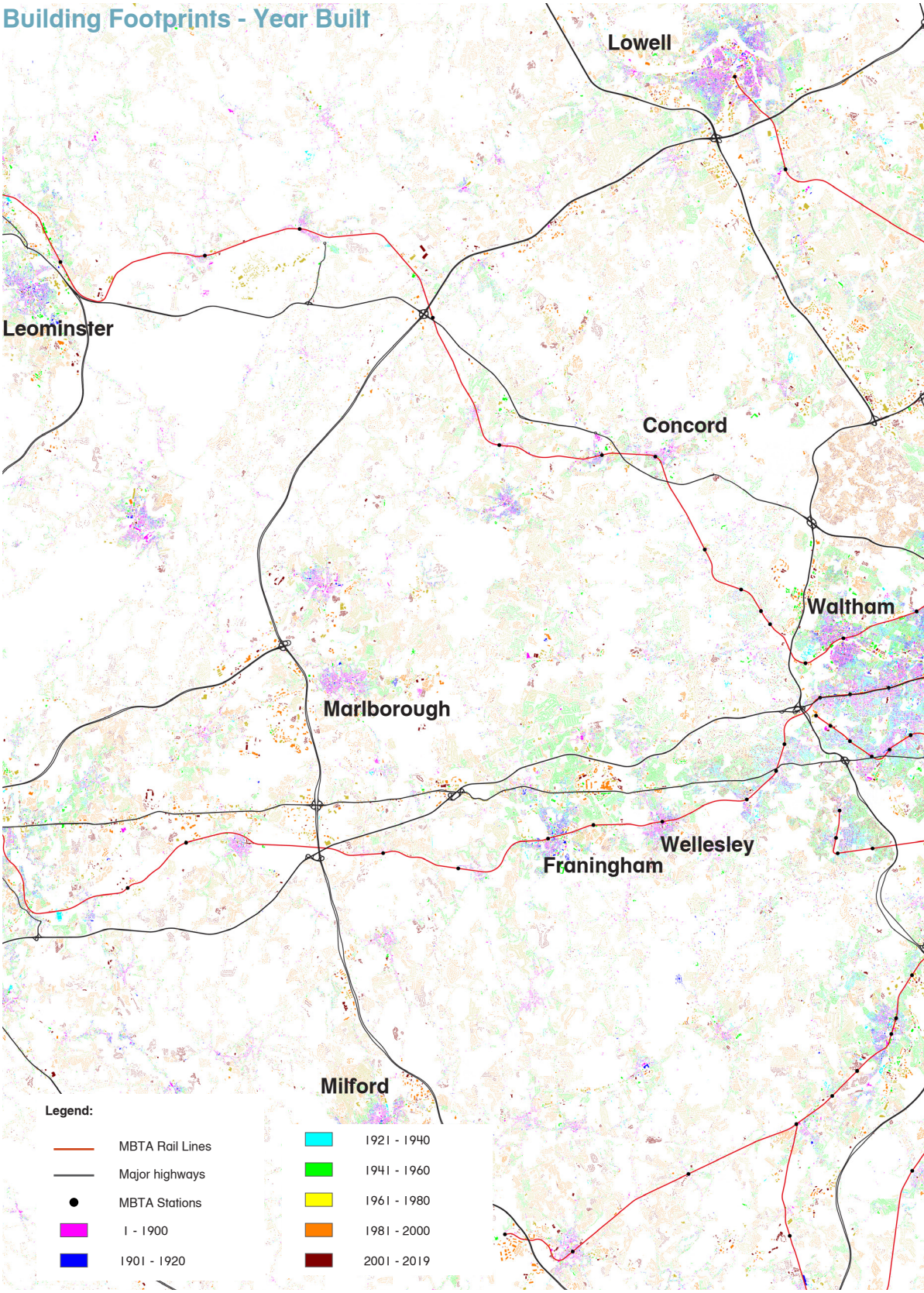
that encircle Boston, as well as I93 and I90 that fan outside of the historic city center. Meanwhile, many of the commuter rail corridors still boast buildings from before 1900s, especially within the Route 128 ringroad.

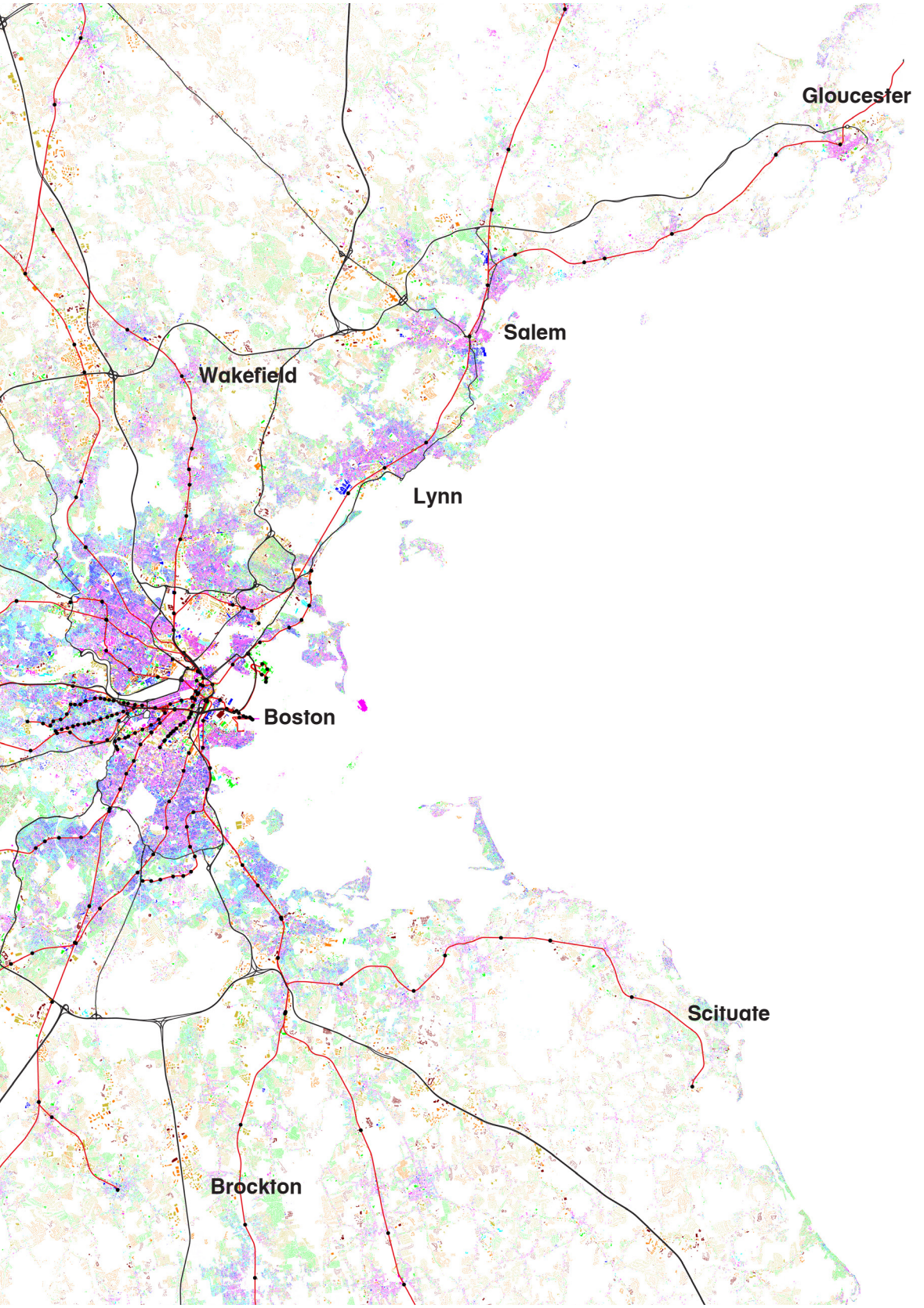
The Smart Growth Era (1990–present) resulted from a New Urbanist movement to contain environmentally wasteful and socially divisive sprawl and auto-oriented single-family developments. Transit oriented development, re-popularized in the US by Peter Calthorpe in the 1990s, recentered planners focus' back to existing rail infrastructure.

Since World War II, the share of rail travel in the region has steadily diminished, largely to the benefit of the automobile. Rail-based travel started declining in the mid 1950s as an increasing share of American households got access to cars. Shortage of funding led to a temporary abandonment of rail service on three lines around Boston in the late 1950s. During the 1960s, Boston's growth was primarily dictated by car-based access, leading to acute traffic congestion in the inner city.

Route 128, completed in 1951, was the country's first outer beltway around Boston's Metropolitan District suburbs. The Route was called America's Technology Highway because it attracted many office and research parks. Technology

Building Footprints - Year Built




Gloucester
Salem
Wakefield
Lynn
Boston
Scituate
Brockton

Family holding hands in-front of in a suburban development in 1965. American Dream" (excerpt) (1991)

Source: Bill Owens: "American Photography and the American Dream" (excerpt) (1991)

businesses and other well-paying service sector jobs migrated to the suburbs during the 1950s and 1960s, following suburban population growth. Some of the highways evolved into commercial strips such as Route 1 and Route 9. The Plan ultimately expanded to include Southeast Expressway, Route 3, and Interstate 93. The extensive highway network was completed by 1970 through Federal Interstate Highway System funding. Just as the federal government played a critical role in funding interstate highways, it also catalysed suburban residential development.

As problems around congestion, fuel shortage and concern for air quality compounded, some commuters started to shift back to train-based travel and the Massachusetts Bay area population rallied behind renewed support for commuter rail travel. Commuter rail was voted into law as an institution in 1964, thereby becoming the first combined Regional transit system in the United States. Since 1965, the Federal Transit Administration (FTA) has continued to provide funding support for the MBTA to help maintain commuter rail in operation as well as support its modernisation and expansion.

During the 1980s and 1990s, the real-estate boom and the idea of agglomeration economies around technology clusters led to an increase in real estate prices. Middle class communities that had occupied relatively central locations until then, increasingly left for outer suburbs, where space was more affordable and schools better funded, leaving behind town centres with lower tax budgets and a smaller economic base.

In the early 2000s, came what Alan Ehrenhalt has called the 'Great Inversion' – a process in which more affluent, largely white and highly educated suburban residents started moving back to inner city neighborhoods, pushing less affluent and often immigrant communities out to towns like Quincy, Chelsea or Lynn (Erenhalt 2012).

Today, the MBTA commuter rail remains operational as a mid-20th century service, reflecting outdated service quality and mobility preferences. The 9AM to 5PM operation hours primarily assume riders that work during conventional schedules, failing to adequately cater to low-income service workers who operate outside these hours or on weekends. Parking structures near stations anticipate primary access to commuter rail stations by car. This contributes to the region's traffic congestion and further exacerbates income inequality by forcing low income communities to drive and invest much of their income in vehicle ownership.

Current plans for upgrading commuter rail service are overdue and welcomed by many. But these plans also signal dangers of transit gentrification that could displace communities that have lived close to poorly functional rail stations until now. With increasing access come

Source: Kenmore Square, formerly Governor's Square, Jones, Leslie, 1886-1967.

new transit oriented developments, higher land values, higher rents and more expensive amenities. It is important that policies protect existing housing and deliver new affordable models of housing. Even in the most progressive towns, where inclusionary zoning regulations are enforced, current housing policies typically require only twenty percent of newly constructed housing units to be affordable. With eighty percent at market rates, new developments will gradually shift the demographics of these towns. Progressive and innovative housing policies are needed to preserve existing affordable housing units near stations and to catalyze new equitable housing models on developable land near stations.

There are 141 different stations in the commuter rail network at present, with several more under discussion as part of MBTA's overhaul plans. Better service could thus open quality access to more affordable housing and work space outside of Boston, in both larger cities like Worcester and Springfield, as well as in numerous small towns distributed along the lines. High-quality rail service could potentially help redirect greater Boston's future growth away from interstate highways, which guided postwar development, and towards rail stations that enable car-free commuting and healthier lifestyles.

Source: Shoppers World, Boston Globe Stuff File Photo, 1951

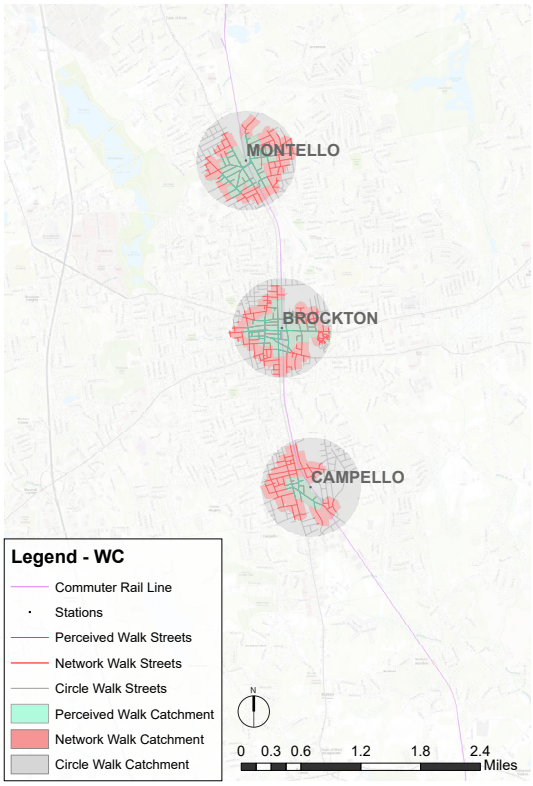
Prospect Hill in Waltham, MA looking towards Boston. Image: Rishab Kattimani.

Among a number of important priorities surrounding commuter rail upgrading, ensuring that residents and workers can access stations on foot or by bike stands out as a critical concern, which could double, or even triple commuter rail beneficiaries, as the next chapters will show. But before that, we must also highlight the main contributions, methodology as well as the limitations of the study.

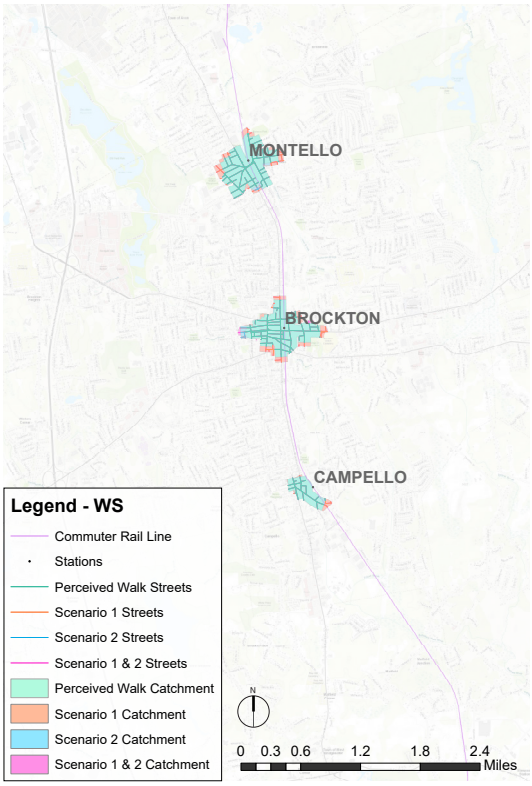
Main contributions of the study

This study applies the perceived distance of pedestrians and cyclists, calculated in the Sevtsuk et al and Hood et al articles (Hood et al 2011; Sevtsuk et al. 2020), to commuter rail stations in the MBTA network. It compares the access to jobs, amenities, people, existing buildings, and vacant land from three distances (euclidean, network, and perceived) for a 10-minute walk- and bike-shed in an effort to analyze TOD catchment areas under an all-day frequent regional rail service. This suggests that other studies using euclidean or network catchment areas are overestimating pedestrian and cyclist access to commuter rail stations and provides a framework for future studies to apply perceived distances instead. We also provide the shapefiles of perceived, network, and euclidean distances used in this report found on the boston.transit-access.com website.

This study further explored the elasticity of the perceived walk- and bike-sheds by creating scenarios that change the street characteristics. With the MBTA working to reduce headways on commuter rail to 15-minutes and offer all-day frequent service, access to downtown Boston will greatly improve near commuter rail stations. This expanded access translates to increased demand to develop and invest near commuter rail stations. To



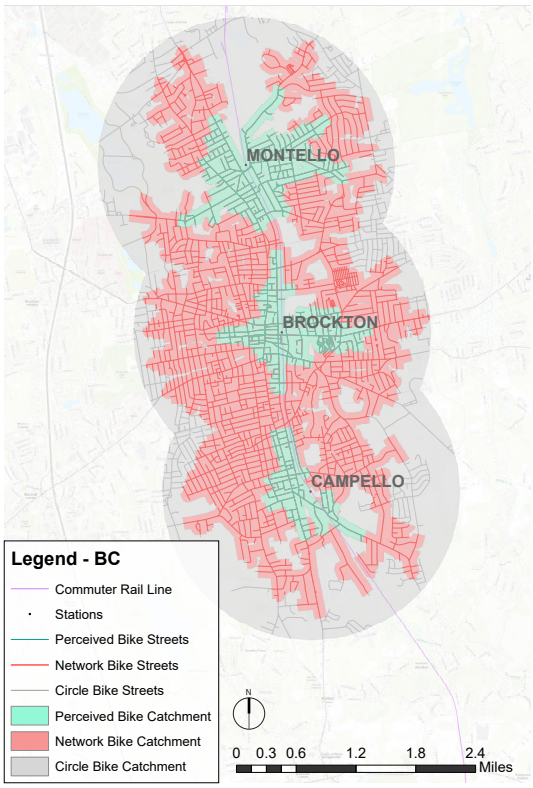
Station Walk Catchments - Legend WC



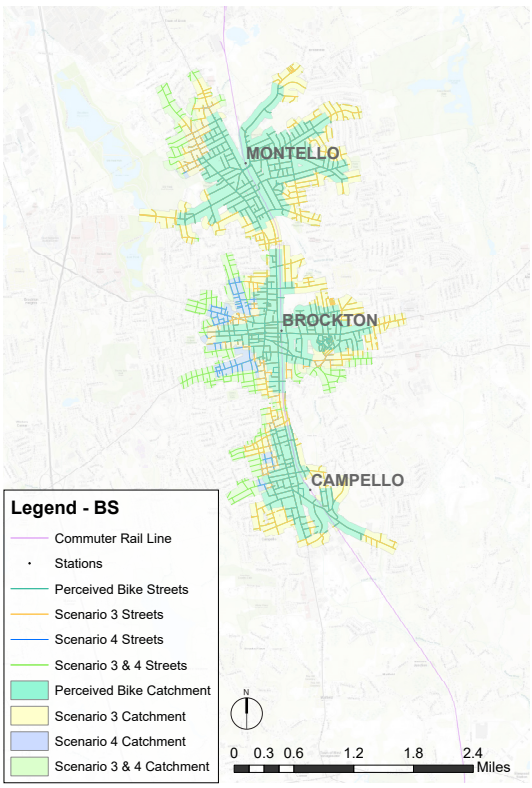
Station Walk Scenarios - Legend WS

capture the development and investment potential, this study calculated the existing building GFA and vacant land area for each catchment around the stations. Planners and policymakers can explore the building GFA and vacant land area for the commuter rail stations near them either in this report (go to By Station section) or on the website boston.transit-access.com.

Refer to legends on maps below for subsequest maps in the following chapters.



Station Bike Catchments - Legend BC

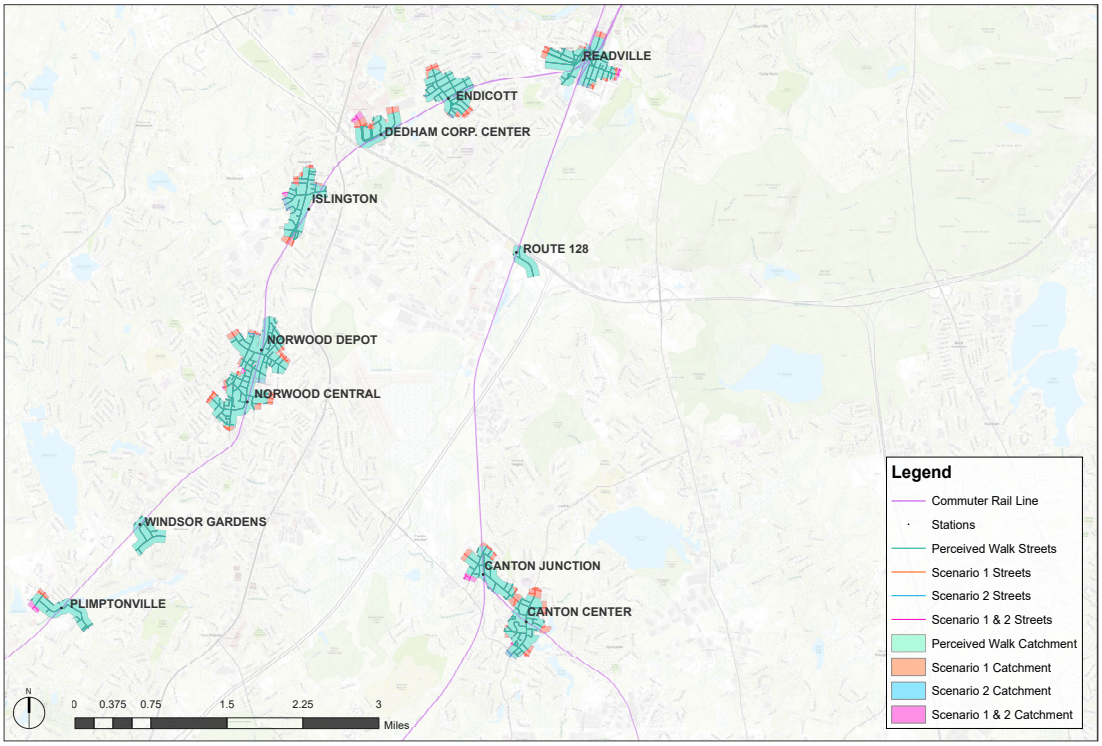


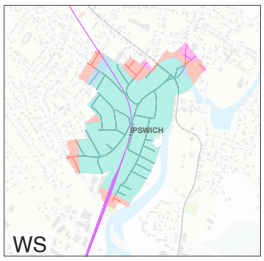
Station Bike Scenarios - Legend BS

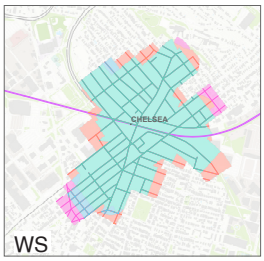
03

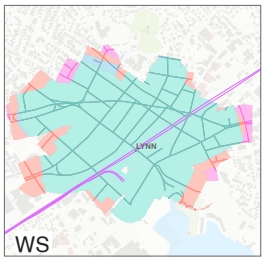
METHODOLOGY

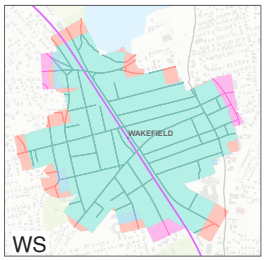
Methodology

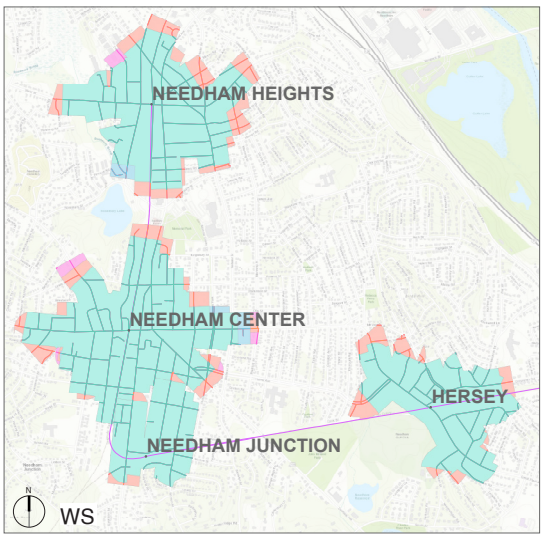


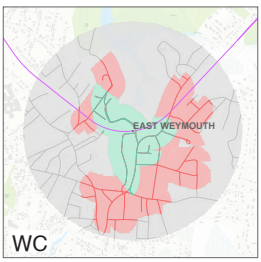


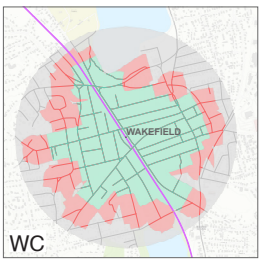


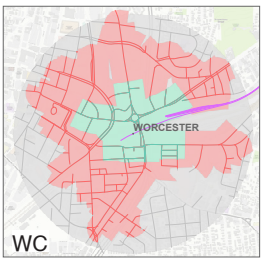


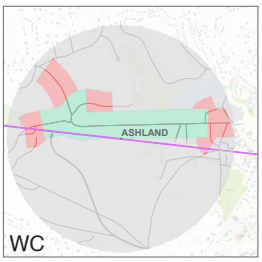










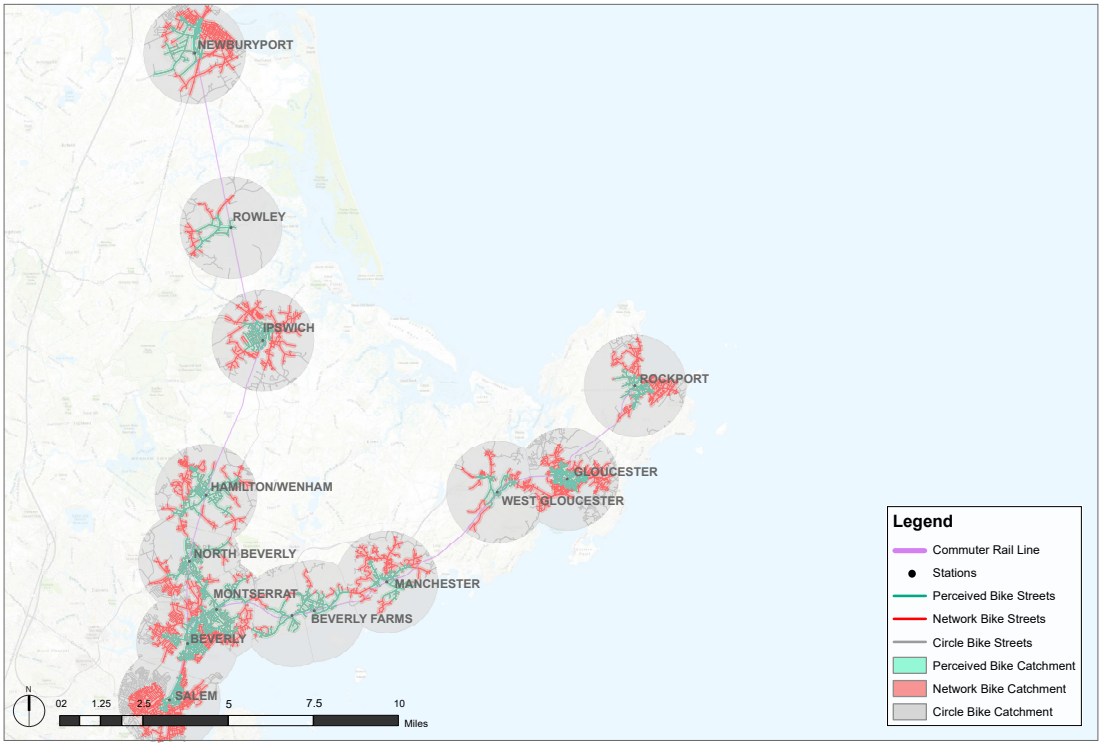


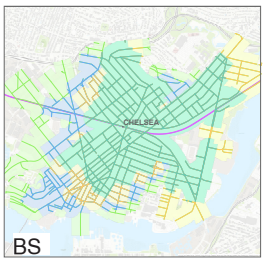
 Maps for illustrative purpose - not to scale.

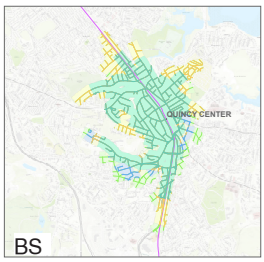
Convenient access to stations, especially after MBTA's frequency improvements are in place, is key to achieving and maintaining ridership on commuter rail. Traditional access to these stations assumes driving, as the MBTA owns and operates 100 lots and garages with over 44,000 spaces. However, with all-day 15-minute headways expected for commuter rail, stations could support increased development densities, similar to those near subway stations. This transformation would encourage active transport (i.e. walking or cycling) to the stations. Previous research that examines TOD potential around transit stations has often used euclidean (as-crow-flies) or network (following the geometric constraints of streets) distances to estimate job, population, or developable area accessible to stations. A half-mile euclidean walkshed is clearly different from a half-mile street network walkshed, but studies have shown that people perceive a half-mile differently, and are often shorter, than both (Hood et al 2011; Sevtsuk et al. 2020). This disconnect can lead to over-estimating the number of jobs, people, or developable land that stakeholders actually "feel" to be accessible from stations. This project examines all three distances (euclidean, network, and perceived) for two modes (walking and biking) to better understand the current accessibility of commuter rail stations. Additionally, four scenarios are proposed as potential policy interventions that could expand the perceived walk- or bike-sheds and increase access to stations.

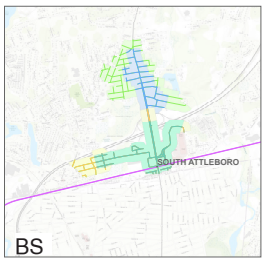
Catchment areas are created for walk-sheds and bike-sheds. Walk-sheds use a half-mile distance while bike-sheds use one and a half miles. Both of these distances were chosen as roughly ten-minute travel times per mode. The euclidean distance represents a straight-line "as the crow flies" catchment. To prevent overlap from nearby stations, a voronoi division is used to assign overlapping areas to the nearest station only. The euclidean distance, however, is rarely a true representation of the distance someone can travel due to street configurations and physical barriers (i.e. buildings, rivers, highways, etc.). The network distance accounts for these barriers creating buffers based on the street network. Any overlapping sections are assigned the nearest station by street network. Network distances, however, do not account for pedestrian and cyclist travel perceptions. For instance, a flat, half-mile street segment will not feel as arduous to a pedestrian or cyclist as an uphill, half-mile street segment. To account for these perceptions, a perceived distance catchment was created.

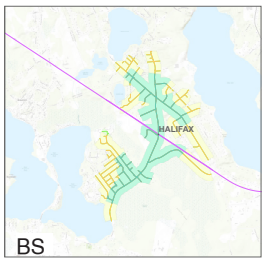
Perceived distances were quantified by Sevtsuk et al (2020) for pedestrians and Hood et al (2011) for cyclists. Both studies used San Francisco as a case study and measured the adjustments to perceived distances based on various street qualities for pedestrians and cyclists. Using a high volume of observed GPS trajectories, Sevtsuk et al found eleven street characteristics that affect pedestrians' choice of walking paths and perception

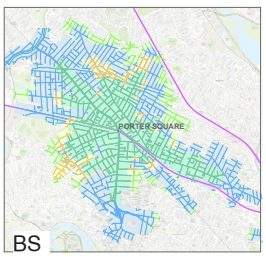


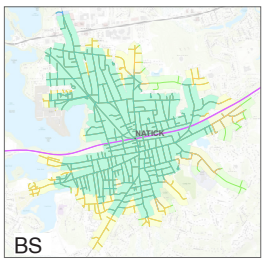


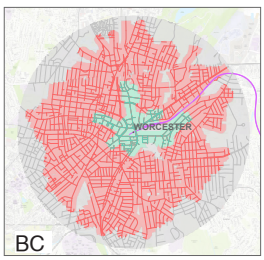


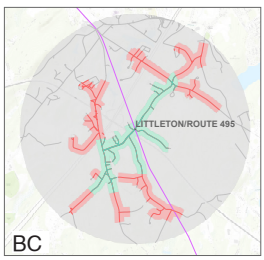


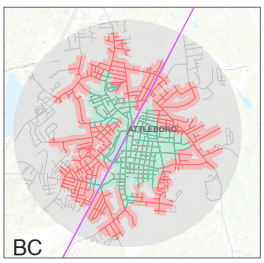


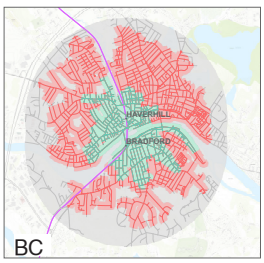


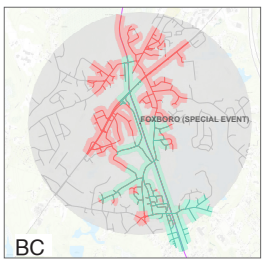


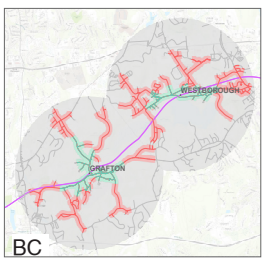










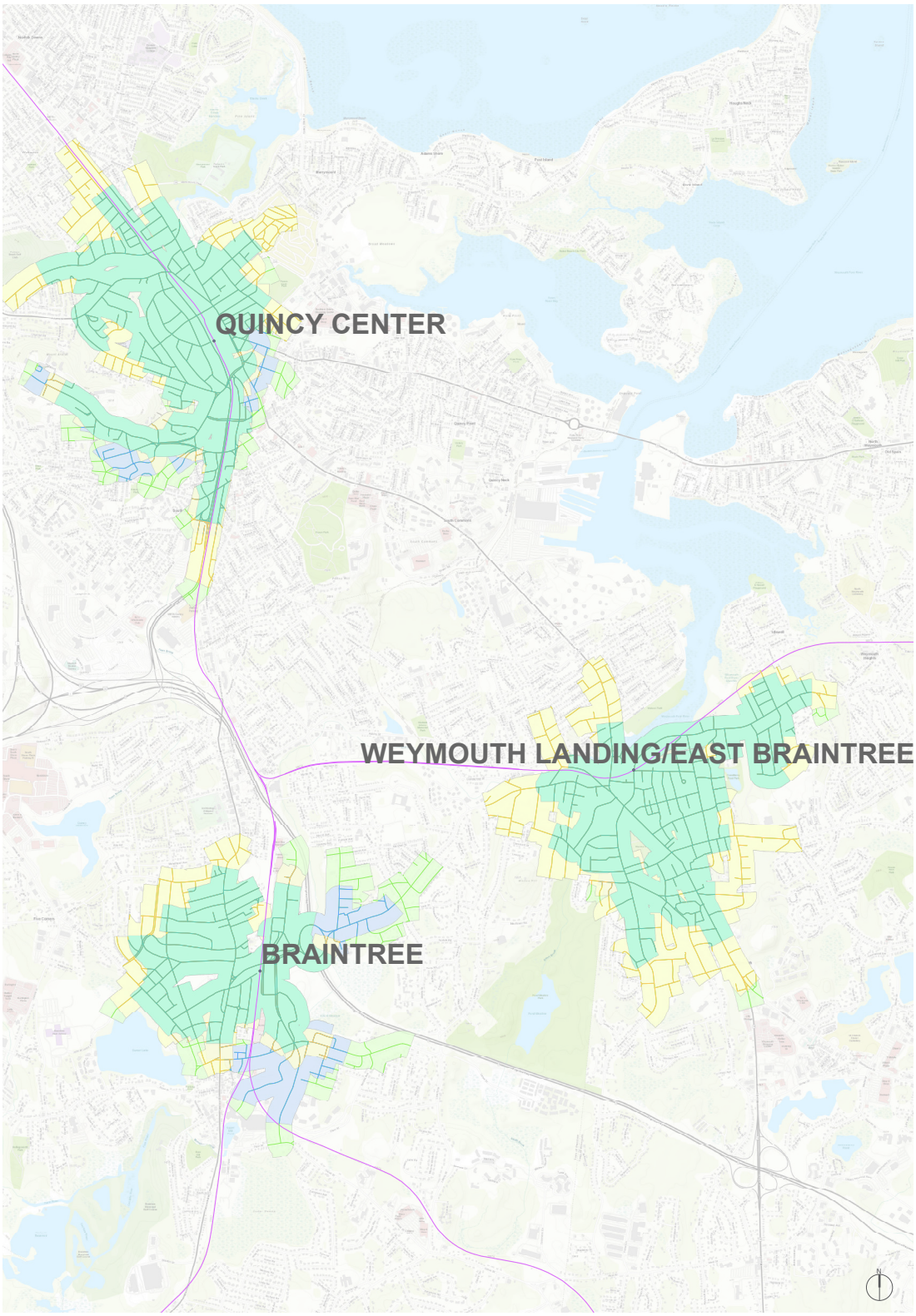


 Maps for illustrative purpose - not to scale.

of path distance. Of those, eight were used in this analysis (the three that were not used had minimal overall effects on the perceived distance). Six of these characteristics increase the perception of walking distance, including elevation gain, number of turns, proximity to highways, speed limit, and traffic volume. Two of the characteristics (number of amenities along the route and sidewalk width) decrease perceived walking distance.

Hood et al (2011) study found six route characteristics that affect a cyclist's path choice and distance perception, including elevation gain, number of turns, cycling in the opposite direction on a one-way street, and cycling on bike paths, lanes, or routes. Bicycle facilities (paths, lanes, and routes) were defined by the San Francisco Municipal Transportation Authority (SFMTA or Muni) Bike Facilities Toolkit.
To match these same bicycle infrastructure categories, we obtained data on bike facilities in Massachusetts through the Metropolitan Area Planning Council (MAPC) DataCommon server and included existing and planned paths, lanes, and routes in our analysis. Elevation gain, number of turns, and cycling in the opposite direction of traffic on one-way streets all increased perceived distances, and consequently decrease the perceived size of the 10-minute bike-shed. Cycling on bike facilities (i.e. bike paths, lanes, or routes) all increase the size of the perceived bike-shed, albeit at varying degrees. This analysis calculated the perceived sheds based on the street characteristics within a 1.5-mile straight-line distance around each commuter rail station.

While it is useful to see how current street conditions affect the perceived distance to commuter rail stations, it is also useful for urban planners to understand how they can improve street conditions to expand the perceived sheds. Four scenarios were analyzed to demonstrate how planners and policy makers can improve street conditions in perceived sheds. The first two scenarios aim to improve the walkshed while the last two scenarios focus on improving the bike-shed. The first scenario explores what would happen if the speed limit on all streets currently listed at under 45mph were lowered to 20 mph and all streets 45 mph and above were reduced by 10 mph. The second scenario imagines increasing amenities by 50%, something that can occur either through natural market forces (increased accessibility at the commuter rail station may induce retail demand) or through focused planning interventions to strengthen commercial corridors near commuter rail stations. The third scenario imagines all roads within a half-mile of the station as having a bike lane (unless it is currently a bike path) and all roads between a 0.5-mile and 1.5-miles away from the station as being a sharrow (unless currently a bike path or lane). The fourth and final scenario permits two-way access for cyclists on one-way roads, which can either be accomplished by converting one-ways into two-way roads or by adding two-way bike lanes on one-way streets. Additionally, the two walk scenarios (1 and


QUINCY CENTER
WEYMOUTH LANDING/EAST BRAINTREE
BRAINTREE

2) and the two bike scenarios (3 and 4) were combined together to see the effect of both in tandem.

For each catchment type (euclidean, network, and perceived), mode (walking and cycling), and scenario (baseline and each of the four scenarios), the length of roadway and catchment area are calculated for each commuter rail station. The catchment areas are used to calculate the population, employment, and number of amenities within each of the station catchments. Additionally, the built gross floor area (GFA) and land area of vacant parcels are calculated. The length of roadway and area catchment reflect the distance and area someone can travel from each commuter rail station. The population, employment, and amenities illustrate the land uses within the catchment areas and the number of people, jobs, and amenities accessible within a 10-minute walk or bike ride from each commuter rail station. The building GFA is used as a proxy of the existing building space nearby each station while the vacant land is a proxy for available developable land. The seven variables (length, area, population, employment, amenities, building GFA, and vacant land) serve to illustrate the existing and potential (under the scenarios) catchments within a 10-minute trip from each commuter rail station. The seven variables are assessed using 2010 U.S. census and 2017 ACS data, as well as local and state parcel information.

Limitations

The perceived catchment areas represent the average perceived distance by pedestrians and cyclists. They do not account for variations in demographics. It is likely that different demographics – genders, age groups, race or income groups – would have varied perceptions of the distance it takes to travel by walking or biking. Certain urban planning interventions, such as street lights, benches, or sidewalk quality could influence the perceived distance for certain demographics. For instance, older populations might find it easier to travel further if there are benches along a route for them to rest. Women might feel safer walking or cycling at night where there are more street lights. These demographic variations are not captured in either the walkshed nor the bike-shed. Further analysis quantifying the perceived distance for varying demographics based on street infrastructure could help fill this gap.

The analysis only explores existing MBTA commuter rail stations within Massachusetts (ignoring those in Rhode Island). All proposed stations and routes, including those currently under construction are not included in this analysis. By the time of publishing this report, this excludes South Coast Rail (New Bedford and Fall River), East-West rail link (Springfield/ Pittsfield to Boston), and new stations on commuter rail, such as Revere, South Salem, and West Station, but does include the Cape Flyer (Wareham, Buzzards Bay, and Hyannis). Many of these proposed stations and lines should be complete prior to the completion of Rail Vision (increasing frequencies, double and triple tracking sections, electrification, etc.). This shortcoming can be overcome by re-running the analysis over those stations.

The seven variables are computed from the 2010 U.S. census and 2017 ACS data, as well as local and state parcel information. They intentionally ignored growth estimates for future years. The purpose is to offer a snapshot of existing street conditions that affect the perception of walking and cycling to commuter rail stations. These perceived distances can be shifted through policy interventions and road improvements. Researchers and analysts are welcome to use the data (downloadable at boston.transit-access.com) for deeper analyses on growth predictions across municipalities. Additionally, the building GFA is all-inclusive and does not separate vacant retail or households from occupied. This was intentional due to the uncertainty under covid-19 (this report was published during the coronavirus outbreak when little was known regarding the near- and long-term future of the economy and the effects of the virus). For that reason, the amount of vacant land accessible is used as a proxy of unoccupied and developable property. However, a limitation of the vacant land is that it does not separate out undevelopable land (such as those near airports or state parks) from vacant and developable property.

Vacant land parcels will also not capture

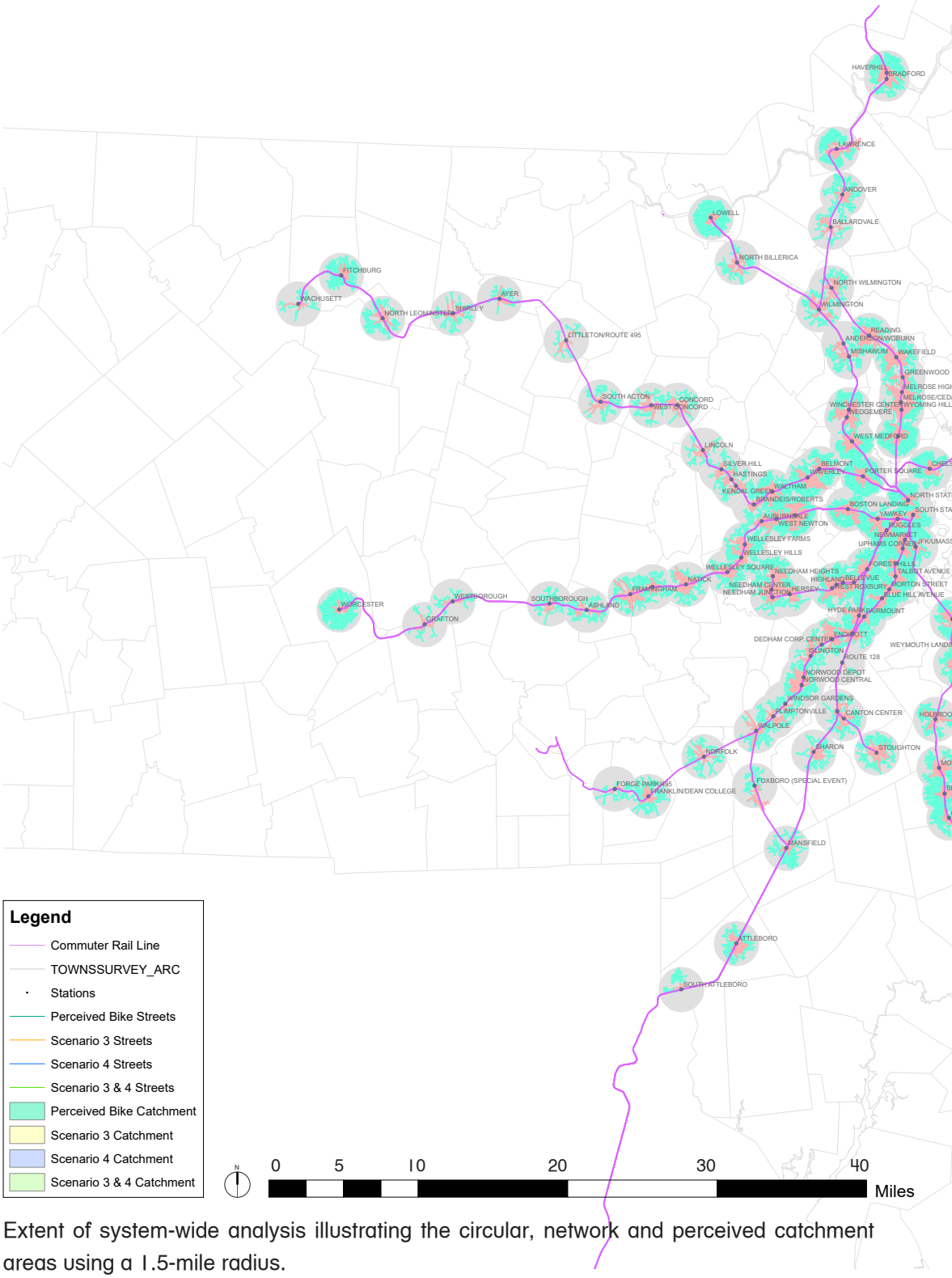
the true redevelopment potential around stations, since many of the older commuter rail cities and towns house historic, and often under-utilized or entirely vacant buildings. These buildings, which we have not included in the analysis due to lack of data across municipal boundaries, may offer more immediate opportunities for TOD development than new-build projects on vacant sites.

The analysis is designed to provide flexibility for those who are interested to download the shapefiles and run their own analyses however they intend. For instance, if a planner is interested in predicting commuter rail ridership under improved frequencies and electrification, they could use the perceived walksheds created in this analysis rather than a half-a-mile network or euclidean walkshed. Additionally, local planners and policymakers can explore specific street improvements to expand the coverage of their walk- and bike-sheds. This can be achieved by changing the attributes values for specific street segments (where changes are considered) in the GIS shapefile and recomputing the "perceived" walk- or bikesheds to compare their relative impact. The simplicity of the tool allows for flexibility in expanding the analysis towards more specific questions.

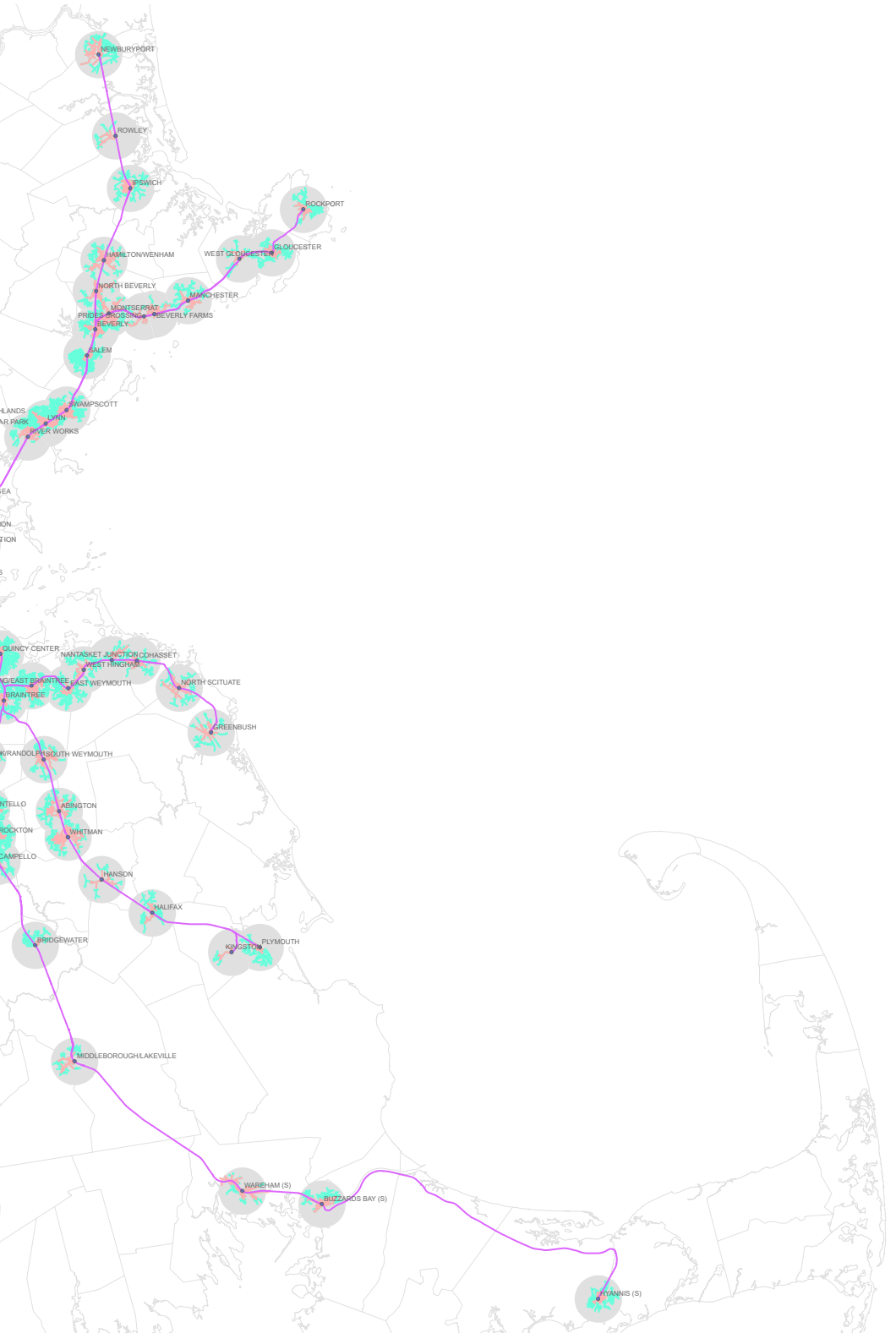
04

PERCEIVED AND OBJECTIVE WALK- AND BIKESHEDS AROUND MBTA COMMUTER RAIL STATIONS

System-wide Analysis



Extent of system-wide analysis illustrating the circular, network and perceived catchment areas using a 1.5-mile radius.


NEWBURYPORT
ROWLEY
IPSWICH
ROCKPORT
GLOUCESTER
WEST GLOUCESTER
HAMILTON/WENHAM
NORTH BEVERLY
MANCHESTER
MONTSERRAT
PRIDES CROSSING
BEVERLY FARMS
BEVERLY
SALEM
SWAMPSCOTT
LYNN
RIVER WORKS
QUINCY CENTER
NANTASKET JUNCTION
COHASSET
WEST HINGHAM
EAST WEYMOUTH
NORTH SCITUATE
BRAINTREE
GREENBUSH
SOUTH WEYMOUTH
ABINGTON
WHITMAN
HANSON
HALIFAX
BRIDGEWATER
KINGSTON
PLYMOUTH
MIDDLEBOROUGH/LAKEVILLE
WAREHAM (S)
BUZZARDS BAY (S)
HYANNIS (S)

System-wide Analysis - Overview

The existing MBTA commuter rail system consists of 141 stations (58 on the north side and 83 on the south) on 12 lines (4 on the north side and 8 on the south). This analysis only includes those stations within Massachusetts (ignores those in Rhode Island) but includes the three stations along the Cape Flyer for a total of 141 stations (3 in Rhode Island and 3 along the Cape Flyer). This analysis does not include the forthcoming South Coast Rail lines to New Bedford and Fall River. New proposed stations (i.e. Revere, South Salem, etc.) and new stations under construction (i.e. West Station) were not included in this analysis. The East-West rail link (connecting Springfield and Pittsfield to Boston) was also not included, and neither were any other studied, proposed, or explored passenger rail options.

The euclidean, network, and perceived walk- and bike-sheds were analyzed for the entire commuter rail network for each of the seven variables. The tables below show the total road length (in miles) and area coverage (in square miles) for walking and cycling at the euclidean, network, and perceived catchments. In aggregate, the half-mile euclidean distance from commuter rail stations covers 1,878 miles of road and 105.8 square miles, whereas the perceived 0.5-mile area only covers 527 miles (28.1%) and 22.8 square miles (21.6%) of roadway and area, respectively. A 1.5-mile euclidean distance from stations covers 9,104 miles of roadway and 712.3 square miles of area. However, cyclists who perceive to travel 1.5 miles from stations would only cover 2,179 miles (23.9%) of roadway and 102.3 square miles (14.4%)

System-wide	**Walking**			
Coverage Area	**Length (mi)**	**% Circular**	**Area (mi^2)**	**% Circular**
Circular	1,878	100.0%	105.8	100.0%
Network	1,163	62.0%	50.6	47.8%
Perceived	527	28.1%	22.8	21.6%

System-wide	**Bicycling**			
Coverage Area	**Length (mi)**	**% Circular**	**Area (mi^2)**	**% Circular**
Circular	**9,104**	**100.0%**	**712.3**	**100.0%**
Network	**6,436**	**70.7%**	**317.9**	**44.6%**
Perceived	**2,179**	**23.9%**	**102.3**	**14.4%**

System-wide analysis results for length and area for circular, network and perceived catchment areas for walking and biking.

of area. Overall, the perceived catchment is never greater than 50% (and often around 25%) of the euclidean catchment, suggesting that using a euclidean distance in an analysis grossly overestimates the true coverage at commuter rail stations. Network coverage also overestimates the perceived coverage by roughly double, in aggregate. This is important to note, as many studies are using network coverage to estimate catchment areas.

Using a euclidean catchment, there are roughly 715,000 jobs and 615,000 people accessible within a 10-minute (0.5 mile) walkshed. However, a perceived 10-minute walkshed only covers 275,000 and 145,000, which is over 400,000 less than the euclidean coverage. Bicycling euclidean catchments cover 1.8 million jobs and 2.5 million people (the catchment radius being three times greater) while the perceived bicycle catchment only reaches 605,000 jobs and 585,000 people. These disparities suggest there is plenty of potential coverage for planners to extend their catchments and encompass more pedestrians and cyclists within a 10-minute trip to the commuter rail station. The smaller perceived catchments may also partly explain the relatively lower levels of ridership on the commuter rail today than idealized areas may suggest.

Increased frequencies and all-day service would likely increase the demand to develop near stations. Developers could either upgrade existing structures or build new developments on vacant land. While it is not known exactly where new

System-wide	**Walking (0.5 miles)**					
Coverage Area	**Employment (Jobs)**	**% Circular**	**Amenities (N)**	**% Circular**	**Population**	**% Circular**
Circular	715,246	100.0%	13,195	100.0%	616,338	100.0%
Network	517,846	72.4%	10,237	77.6%	361,464	58.6%
Perceived	272,337	38.1%	5,621	42.6%	146,139	23.7%

System-wide	**Bicycling (1.5 miles)**					
Coverage Area	**Employment (Jobs)**	**% Circular**	**Amenities (N)**	**% Circular**	**Population**	**% Circular**
Circular	1,844,854	100.0%	34,966	100.0%	2,531,814	100.0%
Network	1,546,666	83.8%	29,167	83.4%	1,794,155	70.9%
Perceived	605,809	32.8%	13,155	37.6%	586,624	23.2%

System-wide analysis results for employment, amenities and population for circular, network and perceived catchment areas for walking and biking.

System-wide Results - Walking

developments will occur, this analysis aggregates the existing building GFA and vacant land area in each catchment. A euclidean 0.5-mile walking catchment would cover 8,226 Million square feet of existing building GFA and 575 million square feet of vacant land. A perceived half-mile walking catchment only 30% of the GFA with 2,482 million sq ft and 15% of the vacant land, or 88 million sq ft. The difference between perceived and euclidean is greater for bike-sheds. A 1.5-mile euclidean distance would cover almost 30 billion sq ft of existing GFA while a 1.5-mile perceived bike-shed only covers 8 billion sq ft (27%). The distinction is greatest in regards to vacant land, where a euclidean bike-shed covers 5 billion sq ft and a perceived 1.5-mile bike-shed only covers 330 million sq ft (6.6%). Increasing the perceived catchments would extend the available GFA and vacant land within a 10-minute journey for new development. Overall, employment, amenities and building GFA are likely to have a higher share of their euclidian totals included in the perceived travel sheds than population and vacant land. This is due to the typical land use configuration around commuter rail stations. Many commuter rail stations have commercial districts near the station as cities historically grew around stations. Residential neighborhoods are often located further away from the station, explaining the lower coverage of population compared to employment

System-wide	**Walking**			
Coverage Area	**Building GFA (M sq ft)**	**% Circular**	**Vacant Land (M sq ft)**	**% Circular**
Circular	8,226	100.0%	53.4	100.0%
Network	5,271	64.1%	17.0	31.8%
Perceived	2,482	30.2%	8.2	15.3%

System-wide	**Bicycling**			
Coverage Area	**Building GFA (M sq ft)**	**% Circular**	**Vacant Land (M sq ft)**	**% Circular**
Circular	**29,930**	**100.0%**	**465.8**	**100.0%**
Network	**22,208**	**74.2%**	**99.9**	**21.4%**
Perceived	**8,000**	**26.7%**	**30.9**	**6.6%**

System-wide analysis results for building GFA and vacant land for circular, network and perceived catchment areas for walking and biking.

and amenities. Densities are also likely to be higher closer to stations, which is reflected in the building GFA coverage. Vacant land is often peripheral, further away from stations (in conjunction with higher densities being built near stations and lower densities further away). For this reason, vacant land within a perceived bike catchment is only 6.6% of that found within an euclidean catchment area.

Existing bike facilities were calculated under the different catchment areas as well. In total, only 1.6% of road-miles in a 1.5-mile euclidean catchment contain a bike facility (bike path, lane or route). Of that, 48.2% are bike paths (bike and pedestrian paths segregated from roads), 45.6% are bike lanes (painted lanes on roads with or without separation bollards from traffic), and 6.2% are bike routes (i.e. sharrows painted on traffic lanes). Overall, there are 144 miles of bike lanes within a 1.5-mile euclidean distance around commuter rail stations. This number drops to 51 miles for perceived cycling distances, although the proportion of bike facilities increases to 2.3%. This is due to bike facilities likely being built in denser areas, which tend to be closer to stations.

Bike Class (mi)	None	Bike Path	Bike Lane	Bike Route	Total
Circular	14,420,655	111,569	105,406	14,428	14,652,057
Network	10,188,309	71,535	87,766	9,744	10,357,355
Perceived	3,425,168	30,158	48,503	3,423	3,507,251

Bike Class (mi)	% None	% Bike Path	% Bike Lane	% Bike Route	Total
Circular	98.4%	0.8%	0.7%	0.1%	100.0%
Network	98.4%	0.7%	0.8%	0.1%	100.0%
Perceived	97.7%	0.9%	1.4%	0.1%	100.0%

Bike Class (mi)	None	Bike Path	Bike Lane	Bike Route	Total
Circular %	100.0%	100.0%	100.0%	100.0%	100.0%
Network %	70.7%	64.1%	83.3%	67.5%	100.0%
Perceived %	23.8%	27.0%	46.0%	23.7%	100.0%

System-wide analysis results for bike facility classification for circular, network and perceived catchment areas for biking.

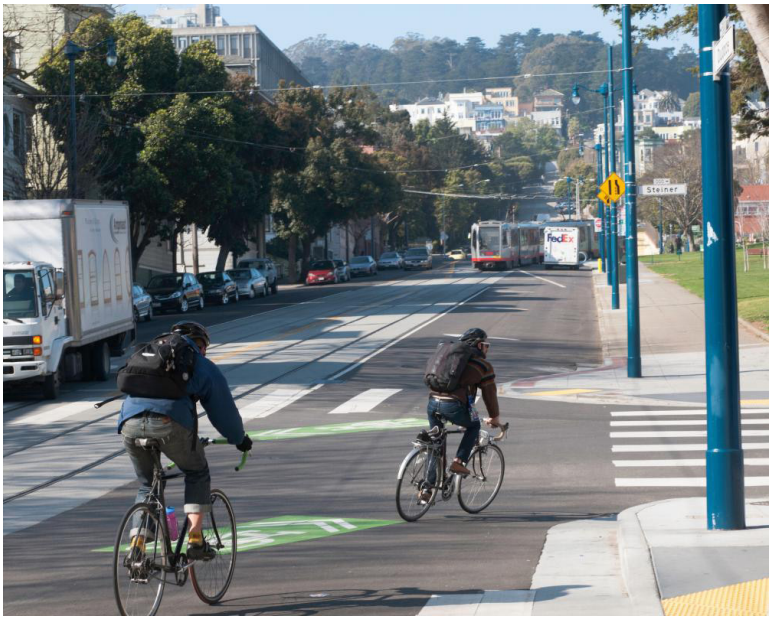
05

POLICY SCENARIOS

Policy Scenarios

Class I - Bike Path

Class II - Bike Lane



Class III - Bike Route (Shared Road)

Scenarios:

Walk:

- Reduce speed limit to 20mph on roads below 45mph and reduce speed limit by 10mph on roads at or above 45mph
- Increase amenities by 50%

Bike:

- Add bike lanes within a half-mile of a station and bike routes within 1.5-miles of a station, preserving bike paths and lanes where they currently exist
- Remove the one-way bike penalty by adding bidirectional bike facilities or making the road two-way

Variables of Analysis:

- Length of streets (in miles)
- Area covered (in square miles)
- Employment (number of jobs)
- Amenities (number of restaurants, shops, retail, etc.)
- Population (number of people)
- Building gross floor area (million sq ft)
- Vacant land (million sq ft)

Policy Scenarios

Perceived catchment areas, unlike euclidean or network, are elastic and depend a lot on the street design. Planners and policymakers can increase the extent of the perceived catchment by changing street conditions. To illustrate the effect of this elasticity, this report creates four scenarios, two for walking and two for biking. The first scenario reduces the speed limit on all streets under 45 mph to 20 mph and for streets 45 mph or over it reduces the speed by 10 mph. The second scenario increases amenities along a street by 50%. Both of these scenarios are designed to increase the perceived walkshed catchment areas. The third scenario adds bike lanes along all streets within a half-mile of the station and makes all streets within 1.5-miles a bike route (i.e. sharrow). The fourth scenario removes the one-way barrier on streets by permitting cyclists to ride in both directions on one-way streets. The third and fourth scenarios are both designed to expand the perceived bike-shed catchments.

The four scenarios were applied to the perceived travel sheds to show how policy and planning interventions can increase the catchment areas. The Tables below show the seven variables and their changes from the perceived baseline compared with the four scenarios. In addition, the two walk and the two bike scenarios were

System-wide	Walking (0.5 miles)			
Coverage Area	**Length (mi)**	**% Baseline**	**Area (km^2)**	**% Baseline**
Baseline	**526.9**	**100.0%**	**22.8**	**100.0%**
Scenario 1	**623.6**	**118.3%**	**27.0**	**118.5%**
Scenario 2	**538.3**	**102.2%**	**23.3**	**102.1%**
Scenario 1 & 2	**635.7**	**120.7%**	**27.5**	**120.6%**

System-wide	Biking (1.5 miles)			
Coverage Area	**Length (mi)**	**% Baseline**	**Area (mi^2)**	**% Baseline**
Baseline	2,179.3	100.0%	102.3	100.0%
Scenario 3	2,965.1	136.1%	143.7	140.4%
Scenario 4	2,699.2	123.9%	122.3	119.6%
Scenario 3 & 4	3,604.0	165.4%	169.5	165.7%

System-wide scenario results for length and area for the 4 scenarios for walking and biking.

combined (Scenarios 1 & 2 and Scenarios 3 & 4) to illustrate the combined effects of both occurring. In general, Scenario 1 (decreasing the speed limits) increased the variables between 13-22% while Scenario 2 (increasing amenities by 50%) had a minimal effect on the variables (increase of 0.8-3.7%). Amenities have a moderate effect on perceived distance individually, but can be influential in clusters. For example, a single additional restaurant on a street has a tiny effect on the perceived walking distance to a station, whereas a commercial main street with many restaurants can produce a sizable positive effect for many travelers. One limitation to increasing the amenities by 50% (Scenario 2) is that the growth depends on existing amenities. However, zoning and existing structures can be barriers to implementing commercial districts nearby stations, so the method used allows planners to get a sense of the impact of amenity growth without implicating drastic changes to the zoning ordinances or built environment. Many gateway cities served by commuter rail also already have favorable zoning regulations in place that would enable a higher density of amenities without requiring a change in zoning codes.

Scenario 3 (adding bicycle facilities) had a significant effect on the length and area coverage from the baseline (36% and

System-wide	Walking (0.5 miles)					
Coverage Area	**Employment (Jobs)**	**% Baseline**	**Amenities (N)**	**% Baseline**	**Population**	**% Baseline**
Baseline	272,337	100.0%	5,621	100.0%	146,139	100.0%
Scenario 1	310,047	113.8%	6,379	113.5%	178,279	122.0%
Scenario 2	278,762	102.4%	5,806	103.3%	151,524	103.7%
Scenario 1 & 2	316,976	116.4%	6,562	116.7%	182,939	125.2%

System-wide	Biking (1.5 miles)					
Coverage Area	**Employment (Jobs)**	**% Baseline**	**Amenities (N)**	**% Baseline**	**Population**	**% Baseline**
Baseline	605,809	100.0%	13,155	100.0%	586,624	100.0%
Scenario 3	770,971	127.3%	15,768	119.9%	780,136	133.0%
Scenario 4	905,359	149.4%	17,818	135.4%	835,875	142.5%
Scenario 3 & 4	1,086,611	179.4%	20,838	158.4%	1,062,747	181.2%

System-wide scenario results for employment, amenities and population for the 4 scenarios for walking and biking.

40% increases, respectively), but a slightly lesser impact in terms of increased jobs, amenities, population, GFA and vacant land (between 20-37%). Scenario 4 (allow bicycles to travel in both directions on one-ways) showed a 24% and 20% increase in length and area coverage, respectively, from the baseline. However, access to employment, population, amenities and building GFA increased between 35-50%. Vacant land access increased by 20% in Scenario 4. Both scenarios 3 and 4 showed significant improvements in expanding perceived access to commuter rail stations. Scenario 3 showed a greater increase in length, area, and vacant land coverage than Scenario 4 but had a lower increase in employment, amenities, population and GFA. This is because the stations that had the greatest growth from Scenario 4 are the stations with high existing densities since one-way streets are more common in denser areas. Improvements in those areas have greater impacts since the growth will cover more existing jobs, people, amenities and GFA. The combination of scenarios 1 and 2 and scenarios 3 and 4 show the joint effects of each pair of scenarios on perceived walksheds and bike-sheds, respectively.

System-wide	**Walking**			
Coverage Area	**Building GFA (M sq ft)**	**% Baseline**	**Vacant Land (M sq ft)**	**% Baseline**
Baseline	**2,482**	**100.0%**	**87.8**	**100.0%**
Scenario 1	**2,918**	**117.6%**	**101.9**	**116.2%**
Scenario 2	**2,541**	**102.4%**	**88.5**	**100.8%**
Scenario 1 & 2	**2,983**	**120.2%**	**103.5**	**117.9%**

System-wide	**Bicycling**			
Coverage Area	**Building GFA (M sq ft)**	**% Baseline**	**Vacant Land (M sq ft)**	**% Baseline**
Baseline	8,000	100.0%	332.5	100.0%
Scenario 3	10,301	128.8%	455.0	136.8%
Scenario 4	11,041	138.0%	396.4	119.2%
Scenario 3 & 4	13,641	170.5%	543.8	163.5%

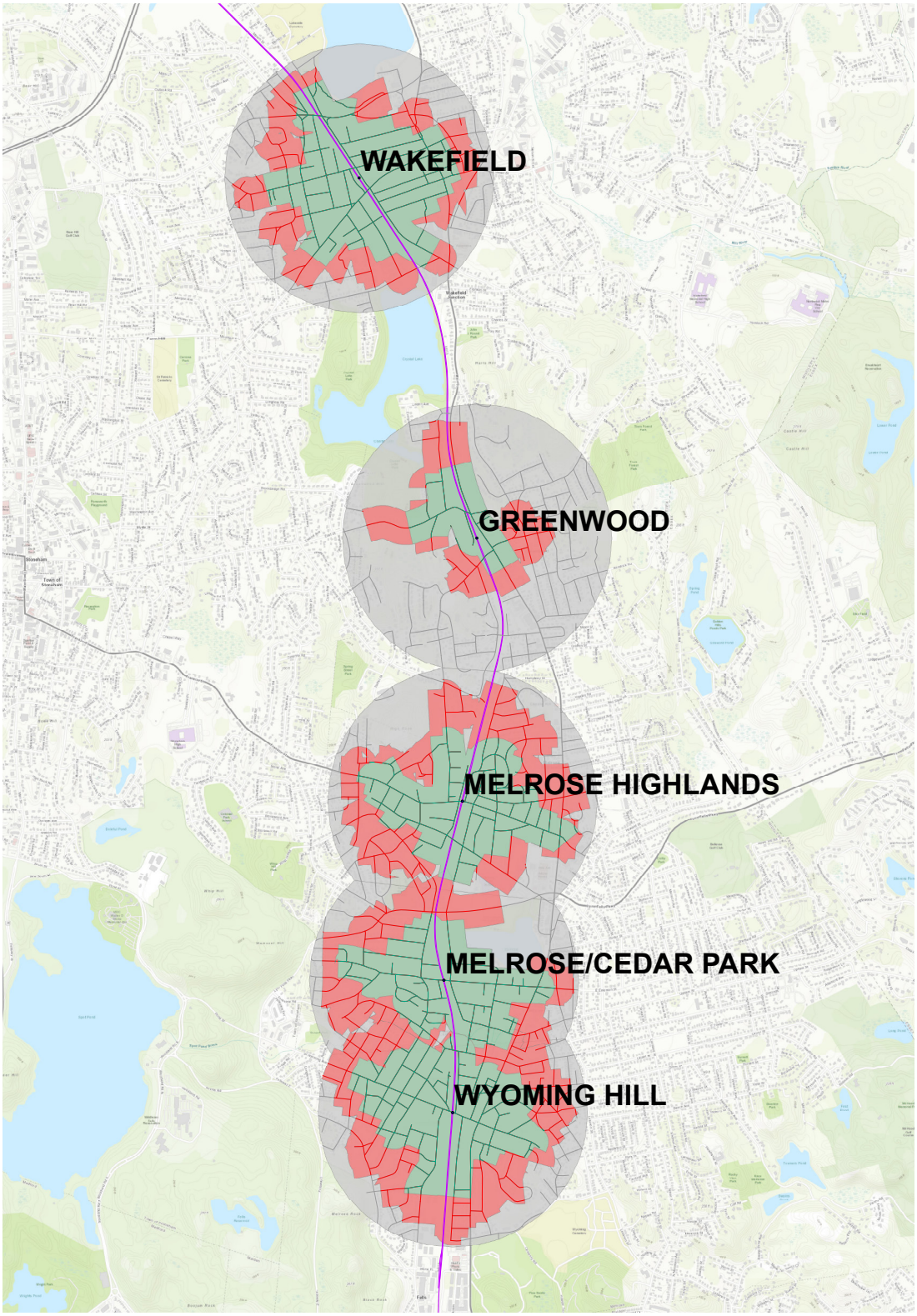
System-wide scenario results for building GFA and vacant land for the 4 scenarios for walking and biking.

Bike Class (mi)	None	Bike Path	Bike Lane	Bike Route	Total
Baseline	3,425,168	30,158	48,503	3,423	3,507,251
Scenario 3	4,677,517	35,557	54,272	4,506	4,771,852
Scenario 4	4,254,593	31,769	53,811	3,777	4,343,950
Scenario 3 & 4	5,697,875	38,203	59,207	4,797	5,800,082

Bike Class (mi)	% None	% Bike Path	% Bike Lane	% Bike Route	Total
Baseline	97.7%	0.9%	1.4%	0.1%	100.0%
Scenario 3	98.0%	0.7%	1.1%	0.1%	100.0%
Scenario 4	97.9%	0.7%	1.2%	0.1%	100.0%
Scenario 3 & 4	98.2%	0.7%	1.0%	0.1%	100.0%

Bike Class (mi)	None	Bike Path	Bike Lane	Bike Route
Baseline %	100.0%	100.0%	100.0%	100.0%
Scenario 3 %	136.6%	117.9%	111.9%	131.6%
Scenario 4 %	124.2%	105.3%	110.9%	110.3%
Scenario 3 & 4 %	166.4%	126.7%	122.1%	140.1%

System-wide scenario results for bike facility classification for scenarios 3 and 4 for biking.


WAKEFIELD
GREENWOOD
MELROSE HIGHLANDS
MELROSE/CEDAR PARK
WYOMING HILL

By Station Analysis

The analysis looked at each catchment area (euclidean, network and perceived), mode (walking and cycling), variable (length, population, GFA, etc.) and scenario for each station on the commuter rail network in Massachusetts.

The coverage varied drastically across each station, depending on the network layout, built environment and street qualities. Stations near high pockets of employment (i.e. Back Bay, South Station, etc.) showed the highest employment and amenity access, while those in low-density suburbs (i.e. Route 128, Halifax, Ayer, etc.) have the lowest access to employment and amenities. Some stations had higher employment and lower population access, and vice-versa, while others had similar access to both. The tables below show the seven variables per station for the perceived and network catchments, including bike facility information. Readers are welcome to explore the tables and search for stations of interest.

While every station has unique street configurations and urban designs attributes, there are general trends that are evident from the network and perceived catchment areas. There are two primary types of street configurations surrounding stations: dense, gridded streets and sparse, cul-de-sac streets. The network and perceived catchment coverage follow similar shapes base on these two layouts. Dense streets have greater coverage and are likely to have a coverage closer to euclidean catchment. Sparse street networks have less coverage and are unlikely to be similar to the euclidean catchment.

In both dense and sparse street configurations, perceived sheds can either be similar to the network shed or much smaller. The factors that determine the difference in perceived shed size vary by station but could be the result of street qualities, such as sidewalk width or speed limits, or environmental factors, such as elevation gain. Depending on the street characteristics, the perceived shed could be similar in terms of coverage to the network or smaller. Both dense and sparse street configurations observe large and small differences in regards to the perceived and network coverage.

In each of these station types, there are other layout configurations that can affect the coverage. There are some areas where connectivity is disrupted (usually by a river, highway, or other physical obstacle) and accessing the rest of a network requires taking a long detour. These barriers can greatly reduce the coverage of networks, both dense and sparse. There are remedies to these barriers, such as adding pedestrian bridges or tunnels, which can expand the 10-minute walk- or bike-shed significantly. As previously mentioned, each station will have its own unique street configuration, street characteristics, and barriers that shape the perceived and network catchment areas. On top of that, the placement of buildings, houses, employment and amenities will differ around each station which will alter the catchment coverage of each variable. For that reason, readers are encouraged to explore the tables in the Appendix or the website.

06

CONCLUSION

Conclusion

The commuter rail network is an invaluable asset for future urban growth in Massachusetts. Though present-day service on the commuter rail network leaves a lot to be desired, upcoming investments could significantly improve service frequency, train and station quality and reduce noise, exhaust and energy use. Should these investments materialize, commuter rail might once again guide urban growth in the state.

This report has focused on access to commuter rail stations. The study has tried to demonstrate that "perceived" ten-minute walksheds (½ mile) and ten-minute bikesheds (1½ miles) are substantially smaller than idealized circular catchment areas (typically covering only one-third of the size) and also smaller than corresponding network catchment areas (typically covering only half the size). Walking and biking distances can be perceived longer due to undesirable route qualities, such as high traffic volumes, lack of ground floor amenities, turns along the route or lack of safe bicycling infrastructure.

To capture the TOD potential around commuter stations, development should be concentrated in areas that are perceived to be within a ten-minute travel-shed around a station. The report has delineated the perceived travel sheds around 141 stations in the network, which can serve as a guide for assessing their TOD potential.

By demonstrating four different policy scenarios, the study also tried to illustrate that sizes of perceived walk- and bike-sheds around stations are not fixed in stone—they can indeed be expanded with progressive policies, such as including bike lanes and safe bi-directional biking regulations, traffic calming measures, increased amenities, etc. Streets that are safer, more comfortable and more interesting for walking and biking will stretch the perceived ten-minute walking and biking distance further, to more households, jobs and TOD development sites.

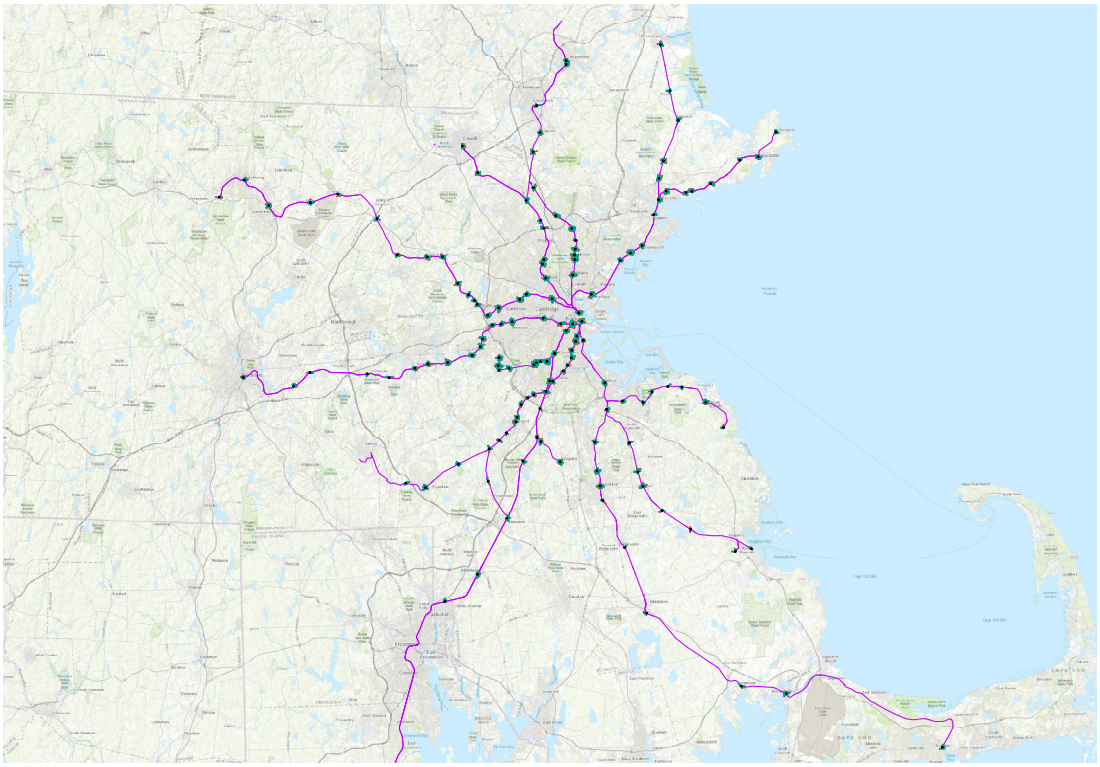
The study's scenarios were selected so as to represent relatively low-cost and quick implementation options involving traffic speed limits, lane paintings and a reversal of one-way biking restrictions. However, key streets and public spaces near stations, which most pedestrians rely on, could warrant much more extensive improvements, such as high-quality sidewalks with generous high-quality pavement, street furniture, landscaping and ground-floor amenities (NACTO 2013). Similarly, in lieu of simple bike lanes and sharrows that the study has investigated, high-potential biking corridors warrant even safer and better bike paths that are separated from traffic and safe enough for kids and elderly bikers alike.

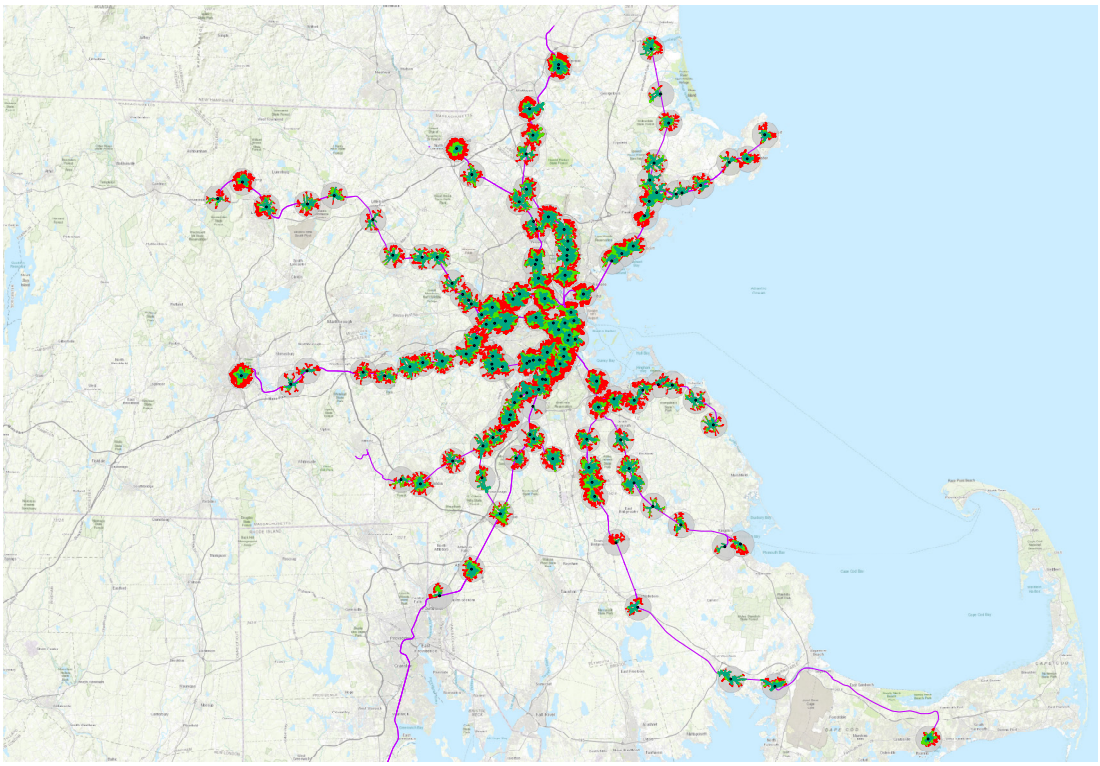
Follow-up work could analyze which specific streets or street segments public investments and improvements would most benefit—which corridors leading to commuter rail stations have the potential to funnel most pedestrians and bikers to

and from stations? Where would scarce tax-payer dollars make the biggest impact on improved access and commuter rail ridership? Analytic tools for detecting most critical walk and bike routes to transit destinations have been developed and are readily available (Sevtsuk 2020b). Intersecting such analysis with demographic data on surrounding residents and workers could also enable the analysis to account for the likelihood of these stakeholders actually using commuter rail. Lower-income communities with fewer alternative modal choices and less resources for personal vehicles might be more likely to be transit riders, even if densities around stations are higher in more affluent areas near Boston. Public street improvements should not only prioritize potential high-volume corridors, but also those where the users of the corridors are more likely to use them.

The study recommends that part of the overall MBTA funding earmarked for commuter rail upgrading be put aside to improve pedestrian and bicycle access to the stations. Improving station access might, in fact, have a higher impact on increasing ridership than capital improvements on the rail lines themselves. Riding a train should fundamentally be a car-free travel mode. In the past, the MBTA has built extensive parking lots near suburban and small-town stations to encourage park-and-ride trips to Boston, having accumulated over 40,000 parking spots. In the 21st century, more TOD development should be concentrated near stations, increasing travel demand on foot and by bike. This would help reduce the congestion externalities, CO2 emissions and overall energy impacts that park-and-ride commuter rail users currently produce. However, biking to stations does not need to be limited to areas immediately surrounding the stations and biking does not need to be limited to the courageous few that accept biking with significant traffic hazards along the way. Better streets and bike routes can compel a higher number and a more diverse set of people to walk and bike to commuter rail from further distances.

The notion of “perceived” travel distances in this report were based on two studies—one on walking, the other on biking—conducted in San Francisco, CA. Both of these studies used a large number of anonymized GPS traces from smart-phone apps to examine which routes people chose to walk and bike (from a set of possible alternatives), and thereby detect which street attributes people gravitated towards or shun from. It would be desirable to implement similar studies in the Boston area and examine whether perceived distance coefficients remain similar. More importantly, it would be desirable to calibrate perceived distance coefficients for different demographic groups separately—by gender, by race, age or income. This would allow the analysis to distinguish how different community members might perceive walking and distances differently, potentially leading to more nuanced policies and street upgrading recommendations.





We hope that the datasets, shapefiles and webmaps distributed along with this report will help stimulate more discussion about access to commuter rail and enable more analysis on both existing access patterns and future policy options.

07

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Findings - Walking

Walking 0.5-miles Network	Length (mi)	Area (mi^2)	Employment (Jobs)
ABINGTON	4.01	0.30	840
ANDERSON/WOBURN	3.64	0.26	3,943
ANDOVER	7.07	0.35	3,005
ASHLAND	1.97	0.16	206
ATTLEBORO	9.02	0.38	3,960
AUBURNDALE	12.50	0.49	1,189
AYER	3.45	0.17	301
BACK BAY	25.12	0.63	72,168
BALLARDVALE	4.67	0.31	289
BELLEVUE	10.34	0.34	932
BELMONT	12.82	0.51	2,113
BEVERLY	12.38	0.43	3,025
BEVERLY FARMS	4.61	0.30	330
BLUE HILL AVENUE	8.77	0.26	1,028
BOSTON LANDING	11.56	0.44	6,076
BRADFORD	8.41	0.31	492
BRAINTREE	7.33	0.34	2,899
BRANDEIS/ROBERTS	10.79	0.42	2,060
BRIDGEWATER	1.01	0.09	13
BROCKTON	12.82	0.51	5,839
BUZZARDS BAY (S)	9.40	0.41	563
CAMPELLO	6.83	0.33	1,715
CANTON CENTER	6.59	0.34	1,654
CANTON JUNCTION	5.13	0.31	831
CHELSEA	17.07	0.54	8,147
COHASSET	2.63	0.21	228
CONCORD	6.64	0.38	1,470
DEDHAM CORP. CENTER	3.01	0.19	1,328
EAST WEYMOUTH	5.88	0.30	642
ENDICOTT	9.55	0.42	272
FAIRMOUNT	9.76	0.36	1,250
FITCHBURG	9.70	0.34	2,017
FOREST HILLS	12.65	0.45	3,229
FORGE PARK/495	3.53	0.24	1,457
FOUR CORNERS/GENEVA AVE	14.10	0.46	1,883
FOXBORO (SPECIAL EVENT)	1.84	0.12	100

	Amenities (N)	Population	Building GFA (M sq ft)	Vacant Land (M sq ft)
	23	604	9.39	0.06
	46	73	14.65	0.11
	116	1019	23.18	0.11
	5	342	3.31	0.09
	99	2969	43.22	0.16
	48	2685	42.05	0.06
	14	589	5.33	0.02
	938	21466	412.11	0.19
	13	321	8.95	0.10
	35	3665	34.99	0.10
	57	1981	24.88	0.08
	159	4969	49.73	0.08
	26	592	10.65	0.03
	46	2088	28.95	0.09
	152	5911	37.41	0.24
	17	1918	15.54	0.08
	50	463	17.25	0.07
	14	1337	18.22	0.11
	3	643	0.13	0.11
	118	2829	63.85	0.35
	39	619	8.10	0.11
	69	2787	25.27	0.10
	60	1453	18.19	0.16
	15	532	10.05	0.05
	176	15000	132.84	0.10
	10	5	1.40	0.14
	64	758	24.15	0.02
	36	92	14.76	0.08
	41	862	9.38	0.15
	5	2252	29.56	0.05
	52	3633	41.29	0.10
	49	2886	34.56	0.16
	73	4329	45.67	0.42
	9	74	2.47	0.16
	86	9440	91.95	0.21
	0	0	0.33	0.02

FRAMINGHAM	12.30	0.48	4,786
FRANKLIN/DEAN COLLEGE	10.47	0.51	2,434
GLOUCESTER	15.31	0.48	3,163
GRAFTON	3.66	0.28	744
GREENBUSH	3.92	0.23	521
GREENWOOD	3.79	0.21	299
HALIFAX	2.14	0.17	1
HAMILTON/WENHAM	7.00	0.38	920
HANSON	2.19	0.17	229
HASTINGS	3.49	0.23	66
HAVERHILL	10.86	0.42	3,861
HERSEY	9.12	0.40	113
HIGHLAND	9.03	0.36	1,737
HOLBROOK/RANDOLPH	7.49	0.43	388
HYANNIS (S)	7.51	0.36	3,538
HYDE PARK	10.89	0.43	2,215
IPSWICH	7.27	0.31	2,853
ISLINGTON	6.54	0.34	1,207
JFK/UMASS	13.93	0.44	2,330
KENDAL GREEN	3.48	0.30	128
KINGSTON	1.00	0.11	0
LAWRENCE	6.66	0.33	5,802
LINCOLN	4.71	0.34	401
LITTLETON/ROUTE 495	3.04	0.23	561
LOWELL	10.78	0.36	2,832
LYNN	12.34	0.47	9,500
MALDEN CENTER	16.38	0.54	4,334
MANCHESTER	6.11	0.31	1,053
MANSFIELD	8.13	0.34	979
MELROSE HIGHLANDS	11.93	0.48	517
MELROSE/CEDAR PARK	8.37	0.40	1,602
MIDDLEBOROUGH/LAKEVILLE	1.52	0.13	628
MISHAWUM	4.39	0.25	3,668
MONTELLO	10.93	0.50	1,904
MONTSERRAT	7.71	0.39	1,374
MORTON STREET	11.47	0.39	1,019
NANTASKET JUNCTION	0.76	0.06	0
NATICK	13.84	0.53	2,390
NEEDHAM CENTER	12.45	0.51	3,341

	159	3850	37.64	0.12
	76	2435	25.68	0.15
	185	5813	72.51	0.16
	1	249	0.39	0.21
	16	182	4.10	0.05
	21	524	9.38	0.05
	0	35	1.09	0.05
	40	822	18.28	0.09
	17	56	3.46	0.02
	3	186	7.33	0.02
	178	5032	62.78	0.12
	6	1589	17.83	0.07
	69	2902	29.82	0.05
	19	1011	14.87	0.20
	123	969	26.37	0.11
	96	4165	51.80	0.14
	80	1812	22.39	0.05
	16	973	17.80	0.04
	47	6523	52.64	0.16
	1	193	7.24	0.10
	0	0	2.02	0.21
	86	2288	70.92	0.18
	15	149	4.18	0.02
	3	0	2.91	0.15
	67	3271	41.20	0.11
	199	5725	82.75	0.15
	145	8669	95.90	0.08
	48	892	15.74	0.08
	68	1815	26.85	0.12
	47	3081	38.01	0.07
	62	2740	28.11	0.12
	6	440	4.83	0.11
	60	213	16.89	0.03
	52	3132	30.18	0.11
	24	1623	12.22	0.05
	45	7284	65.34	0.16
	0	241	1.04	0.06
	124	3542	42.10	0.10
	142	2144	19.38	0.30

NEEDHAM HEIGHTS	12.05	0.53	2,403
NEEDHAM JUNCTION	6.08	0.33	1,222
NEWBURYPORT	5.34	0.31	1,059
NEWMARKET	9.68	0.40	8,203
NEWTONVILLE	13.04	0.52	3,735
NORFOLK	4.31	0.32	462
NORTH BEVERLY	8.84	0.43	1,235
NORTH BILLERICA	6.59	0.37	282
NORTH LEOMINSTER	7.31	0.37	1,016
NORTH SCITUATE	5.04	0.34	410
NORTH STATION	20.19	0.51	30,972
NORTH WILMINGTON	5.70	0.37	391
NORWOOD CENTRAL	7.72	0.37	4,108
NORWOOD DEPOT	9.28	0.40	2,672
PLIMPTONVILLE	2.91	0.18	75
PLYMOUTH	2.55	0.18	1,111
PORTER SQUARE	19.12	0.57	4,092
PRIDES CROSSING	3.68	0.29	215
QUINCY CENTER	11.13	0.42	8,005
READING	11.40	0.45	1,668
READVILLE	11.47	0.47	1,185
RIVER WORKS	3.97	0.25	312
ROCKPORT	7.93	0.39	609
ROSLINDALE VILLAGE	13.45	0.54	2,207
ROUTE 128	0.58	0.07	0
ROWLEY	2.06	0.17	75
RUGGLES	16.85	0.42	8,486
SALEM	6.93	0.24	3,705
SHARON	6.09	0.34	723
SHIRLEY	6.99	0.37	1,672
SILVER HILL	4.17	0.32	28
SOUTH ACTON	4.42	0.31	113
SOUTH ATTLEBORO	2.94	0.16	816
SOUTH STATION	18.55	0.52	125,612
SOUTH WEYMOUTH	3.95	0.27	391
SOUTHBOROUGH	2.53	0.18	7
STOUGHTON	12.91	0.54	2,991
SWAMPSCOTT	12.47	0.49	2,021
TALBOT AVENUE	13.75	0.44	1,824

	43	3008	20.58	0.28
	31	1491	11.10	0.11
	22	68	11.28	0.20
	87	2573	39.49	0.22
	102	3768	73.17	0.04
	26	110	5.76	0.08
	52	1269	15.57	0.08
	6	978	11.59	0.11
	38	692	16.90	0.08
	28	342	5.72	0.07
	361	12431	236.26	0.30
	25	350	8.46	0.07
	114	1367	41.68	0.07
	96	2401	34.58	0.06
	3	282	5.49	0.02
	26	149	14.76	0.07
	201	12077	168.18	0.05
	5	315	4.72	0.04
	156	3963	85.28	0.14
	100	2730	27.22	0.06
	33	2279	29.81	0.42
	18	0	4.86	0.01
	28	1243	22.12	0.14
	121	7055	115.80	0.17
	0	0	0.00	0.06
	5	58	3.29	0.03
	62	14207	83.80	0.27
	95	2219	56.80	0.12
	32	600	13.30	0.09
	28	648	6.77	0.11
	1	427	10.36	0.03
	8	100	7.94	0.27
	15	114	3.76	0.04
	965	8181	567.79	0.34
	22	48	11.11	0.13
	2	59	1.91	0.12
	104	3041	30.42	0.18
	54	5227	40.40	0.08
	94	6996	75.52	0.20

UPHAMS CORNER	16.58	0.49	2,147
WACHUSETT	2.07	0.18	89
WAKEFIELD	12.16	0.51	3,829
WALPOLE	5.86	0.32	1,792
WALTHAM	15.98	0.55	5,838
WAREHAM (S)	5.71	0.27	1,121
WAVERLEY	14.09	0.49	1,216
WEDGEMERE	10.12	0.39	95
WELLESLEY FARMS	9.28	0.47	95
WELLESLEY HILLS	8.94	0.42	2,035
WELLESLEY SQUARE	10.82	0.50	4,451
WEST CONCORD	8.54	0.40	1,729
WEST GLOUCESTER	2.71	0.23	63
WEST HINGHAM	3.33	0.26	708
WEST MEDFORD	13.16	0.49	799
WEST NATICK	7.72	0.45	1,081
WEST NEWTON	9.08	0.39	2,031
WEST ROXBURY	9.06	0.41	1,402
WESTBOROUGH	1.98	0.16	97
WEYMOUTH LANDING/EAST BRAINTREE	8.34	0.40	1,141
WHITMAN	7.96	0.39	415
WILMINGTON	4.81	0.32	945
WINCHESTER CENTER	10.29	0.44	2,960
WINDSOR GARDENS	1.77	0.13	8
WORCESTER	13.93	0.49	13,356
WYOMING HILL	12.54	0.51	1,632
YAWKEY	13.00	0.39	29,726

	90	10342	92.57	0.23
	4	78	3.36	0.06
	178	3295	48.48	0.12
	77	454	15.97	0.18
	236	7104	73.11	0.09
	46	467	12.74	0.10
	61	4467	33.25	0.57
	2	1781	20.66	0.03
	4	1282	16.33	0.16
	67	874	19.01	0.10
	169	1911	25.87	0.15
	75	1232	26.46	0.18
	0	237	4.83	0.13
	4	347	6.52	0.15
	39	4986	65.94	0.11
	23	1550	11.23	0.03
	62	1983	46.00	0.06
	56	3285	49.58	0.20
	0	100	1.01	0.08
	51	2305	17.11	0.11
	26	1357	21.31	0.12
	56	328	7.69	0.12
	112	1502	31.18	0.08
	0	409	4.70	0.06
	172	934	102.75	0.11
	95	6150	46.48	0.07
	214	12082	105.58	0.20

Findings - Walking

Walking 1km Perceived	Length (mi)	Area (sq mi)	Employment (Jobs)
ABINGTON	2.08	0.17	614
ANDERSON/WOBURN	1.64	0.12	916
ANDOVER	3.37	0.14	1,598
ASHLAND	1.14	0.10	151
ATTLEBORO	3.28	0.15	1,828
AUBURNDALE	4.67	0.15	561
AYER	2.24	0.11	238
BACK BAY	11.89	0.32	47,391
BALLARDVALE	3.11	0.20	269
BELLEVUE	4.46	0.15	852
BELMONT	4.94	0.18	1,976
BEVERLY	5.06	0.18	1,200
BEVERLY FARMS	2.83	0.19	316
BLUE HILL AVENUE	2.85	0.10	612
BOSTON LANDING	4.24	0.17	2,392
BRADFORD	3.71	0.15	194
BRAINTREE	3.43	0.13	729
BRANDEIS/ROBERTS	6.47	0.22	1,793
BRIDGEWATER	0.55	0.05	3
BROCKTON	5.46	0.22	2,954
BUZZARDS BAY (S)	4.68	0.19	322
CAMPELLO	1.37	0.07	239
CANTON CENTER	3.41	0.15	1,167
CANTON JUNCTION	2.08	0.11	523
CHELSEA	8.26	0.24	3,070
COHASSET	1.65	0.10	81
CONCORD	4.19	0.22	1,199
DEDHAM CORP. CENTER	1.45	0.09	516
EAST WEYMOUTH	1.99	0.09	68
ENDICOTT	3.49	0.15	95
FAIRMOUNT	3.04	0.11	696
FITCHBURG	3.25	0.11	1,037
FOREST HILLS	5.19	0.18	1,343
FORGE PARK/495	1.47	0.09	107
FOUR CORNERS/GENEVA AVE	3.97	0.13	719
FOXBORO (SPECIAL EVENT)	1.40	0.10	100

	Amenities (N)	Population	Building GFA (M sq ft)	Vacant Land (M sq ft)
	15	378	5.80	0.03
	26	0	8.60	0.05
	54	658	12.45	0.08
	4	246	2.31	0.05
	55	1,375	21.73	0.03
	30	944	15.95	0.01
	13	405	4.02	0.01
	538	9,788	262.47	0.11
	13	112	6.83	0.06
	33	1,131	15.27	0.07
	51	514	9.80	0.04
	86	2,441	27.38	0.04
	26	330	7.34	0.01
	29	807	12.16	0.04
	68	1,428	14.61	0.14
	9	921	6.59	0.07
	13	100	10.43	0.02
	14	640	15.04	0.04
	1	643	0.00	0.06
	64	826	29.49	0.10
	24	235	3.79	0.04
	17	321	3.27	0.04
	52	779	9.99	0.03
	5	356	4.59	0.00
	94	6,979	62.62	0.04
	6	0	0.86	0.12
	52	563	15.20	0.01
	2	41	12.01	0.01
	5	133	2.14	0.08
	5	806	10.00	0.01
	45	1,169	13.86	0.03
	26	935	12.30	0.09
	30	1,453	13.12	0.28
	3	0	0.35	0.10
	33	3,259	28.18	0.08
	0	0	0.28	0.00

FRAMINGHAM	4.14	0.16	705
FRANKLIN/DEAN COLLEGE	5.24	0.23	1,208
GLOUCESTER	5.36	0.17	1,081
GRAFTON	1.71	0.12	24
GREENBUSH	1.46	0.08	194
GREENWOOD	1.48	0.08	242
HALIFAX	0.81	0.08	0
HAMILTON/WENHAM	3.93	0.22	897
HANSON	1.05	0.09	195
HASTINGS	2.02	0.14	36
HAVERHILL	2.99	0.12	2,090
HERSEY	3.68	0.18	60
HIGHLAND	5.15	0.20	1,556
HOLBROOK/RANDOLPH	3.05	0.18	217
HYANNIS (S)	2.55	0.13	1,634
HYDE PARK	5.59	0.20	1,549
IPSWICH	2.95	0.13	2,044
ISLINGTON	3.03	0.15	897
JFK/UMASS	4.07	0.09	437
KENDAL GREEN	1.95	0.15	68
KINGSTON	0.83	0.09	0
LAWRENCE	1.96	0.15	4,249
LINCOLN	2.85	0.20	397
LITTLETON/ROUTE 495	2.20	0.15	561
LOWELL	2.75	0.11	815
LYNN	6.59	0.25	6,047
MALDEN CENTER	7.55	0.24	2,073
MANCHESTER	2.86	0.15	907
MANSFIELD	3.77	0.15	647
MELROSE HIGHLANDS	5.96	0.24	433
MELROSE/CEDAR PARK	4.90	0.22	920
MIDDLEBOROUGH/LAKEVILLE	0.93	0.09	105
MISHAWUM	2.19	0.13	2,085
MONTELLO	4.79	0.22	1,281
MONTSERRAT	5.12	0.22	420
MORTON STREET	1.71	0.06	134
NANTASKET JUNCTION	0.52	0.05	0
NATICK	6.91	0.26	2,079
NEEDHAM CENTER	8.12	0.31	2,952

	53	799	11.85	0.06
	63	1,287	15.25	0.04
	57	2,558	28.59	0.03
	0	4	0.33	0.07
	5	58	1.56	0.01
	20	76	4.30	0.02
	0	0	0.43	0.05
	40	519	10.46	0.02
	13	0	2.38	0.01
	0	186	4.44	0.02
	98	1,724	25.76	0.06
	5	587	6.54	0.06
	54	1,526	26.26	0.04
	11	169	5.95	0.13
	64	352	12.20	0.04
	74	1,853	27.51	0.08
	54	752	10.78	0.03
	15	312	8.24	0.03
	4	929	8.17	0.05
	1	70	3.10	0.06
	0	0	1.16	0.21
	36	231	39.65	0.09
	14	78	2.75	0.01
	3	0	1.43	0.07
	6	522	11.40	0.03
	141	2,661	48.51	0.07
	77	4,582	60.46	0.05
	41	244	7.18	0.06
	51	758	11.92	0.06
	43	2,019	17.59	0.02
	39	1,647	17.02	0.04
	1	287	3.95	0.09
	26	50	8.46	0.01
	28	1,136	12.90	0.06
	5	840	8.36	0.03
	16	827	8.93	0.02
	0	241	0.76	0.04
	108	1,886	26.54	0.07
	132	1,227	11.13	0.25

NEEDHAM HEIGHTS	5.92	0.25	1,760
NEEDHAM JUNCTION	1.96	0.11	938
NEWBURYPORT	3.10	0.16	719
NEWMARKET	4.93	0.17	4,793
NEWTONVILLE	7.30	0.28	2,339
NORFOLK	2.68	0.16	402
NORTH BEVERLY	5.31	0.23	884
NORTH BILLERICA	3.32	0.18	259
NORTH LEOMINSTER	3.12	0.20	594
NORTH SCITUATE	3.30	0.22	408
NORTH STATION	7.77	0.19	10,994
NORTH WILMINGTON	2.69	0.16	368
NORWOOD CENTRAL	3.90	0.18	2,579
NORWOOD DEPOT	4.44	0.19	1,002
PLIMPTONVILLE	1.28	0.09	11
PLYMOUTH	0.82	0.07	298
PORTER SQUARE	7.89	0.23	2,667
PRIDES CROSSING	2.47	0.18	211
QUINCY CENTER	4.32	0.17	893
READING	6.09	0.23	763
READVILLE	5.03	0.20	651
RIVER WORKS	2.33	0.16	30
ROCKPORT	2.65	0.12	286
ROSLINDALE VILLAGE	8.19	0.29	1,800
ROUTE 128	0.40	0.04	0
ROWLEY	1.51	0.12	40
RUGGLES	7.19	0.17	3,756
SALEM	2.39	0.08	213
SHARON	2.49	0.12	255
SHIRLEY	4.01	0.19	885
SILVER HILL	2.06	0.15	10
SOUTH ACTON	2.24	0.14	81
SOUTH ATTLEBORO	2.02	0.09	816
SOUTH STATION	7.43	0.22	57,384
SOUTH WEYMOUTH	1.78	0.11	236
SOUTHBOROUGH	0.75	0.05	5
STOUGHTON	6.88	0.24	2,394
SWAMPSCOTT	4.76	0.19	940
TALBOT AVENUE	5.19	0.17	746

	35	1,536	10.78	0.14
	25	465	3.47	0.07
	9	68	6.66	0.02
	40	306	16.07	0.12
	90	1,959	41.75	0.02
	21	107	3.30	0.05
	49	800	9.84	0.01
	5	251	7.41	0.07
	30	416	9.12	0.05
	28	243	3.99	0.05
	109	4,008	108.73	0.13
	22	166	3.85	0.05
	68	836	21.78	0.02
	55	1,083	17.31	0.03
	2	0	2.21	0.02
	6	0	10.57	0.03
	136	4,720	71.49	0.03
	4	88	3.34	0.04
	24	1,632	24.74	0.07
	48	1,229	14.41	0.03
	13	760	11.27	0.22
	1	0	3.06	0.00
	20	330	6.34	0.04
	106	3,529	65.40	0.11
	0	0	0.00	0.06
	4	58	2.24	0.01
	20	5,696	33.49	0.16
	8	830	17.37	0.02
	13	151	3.76	0.05
	22	500	3.92	0.04
	1	191	4.61	0.01
	7	78	3.25	0.15
	15	98	3.75	0.00
	287	2,416	245.05	0.20
	9	9	6.88	0.06
	1	0	0.19	0.03
	75	1,354	17.20	0.05
	29	1,945	17.70	0.03
	35	3,072	30.43	0.07

UPHAMS CORNER	6.66	0.20	1,205
WACHUSETT	1.11	0.10	9
WAKEFIELD	7.53	0.30	2,932
WALPOLE	2.54	0.13	721
WALTHAM	6.72	0.24	3,581
WAREHAM (S)	3.18	0.13	733
WAVERLEY	8.34	0.27	823
WEDGEMERE	5.39	0.20	55
WELLESLEY FARMS	3.72	0.20	21
WELLESLEY HILLS	3.86	0.17	1,856
WELLESLEY SQUARE	5.11	0.23	3,797
WEST CONCORD	3.73	0.15	1,149
WEST GLOUCESTER	1.75	0.13	63
WEST HINGHAM	1.98	0.15	680
WEST MEDFORD	5.24	0.20	584
WEST NATICK	2.80	0.18	392
WEST NEWTON	3.63	0.15	1,652
WEST ROXBURY	5.25	0.22	806
WESTBOROUGH	1.08	0.10	3
WEYMOUTH LANDING/EAST BRAINTREE	3.24	0.15	377
WHITMAN	3.87	0.21	307
WILMINGTON	2.76	0.17	789
WINCHESTER CENTER	5.02	0.19	2,159
WINDSOR GARDENS	1.00	0.07	1
WORCESTER	3.19	0.11	514
WYOMING HILL	6.95	0.27	608
YAWKEY	6.26	0.17	24,002

	53	4,202	41.04	0.13
	0	76	2.82	0.02
	141	1,943	32.59	0.05
	6	134	6.55	0.12
	165	2,369	37.90	0.05
	39	87	6.68	0.03
	51	2,627	19.73	0.03
	0	1,115	10.14	0.03
	0	596	6.51	0.08
	62	218	9.88	0.04
	144	773	13.27	0.08
	64	214	10.70	0.04
	0	83	3.54	0.08
	4	153	3.36	0.08
	35	2,046	30.10	0.07
	11	418	4.59	0.02
	53	596	17.12	0.05
	42	1,918	22.79	0.08
	0	97	0.87	0.05
	23	514	5.38	0.07
	22	617	11.65	0.04
	40	98	4.78	0.09
	90	489	13.15	0.06
	0	315	2.72	0.03
	20	19	28.33	0.03
	42	3,528	27.18	0.03
	103	6,251	47.04	0.11

Findings - Bicycle

Bicycle 1.5-miles Network	Length (mi)	Area (sq mi)	Employment (Jobs)	Amenities (N)	Population
ABINGTON	40.3	2.63	3,238	122	3,638
ANDERSON/WOBURN	17.7	0.75	4,758	78	1,783
ANDOVER	54.0	3.22	9,400	204	6,625
ASHLAND	39.0	2.60	2,590	86	2,303
ATTLEBORO	59.1	3.11	8,971	183	13,223
AUBURNDALE	36.0	1.71	4,319	67	6,493
AYER	25.2	1.50	2,026	87	2,789
BACK BAY	52.4	1.46	97,413	1,460	48,962
BALLARDVALE	32.3	2.12	1,543	21	1,969
BELLEVUE	40.2	1.25	1,911	53	9,878
BELMONT	70.1	3.03	5,230	114	14,431
BEVERLY	42.8	2.07	9,583	309	13,715
BEVERLY FARMS	11.2	0.85	494	28	763
BLUE HILL AVENUE	75.1	2.47	2,904	80	20,734
BOSTON LANDING	106.2	3.80	29,495	770	56,730
BRADFORD	46.0	1.74	1,783	76	7,201
BRAINTREE	58.5	3.10	7,829	234	10,517
BRANDEIS/ROBERTS	31.5	1.18	14,790	27	3,232
BRIDGEWATER	17.3	1.13	3,069	104	3,052
BROCKTON	87.1	3.80	11,509	321	29,454
BUZZARDS BAY (S)	37.8	1.88	2,557	122	2,955
CAMPELLO	54.0	2.86	3,971	175	16,409
CANTON CENTER	33.9	2.19	3,591	155	6,807
CANTON JUNCTION	19.8	1.24	1,877	35	1,933
CHELSEA	89.0	3.52	26,116	592	55,508
COHASSET	21.2	1.59	1,374	48	547
CONCORD	34.3	2.38	5,117	148	2,968
DEDHAM CORP. CENTER	23.3	0.73	5,354	116	897
EAST WEYMOUTH	44.9	2.57	2,110	78	7,670
ENDICOTT	44.8	2.32	5,628	130	9,912
FAIRMOUNT	36.3	1.71	1,906	72	10,590
FITCHBURG	80.0	3.51	8,896	256	19,146
FOREST HILLS	90.1	3.38	16,843	345	26,683
FORGE PARK/495	18.0	1.32	5,233	94	649

	Building GFA (M sq ft)	Vacant Land (M sq ft)	Bike Path (mi)	Bike Lane (mi)	Bike Route (mi)	Bike Facilities (mi)
	70.1	0.69	-	-	-	-
	46.6	0.21	-	-	-	-
	105.1	0.93	-	-	-	-
	48.3	1.07	1,106	-	-	1,106
	189.9	1.18	9,091	-	-	9,091
	104.6	0.38	-	-	-	-
	32.6	0.46	-	-	-	-
	730.4	0.52	-	-	-	-
	43.5	0.44	-	-	-	-
	106.7	0.42	1,719	1,910	-	3,629
	166.4	0.48	-	-	-	-
	127.7	0.60	-	-	-	-
	17.3	0.42	-	-	-	-
	174.3	0.94	5,164	12,515	1,126	18,804
	447.9	1.57	-	-	-	-
	68.4	0.44	-	-	-	-
	123.9	0.73	103	-	-	103
	44.9	0.38	-	-	-	-
	25.7	0.42	-	-	-	-
	242.5	1.22	-	-	-	-
	42.8	0.60	59	1,814	-	1,873
	122.8	0.85	-	-	-	-
	65.8	0.52	-	-	-	-
	31.5	0.20	-	-	-	-
	498.8	1.00	-	-	-	-
	23.1	0.57	2,630	948	-	3,578
	91.8	0.60	-	-	-	-
	42.7	0.22	641	2,568	642	3,850
	71.4	0.55	3,017	-	-	3,017
	167.2	0.38	1,576	4,898	756	7,229
	107.4	0.39	2,803	3,750	-	6,553
	187.1	1.11	-	-	-	-
	289.3	2.09	-	-	-	-
	34.0	0.51	-	-	-	-

FOUR CORNERS/ GENEVA AVE	56.4	1.95	5,940	251	38,633
FOXBORO (SPECIAL EVENT)	29.3	1.99	4,964	96	817
FRAMINGHAM	65.4	3.66	18,265	303	17,555
FRANKLIN/DEAN COLLEGE	51.3	3.26	6,195	208	5,943
GLOUCESTER	44.5	1.97	7,843	294	11,962
GRAFTON	15.7	1.42	1,410	10	302
GREENBUSH	24.7	1.82	1,303	37	678
GREENWOOD	33.0	1.44	798	43	5,264
HALIFAX	21.3	1.61	58	6	1,674
HAMILTON/WENHAM	37.2	2.45	1,941	63	2,321
HANSON	12.1	1.14	415	27	254
HASTINGS	14.2	0.97	127	7	649
HAVERHILL	65.0	3.14	9,261	302	22,941
HERSEY	36.4	1.85	1,581	19	6,808
HIGHLAND	25.0	1.00	2,614	87	6,774
HOLBROOK/ RANDOLPH	52.9	2.88	5,000	203	8,411
HYANNIS (S)	39.4	1.98	11,236	403	4,127
HYDE PARK	32.2	2.04	3,197	136	14,573
IPSWICH	38.7	2.41	3,788	130	4,038
ISLINGTON	23.6	2.11	9,656	81	3,256
JFK/UMASS	52.4	2.27	12,365	332	37,260
KENDAL GREEN	18.5	1.59	6,183	57	1,648
KINGSTON	7.8	0.47	302	17	54
LAWRENCE	99.8	3.98	30,398	764	45,960
LINCOLN	19.2	1.66	781	22	688
LITTLETON/ROUTE 495	15.4	1.27	1,110	9	163
LOWELL	125.6	4.38	22,752	757	53,135
LYNN	63.6	2.55	16,102	489	42,325
MALDEN CENTER	126.9	4.52	15,448	509	57,999
MANCHESTER	29.3	2.03	1,652	60	2,424
MANSFIELD	49.0	2.97	5,633	160	5,652
MELROSE HIGHLANDS	38.2	1.92	1,803	83	9,338
MELROSE/CEDAR PARK	21.9	1.08	4,782	80	6,528
MIDDLEBOROUGH/ LAKEVILLE	19.4	1.43	2,358	64	2,185
MISHAWUM	33.7	2.27	17,781	266	4,121

	342.2	0.69	-	-	-	-
	43.6	0.96	-	-	-	-
	146.6	1.63	1,578	1,942	-	3,519
	97.5	0.84	204	-	-	204
	164.4	0.77	-	-	-	-
	10.8	0.46	-	-	-	-
	21.9	0.56	1,837	-	-	1,837
	53.9	0.31	-	-	-	-
	16.2	1.02	-	-	-	-
	68.5	0.43	-	-	-	-
	12.3	0.23	-	-	-	-
	30.7	0.06	-	-	-	-
	212.4	0.85	-	-	-	-
	66.4	0.46	1,593	783	1,715	4,091
	103.7	0.68	-	-	-	-
	112.8	1.21	640	-	-	640
	97.7	0.66	445	-	-	445
	142.6	0.78	7,013	8,970	227	16,210
	65.8	0.70	-	-	-	-
	88.3	0.37	-	811	1,329	2,140
	313.3	1.24	-	-	-	-
	62.0	0.34	-	-	-	-
	13.2	0.24	164	-	-	164
	531.0	1.14	-	-	-	-
	17.5	0.19	-	-	-	-
	12.8	0.44	-	-	-	-
	593.6	1.32	-	-	-	-
	278.1	0.55	-	-	-	-
	505.9	0.88	-	-	-	-
	48.4	0.43	-	-	-	-
	112.9	0.83	860	-	-	860
	102.8	0.45	-	-	-	-
	68.8	0.14	-	-	-	-
	36.3	0.57	2,786	525	-	3,311
	146.3	0.27	-	-	-	-

MONTELLO	64.2	3.33	4,172	146	14,372
MONTSERRAT	42.6	2.00	7,355	60	6,499
MORTON STREET	45.3	2.30	6,194	214	27,547
NANTASKET JUNCTION	16.9	0.97	163	1	569
NATICK	61.0	3.37	5,669	211	8,618
NEEDHAM CENTER	28.8	1.56	3,811	151	5,559
NEEDHAM HEIGHTS	57.1	2.81	14,527	159	9,493
NEEDHAM JUNCTION	19.2	1.19	1,283	32	2,115
NEWBURYPORT	53.7	2.84	10,588	303	8,147
NEWMARKET	39.3	1.09	28,899	196	8,331
NEWTONVILLE	94.9	3.83	16,589	384	24,324
NORFOLK	31.2	2.68	1,123	33	1,237
NORTH BEVERLY	28.9	1.68	4,482	119	3,482
NORTH BILLERICA	36.3	2.44	5,132	80	3,196
NORTH LEOMINSTER	53.2	3.15	9,903	251	5,494
NORTH SCITUATE	27.8	2.08	1,254	76	1,320
NORTH STATION	93.4	2.64	123,639	1,260	50,089
NORTH WILMINGTON	35.5	2.33	1,088	38	2,446
NORWOOD CENTRAL	45.1	2.14	8,255	271	9,178
NORWOOD DEPOT	34.7	1.72	4,654	163	7,139
PLIMPTONVILLE	32.2	1.87	856	40	4,298
PLYMOUTH	24.5	1.69	2,582	107	3,498
PORTER SQUARE	150.4	4.94	46,383	1,212	90,510
PRIDES CROSSING	9.6	0.76	995	7	847
QUINCY CENTER	102.6	4.08	20,472	553	33,955
READING	70.9	3.60	6,069	210	12,069
READVILLE	46.6	2.11	2,621	107	6,516
RIVER WORKS	37.2	1.70	7,999	160	10,972
ROCKPORT	32.2	1.73	2,076	120	3,163
ROSLINDALE VILLAGE	48.9	2.07	6,507	228	24,029
ROUTE 128	4.3	0.27	62	2	0
ROWLEY	11.0	0.85	419	22	80
RUGGLES	78.4	2.27	59,277	436	55,434
SALEM	65.9	2.53	19,181	530	22,879
SHARON	31.6	2.31	1,825	45	3,305
SHIRLEY	34.5	2.45	1,889	34	1,478
SILVER HILL	15.9	1.37	117	3	1,144
SOUTH ACTON	34.0	2.39	2,021	55	1,957
SOUTH ATTLEBORO	21.3	1.10	2,497	99	2,022

	125.2	0.59	181	-	-	181
	69.7	0.68	-	-	-	-
	270.4	0.98	1,100	3,412	926	5,438
	16.4	0.59	1,497	1,097	622	3,216
	108.8	0.88	-	-	-	-
	55.9	0.56	-	-	-	-
	89.9	1.98	-	-	-	-
	27.0	0.37	1,674	-	-	1,674
	175.6	0.95	-	-	-	-
	157.8	0.74	-	-	-	-
	414.8	0.63	-	-	-	-
	44.1	0.58	-	-	-	-
	46.2	0.47	-	-	-	-
	53.4	0.60	-	-	-	-
	148.9	0.88	-	-	-	-
	30.8	0.58	-	-	-	-
	878.2	1.34	-	-	-	-
	32.6	0.90	-	-	-	-
	147.5	0.43	-	-	-	-
	106.0	0.33	-	3	-	3
	70.8	0.30	469	-	-	469
	57.9	0.60	1,625	-	-	1,625
	1,224.8	0.62	-	-	-	-
	9.5	0.08	-	-	-	-
	449.1	0.88	1,694	16,914	213	18,822
	140.9	0.73	-	-	-	-
	96.0	1.42	6,241	6,516	696	13,453
	81.9	0.49	-	-	-	-
	72.6	0.70	-	-	-	-
	284.9	0.55	-	2,562	683	3,245
	0.2	0.09	-	10	-	10
	15.1	0.16	-	-	-	-
	453.6	1.54	-	-	-	-
	340.4	0.79	-	-	-	-
	65.6	0.49	-	-	422	422
	21.4	2.19	-	-	-	-
	29.5	0.25	-	-	-	-
	60.5	0.94	-	-	-	-
	33.4	0.36	-	-	-	-

SOUTH STATION	61.2	2.10	223,296	1,655	18,021
SOUTH WEYMOUTH	30.8	2.07	2,222	122	2,107
SOUTHBOROUGH	23.6	2.05	345	14	1,401
STOUGHTON	70.7	3.89	7,617	246	10,385
SWAMPSCOTT	63.3	2.68	5,427	222	25,473
TALBOT AVENUE	62.9	2.11	9,209	344	38,759
UPHAMS CORNER	42.0	1.50	11,450	293	32,185
WACHUSETT	16.9	1.35	941	12	1,003
WAKEFIELD	69.5	3.59	8,318	291	15,737
WALPOLE	35.6	2.53	3,479	129	3,907
WALTHAM	92.7	3.80	25,581	580	32,499
WAREHAM (S)	29.2	1.80	3,422	76	1,911
WAVERLEY	86.4	3.52	9,967	248	26,257
WEDGEMERE	35.3	1.64	546	8	6,503
WELLESLEY FARMS	43.7	2.50	7,022	47	4,912
WELLESLEY HILLS	38.0	2.17	3,648	74	4,785
WELLESLEY SQUARE	52.8	2.85	6,153	200	8,855
WEST CONCORD	37.7	2.27	4,212	103	4,028
WEST GLOUCESTER	17.9	1.24	748	15	944
WEST HINGHAM	30.2	2.12	4,016	158	2,661
WEST MEDFORD	105.5	3.73	10,857	353	36,478
WEST NATICK	48.2	2.45	3,947	129	10,858
WEST NEWTON	46.8	2.23	4,966	107	10,346
WEST ROXBURY	56.3	2.39	8,082	151	12,386
WESTBOROUGH	17.9	1.33	1,407	8	897
WEYMOUTH LANDING/ EAST BRAINTREE	65.9	3.38	4,543	180	15,191
WHITMAN	42.4	2.67	2,823	120	7,368
WILMINGTON	41.8	2.82	3,676	137	3,288
WINCHESTER CENTER	50.1	2.28	8,284	193	10,815
WINDSOR GARDENS	24.3	1.39	2,478	69	4,873
WORCESTER	124.4	4.76	53,411	768	52,702
WYOMING HILL	44.4	1.96	3,221	134	12,721
YAWKEY	57.8	2.34	110,254	698	49,962

	1,037.1	1.44	-	-	-	-
	52.1	1.29	-	2,362	92	2,453
	20.7	1.75	-	-	-	-
	113.4	1.16	990	-	-	990
	185.6	0.40	-	-	-	-
	350.0	0.63	-	-	-	-
	278.7	0.57	-	-	-	-
	18.4	0.63	-	-	-	-
	172.7	0.91	-	-	-	-
	103.5	0.90	142	-	-	142
	308.7	0.52	-	-	-	-
	51.6	1.02	2,953	4,686	-	7,640
	229.6	1.19	-	-	-	-
	81.7	0.15	-	-	-	-
	94.5	0.72	-	-	-	-
	77.9	0.44	-	-	-	-
	85.9	1.64	-	-	-	-
	80.6	0.60	-	-	-	-
	26.5	0.66	-	-	-	-
	78.6	0.69	1,025	-	295	1,320
	405.1	1.09	-	-	-	-
	89.5	0.51	620	-	-	620
	211.3	0.24	-	-	-	-
	229.8	0.91	666	5,310	-	5,975
	32.3	0.30	-	-	-	-
	123.8	0.67	435	52	-	487
	108.4	0.78	620	-	-	620
	46.8	0.95	-	-	-	-
	125.9	0.31	-	-	-	-
	66.4	0.39	627	-	-	627
	723.9	1.11	3,948	3,411	-	7,358
	117.4	0.69	-	-	-	-
	538.3	0.66	-	-	-	-

Findings - Bicycle

Bicycle 1.5-miles Perceived	Length (mi)	Area (sq mi)	Employment (Jobs)	Amenities (N)	Population
ABINGTON	13.51	0.99	1,371	64	1434
ANDERSON/WOBURN	6.40	0.40	4,368	53	216
ANDOVER	12.65	0.64	3,975	153	2174
ASHLAND	11.36	0.66	984	43	1446
ATTLEBORO	23.03	1.03	5,748	127	7022
AUBURNDALE	17.42	0.64	1,555	50	4163
AYER	10.44	0.51	944	45	1646
BACK BAY	24.16	0.65	73,017	871	19187
BALLARDVALE	11.00	0.77	545	14	828
BELLEVUE	16.67	0.40	953	35	3133
BELMONT	22.86	0.90	2,655	77	3634
BEVERLY	20.09	0.76	4,364	242	8179
BEVERLY FARMS	8.97	0.63	490	28	747
BLUE HILL AVENUE	19.79	0.58	1,725	61	5307
BOSTON LANDING	35.59	1.24	13,513	470	23009
BRADFORD	18.11	0.60	815	28	3573
BRAINTREE	11.47	0.50	2,755	47	1977
BRANDEIS/ROBERTS	14.44	0.55	3,965	22	1840
BRIDGEWATER	1.13	0.10	13	3	643
BROCKTON	18.40	0.76	5,664	134	4895
BUZZARDS BAY (S)	18.47	0.88	1,904	103	1007
CAMPELLO	9.46	0.44	1,970	93	3653
CANTON CENTER	10.87	0.69	1,861	69	2138
CANTON JUNCTION	6.84	0.39	796	11	604
CHELSEA	22.68	0.75	8,345	198	17804
COHASSET	7.24	0.51	747	25	37
CONCORD	15.64	0.97	3,767	124	1544
DEDHAM CORP. CENTER	10.69	0.30	3,188	73	223
EAST WEYMOUTH	9.20	0.45	860	51	1590
ENDICOTT	24.28	1.13	1,949	46	5229
FAIRMOUNT	9.19	0.36	1,209	48	3444
FITCHBURG	15.83	0.59	2,677	64	4500
FOREST HILLS	26.14	0.99	4,087	135	8907
FORGE PARK/495	3.43	0.22	1,550	11	8

	Building GFA (M sq ft)	Vacant Land (M sq ft)	Bike Path (mi)	Bike Lane (mi)	Bike Route (mi)	Bike Facilities (mi)
	29.2	171,010	-	-	-	-
	24.3	175,328	-	-	-	-
	35.8	156,382	-	-	-	-
	18.8	229,314	488	-	-	488
	86.5	468,062	2,833	-	-	2,833
	53.4	61,401	-	-	-	-
	17.1	108,716	-	-	-	-
	449.3	195,547	-	-	-	-
	17.1	133,180	-	-	-	-
	57.7	103,303	396	77	-	473
	45.6	273,584	-	-	-	-
	71.9	159,321	-	-	-	-
	15.2	261,348	-	-	-	-
	58.7	189,972	1,942	6,397	-	8,340
	181.0	436,109	-	-	-	-
	29.4	134,086	-	-	-	-
	28.2	62,065	-	-	-	-
	23.7	131,302	-	-	-	-
	0.1	128,719	-	-	-	-
	75.5	447,433	-	-	-	-
	19.0	284,845	59	1,156	-	1,215
	30.9	103,565	-	-	-	-
	27.6	173,120	-	-	-	-
	11.4	46,304	-	-	-	-
	160.1	127,500	-	-	-	-
	5.7	327,764	1,502	867	-	2,369
	53.8	166,584	-	-	-	-
	19.4	149,112	641	1,391	-	2,031
	15.2	164,959	1,186	-	-	1,186
	77.6	155,880	679	3,504	653	4,837
	38.6	99,419	1,334	2,279	-	3,613
	56.2	215,680	-	-	-	-
	93.7	520,510	-	-	-	-
	2.5	145,711	-	-	-	-

FOUR CORNERS/ GENEVA AVE	10.45	0.35	1,455	75	7983
FOXBORO (SPECIAL EVENT)	14.70	0.98	2,711	12	806
FRAMINGHAM	32.85	1.59	8,409	227	8159
FRANKLIN/DEAN COLLEGE	14.54	0.71	2,720	97	2736
GLOUCESTER	15.31	0.50	2,819	114	5595
GRAFTON	5.42	0.46	808	3	264
GREENBUSH	10.16	0.69	807	26	231
GREENWOOD	14.73	0.67	576	38	2728
HALIFAX	5.36	0.40	22	3	93
HAMILTON/WENHAM	18.89	1.16	1,713	58	1678
HANSON	5.59	0.48	300	21	137
HASTINGS	7.04	0.49	102	6	313
HAVERHILL	14.90	0.69	4,564	188	8006
HERSEY	18.58	0.83	196	12	3675
HIGHLAND	13.50	0.51	1,774	69	4299
HOLBROOK/ RANDOLPH	18.39	1.03	1,552	88	3407
HYANNIS (S)	9.14	0.42	3,387	120	1070
HYDE PARK	18.33	0.84	2,596	122	7288
IPSWICH	12.14	0.59	3,139	99	2652
ISLINGTON	10.85	0.80	2,135	27	2205
JFK/UMASS	12.13	0.35	2,280	33	3545
KENDAL GREEN	6.71	0.54	1,441	5	615
KINGSTON	2.45	0.25	299	17	0
LAWRENCE	29.40	1.29	9,908	252	12650
LINCOLN	7.82	0.62	564	15	170
LITTLETON/ROUTE 495	6.00	0.46	834	5	82
LOWELL	12.61	0.41	2,132	60	4824
LYNN	21.17	0.80	9,856	234	15102
MALDEN CENTER	31.71	1.08	6,518	241	15014
MANCHESTER	10.06	0.64	1,127	52	912
MANSFIELD	10.26	0.47	1,272	80	1695
MELROSE HIGHLANDS	25.12	1.14	1,482	65	6436
MELROSE/CEDAR PARK	15.46	0.69	4,632	76	4803
MIDDLEBOROUGH/ LAKEVILLE	7.25	0.55	1,088	39	554
MISHAWUM	8.65	0.51	4,768	92	686

	73.4	188,731	-	-	-	-
	29.1	322,862	-	-	-	-
	78.5	1,150,093	1,474	1,565	-	3,038
	33.9	149,960	-	-	-	-
	70.3	155,310	-	-	-	-
	0.8	210,137	-	-	-	-
	7.8	124,948	819	-	-	819
	28.0	121,324	-	-	-	-
	3.3	53,156	-	-	-	-
	41.1	229,420	-	-	-	-
	6.8	144,057	-	-	-	-
	15.7	35,242	-	-	-	-
	82.0	205,595	-	-	-	-
	37.0	114,403	111	-	1,390	1,501
	50.8	61,247	-	-	-	-
	40.6	360,999	-	-	-	-
	28.6	171,888	445	-	-	445
	74.5	262,736	3,500	6,219	227	9,947
	33.4	151,739	-	-	-	-
	41.6	102,447	-	811	228	1,039
	34.1	129,733	-	-	-	-
	13.8	129,331	-	-	-	-
	6.1	236,314	164	-	-	164
	189.7	481,644	-	-	-	-
	6.3	31,665	-	-	-	-
	7.5	201,572	-	-	-	-
	50.8	85,861	-	-	-	-
	124.0	154,000	-	-	-	-
	150.9	145,293	-	-	-	-
	21.4	90,449	-	-	-	-
	28.1	132,612	264	-	-	264
	71.9	195,186	-	-	-	-
	51.0	126,849	-	-	-	-
	12.0	237,481	1,666	525	-	2,191
	31.0	54,921	-	-	-	-

MONTELLO	22.09	1.07	2,677	90	5246
MONTSERRAT	24.84	1.20	1,934	40	4298
MORTON STREET	15.44	0.55	1,189	64	8403
NANTASKET JUNCTION	4.87	0.38	34	0	302
NATICK	32.67	1.42	4,446	175	6665
NEEDHAM CENTER	21.15	1.03	3,550	145	4442
NEEDHAM HEIGHTS	20.30	0.91	3,326	47	4817
NEEDHAM JUNCTION	8.57	0.36	1,225	31	1501
NEWBURYPORT	17.49	1.02	3,691	53	1078
NEWMARKET	13.46	0.52	10,269	105	2974
NEWTONVILLE	44.75	1.89	10,358	240	12252
NORFOLK	8.86	0.68	941	28	174
NORTH BEVERLY	15.42	0.85	1,861	82	2039
NORTH BILLERICA	13.50	0.83	464	12	1701
NORTH LEOMINSTER	14.48	0.87	1,479	52	969
NORTH SCITUATE	12.29	0.91	1,106	67	596
NORTH STATION	17.76	0.44	21,950	292	9885
NORTH WILMINGTON	13.21	0.90	481	31	889
NORWOOD CENTRAL	17.06	0.78	4,595	127	3483
NORWOOD DEPOT	15.72	0.68	2,935	103	3576
PLIMPTONVILLE	9.54	0.62	362	9	994
PLYMOUTH	4.12	0.27	1,323	43	401
PORTER SQUARE	31.03	0.95	8,876	391	19761
PRIDES CROSSING	7.09	0.58	986	7	847
QUINCY CENTER	20.46	0.81	7,905	123	5877
READING	34.05	1.52	3,604	163	6173
READVILLE	20.55	0.84	1,976	72	3058
RIVER WORKS	12.30	0.67	6,212	94	3537
ROCKPORT	10.04	0.51	700	32	1452
ROSLINDALE VILLAGE	17.41	0.73	2,451	139	9603
ROUTE 128	0.64	0.07	0	0	0
ROWLEY	5.34	0.42	253	13	60
RUGGLES	23.60	0.63	8,378	74	15493
SALEM	9.60	0.32	2,940	92	3173
SHARON	10.56	0.60	1,111	39	1309
SHIRLEY	12.75	0.82	1,748	30	877
SILVER HILL	6.31	0.47	53	1	630
SOUTH ACTON	9.81	0.73	324	16	484
SOUTH ATTLEBORO	3.52	0.18	829	16	314

	54.0	199,212	-	-	-	-
	42.0	306,935	-	-	-	-
	83.5	176,786	-	917	-	917
	5.9	266,339	807	1,097	-	1,904
	73.8	254,698	-	-	-	-
	40.4	349,336	-	-	-	-
	36.7	387,775	-	-	-	-
	11.5	105,765	337	-	-	337
	44.5	383,127	-	-	-	-
	55.0	322,176	-	-	-	-
	227.4	226,001	-	-	-	-
	13.2	122,551	-	-	-	-
	23.3	180,809	-	-	-	-
	19.1	172,935	-	-	-	-
	37.0	197,931	-	-	-	-
	15.1	242,876	-	-	-	-
	179.4	223,296	-	-	-	-
	15.4	147,046	-	-	-	-
	72.4	147,641	-	-	-	-
	54.3	101,041	-	-	-	-
	21.5	135,844	-	-	-	-
	17.9	88,703	-	-	-	-
	263.5	103,066	-	-	-	-
	8.5	58,525	-	-	-	-
	104.9	226,153	90	6,892	178	7,160
	70.6	153,705	-	-	-	-
	49.2	717,434	4,236	4,974	655	9,865
	31.0	146,928	-	-	-	-
	24.8	207,350	-	-	-	-
	156.0	145,955	-	-	-	-
	0.0	63,515	-	10	-	10
	7.7	88,248	-	-	-	-
	117.6	833,476	-	-	-	-
	64.0	125,080	-	-	-	-
	26.3	90,597	-	-	-	-
	12.0	380,568	-	-	-	-
	14.1	57,608	-	-	-	-
	15.9	373,522	-	-	-	-
	4.8	58,351	-	-	-	-

SOUTH STATION	16.44	0.49	94,089	605	4923
SOUTH WEYMOUTH	13.17	0.87	683	25	574
SOUTHBOROUGH	5.13	0.38	77	4	73
STOUGHTON	28.44	1.27	4,595	138	5410
SWAMPSCOTT	22.22	0.85	2,801	107	8856
TALBOT AVENUE	17.86	0.59	2,327	118	9858
UPHAMS CORNER	19.48	0.56	2,636	127	13265
WACHUSETT	3.74	0.31	119	4	81
WAKEFIELD	32.85	1.47	5,993	239	7179
WALPOLE	14.73	0.99	2,314	104	1061
WALTHAM	30.65	1.10	8,823	403	13726
WAREHAM (S)	23.16	1.40	2,751	68	1271
WAVERLEY	33.52	1.30	3,158	150	12131
WEDGEMERE	22.68	1.06	309	6	4298
WELLESLEY FARMS	13.85	0.74	173	8	1549
WELLESLEY HILLS	15.15	0.81	2,314	68	1816
WELLESLEY SQUARE	21.32	0.98	5,385	187	3099
WEST CONCORD	18.72	0.98	2,439	85	2048
WEST GLOUCESTER	6.17	0.44	431	10	366
WEST HINGHAM	8.13	0.61	1,072	37	744
WEST MEDFORD	29.75	1.06	1,543	78	9736
WEST NATICK	12.05	0.61	1,340	45	2819
WEST NEWTON	18.10	0.77	2,751	83	4105
WEST ROXBURY	24.22	1.04	2,690	94	7106
WESTBOROUGH	4.60	0.30	146	1	283
WEYMOUTH LANDING/ EAST BRAINTREE	16.29	0.78	1,745	76	4179
WHITMAN	25.85	1.38	1,920	88	4825
WILMINGTON	19.05	1.15	2,466	125	1704
WINCHESTER CENTER	18.47	0.79	3,339	138	3408
WINDSOR GARDENS	2.86	0.21	40	0	520
WORCESTER	11.88	0.47	12,681	123	1624
WYOMING HILL	20.58	0.94	2,273	108	8107
YAWKEY	20.52	0.62	47,529	276	20393

	449.5	392,732	-	-	-	-
	21.4	703,711	-	1,741	92	1,833
	2.8	141,326	-	-	-	-
	52.8	453,449	-	-	-	-
	66.7	114,102	-	-	-	-
	101.7	239,559	-	-	-	-
	114.1	244,051	-	-	-	-
	5.0	91,496	-	-	-	-
	90.4	326,536	-	-	-	-
	40.2	556,693	-	-	-	-
	134.6	235,018	-	-	-	-
	35.4	782,672	3,661	5,108	-	8,769
	94.0	711,398	-	-	-	-
	56.3	83,236	-	-	-	-
	26.5	179,520	-	-	-	-
	35.9	237,726	-	-	-	-
	38.7	298,478	-	-	-	-
	46.0	309,995	-	-	-	-
	10.0	208,748	-	-	-	-
	21.3	209,154	-	-	-	-
	119.9	271,684	-	-	-	-
	17.6	61,431	141	-	-	141
	84.9	127,050	-	-	-	-
	125.3	287,914	639	2,465	-	3,104
	4.8	132,582	-	-	-	-
	33.9	149,119	145	-	-	145
	64.7	314,488	-	-	-	-
	23.1	310,651	-	-	-	-
	49.6	126,236	-	-	-	-
	8.0	68,689	-	-	-	-
	93.1	134,701	600	507	-	1,107
	74.4	117,863	-	-	-	-
	237.0	246,802	-	-	-	-

Scenarios - Walking

Scenario 1 - Walk	Length (mi)	Area (sq mi)	Employment (Jobs)
ABINGTON	2.52	0.20	794
ANDERSON/WOBURN	2.08	0.15	1,125
ANDOVER	4.08	0.18	1,823
ASHLAND	1.44	0.12	151
ATTLEBORO	3.67	0.18	2,108
AUBURNDALE	5.34	0.18	572
AYER	2.63	0.12	238
BACK BAY	14.71	0.38	51,640
BALLARDVALE	3.54	0.23	289
BELLEVUE	5.32	0.17	876
BELMONT	5.95	0.22	1,978
BEVERLY	6.16	0.22	2,051
BEVERLY FARMS	3.08	0.20	324
BLUE HILL AVENUE	3.43	0.11	633
BOSTON LANDING	5.57	0.21	3,306
BRADFORD	4.42	0.18	199
BRAINTREE	3.82	0.15	1,241
BRANDEIS/ROBERTS	7.24	0.25	1,813
BRIDGEWATER	0.55	0.05	3
BROCKTON	6.61	0.27	3,711
BUZZARDS BAY (S)	4.84	0.20	335
CAMPELLO	1.55	0.07	239
CANTON CENTER	4.24	0.19	1,345
CANTON JUNCTION	2.29	0.13	523
CHELSEA	9.88	0.29	4,980
COHASSET	1.65	0.10	81
CONCORD	4.58	0.25	1,199
DEDHAM CORP. CENTER	1.93	0.11	637
EAST WEYMOUTH	2.26	0.11	70
ENDICOTT	4.01	0.17	95
FAIRMOUNT	3.87	0.13	742
FITCHBURG	4.26	0.14	1,084
FOREST HILLS	6.42	0.22	1,449
FORGE PARK/495	1.82	0.11	467
FOUR CORNERS/GENEVA AVE	4.94	0.17	741
FOXBORO (SPECIAL EVENT)	1.69	0.11	100

	Amenities (N)	Population	Building GFA (M sq ft)	Vacant Land (M sq ft)
	19	456	6.8	0.44
	26	15	10.0	0.74
	65	771	15.2	0.88
	4	342	2.5	0.95
	67	1,547	24.4	0.64
	31	1,036	18.5	0.15
	13	405	4.3	0.16
	620	11,724	297.2	1.21
	13	112	7.3	0.84
	34	1,413	16.4	0.73
	51	682	11.0	0.62
	118	2,686	31.9	0.54
	26	355	7.9	0.13
	31	807	13.2	0.42
	102	1,629	19.6	1.58
	9	1,088	8.3	0.73
	24	150	12.3	0.24
	14	977	15.5	0.45
	1	643	0.0	0.63
	76	1,170	39.6	1.61
	26	191	3.8	0.47
	17	321	3.8	0.43
	55	939	11.4	0.36
	5	405	5.2	0.01
	117	8,601	77.3	0.58
	6	0	0.9	1.32
	52	588	16.8	0.13
	8	92	14.3	0.83
	5	346	2.4	0.85
	5	877	11.5	0.14
	47	1,283	15.9	0.31
	27	1,054	14.1	1.12
	40	1,637	16.6	3.00
	3	0	0.3	1.18
	37	4,850	36.3	0.98
	0	0	0.3	0.01

FRAMINGHAM	5.37	0.20	849
FRANKLIN/DEAN COLLEGE	5.86	0.26	1,598
GLOUCESTER	6.56	0.21	1,315
GRAFTON	1.75	0.13	24
GREENBUSH	1.86	0.10	311
GREENWOOD	1.88	0.11	251
HALIFAX	1.05	0.09	0
HAMILTON/WENHAM	4.85	0.27	905
HANSON	1.16	0.10	195
HASTINGS	2.26	0.15	36
HAVERHILL	3.93	0.15	2,257
HERSEY	4.43	0.21	80
HIGHLAND	6.05	0.23	1,574
HOLBROOK/RANDOLPH	3.32	0.20	218
HYANNIS (S)	3.00	0.15	1,892
HYDE PARK	6.27	0.23	1,573
IPSWICH	3.66	0.16	2,093
ISLINGTON	3.61	0.17	900
JFK/UMASS	5.03	0.13	500
KENDAL GREEN	2.18	0.19	68
KINGSTON	0.89	0.10	0
LAWRENCE	2.52	0.18	4,314
LINCOLN	3.44	0.24	397
LITTLETON/ROUTE 495	2.44	0.18	561
LOWELL	3.84	0.14	1,127
LYNN	7.73	0.30	6,594
MALDEN CENTER	9.35	0.30	2,468
MANCHESTER	3.41	0.18	958
MANSFIELD	4.13	0.17	674
MELROSE HIGHLANDS	7.16	0.29	460
MELROSE/CEDAR PARK	5.84	0.27	1,290
MIDDLEBOROUGH/LAKEVILLE	0.93	0.09	105
MISHAWUM	2.70	0.16	2,193
MONTELLO	5.76	0.26	1,315
MONTSERRAT	5.93	0.27	428
MORTON STREET	2.81	0.09	145
NANTASKET JUNCTION	0.64	0.05	0
NATICK	8.55	0.32	2,256
NEEDHAM CENTER	9.33	0.36	3,004

	66	1,035	15.4	0.74
	66	1,625	18.9	0.49
	75	2,829	35.0	0.30
	0	4	0.3	0.79
	6	58	2.2	0.10
	20	158	5.7	0.39
	0	0	0.5	0.49
	40	728	13.0	0.28
	13	21	2.6	0.11
	0	186	4.8	0.18
	116	2,016	31.6	0.74
	6	755	7.9	0.68
	54	1,872	16.7	0.51
	11	225	6.5	1.39
	74	520	14.0	0.50
	76	2,115	31.6	0.91
	61	975	13.5	0.34
	15	516	9.4	0.32
	9	1,716	15.4	0.58
	1	126	4.1	0.83
	0	0	1.4	2.23
	40	334	40.3	1.61
	14	81	3.6	0.14
	3	0	1.6	0.89
	9	732	14.3	0.40
	147	3,176	56.9	0.95
	88	5,229	67.7	0.58
	46	417	8.8	0.62
	52	934	13.5	0.69
	45	2,074	20.2	0.35
	59	2,040	20.9	0.44
	1	287	4.1	0.98
	27	63	10.3	0.09
	30	1,625	15.1	0.64
	6	927	9.4	0.34
	18	1,544	14.4	0.55
	0	188	0.7	0.64
	117	2,298	30.6	0.87
	138	1,384	13.5	2.75

NEEDHAM HEIGHTS	7.39	0.31	1,824
NEEDHAM JUNCTION	2.01	0.11	1,091
NEWBURYPORT	3.76	0.19	719
NEWMARKET	5.39	0.20	5,656
NEWTONVILLE	8.66	0.34	3,169
NORFOLK	2.81	0.17	405
NORTH BEVERLY	6.26	0.28	911
NORTH BILLERICA	4.06	0.22	260
NORTH LEOMINSTER	4.20	0.24	677
NORTH SCITUATE	3.59	0.25	408
NORTH STATION	9.10	0.23	13,962
NORTH WILMINGTON	3.21	0.21	381
NORWOOD CENTRAL	4.53	0.20	2,772
NORWOOD DEPOT	5.03	0.22	1,211
PLIMPTONVILLE	1.42	0.10	14
PLYMOUTH	0.82	0.07	298
PORTER SQUARE	9.60	0.29	3,001
PRIDES CROSSING	2.63	0.20	211
QUINCY CENTER	4.99	0.20	1,689
READING	7.36	0.28	1,185
READVILLE	5.60	0.23	679
RIVER WORKS	2.63	0.18	69
ROCKPORT	3.16	0.15	301
ROSLINDALE VILLAGE	9.33	0.35	1,957
ROUTE 128	0.40	0.04	0
ROWLEY	1.71	0.14	41
RUGGLES	8.46	0.21	3,843
SALEM	2.98	0.10	449
SHARON	2.93	0.15	327
SHIRLEY	4.57	0.22	916
SILVER HILL	2.34	0.18	17
SOUTH ACTON	2.75	0.18	86
SOUTH ATTLEBORO	2.14	0.09	816
SOUTH STATION	8.92	0.27	68,624
SOUTH WEYMOUTH	1.96	0.12	240
SOUTHBOROUGH	0.75	0.06	5
STOUGHTON	7.43	0.27	2,401
SWAMPSCOTT	5.62	0.22	1,049
TALBOT AVENUE	6.07	0.20	781

	35	1,639	12.7	1.92
	25	544	3.6	0.92
	9	68	7.2	0.74
	53	357	19.4	1.39
	92	2,329	51.2	0.31
	22	107	3.6	0.52
	49	882	11.3	0.14
	5	296	8.5	0.95
	32	507	10.5	0.72
	28	243	4.2	0.58
	117	5,303	118.3	1.59
	23	228	5.5	0.67
	79	882	24.6	0.28
	59	1,429	19.4	0.40
	2	0	2.5	0.25
	6	0	10.6	0.32
	158	5,549	89.0	0.27
	4	93	3.6	0.40
	37	1,747	32.8	0.77
	64	1,324	17.6	0.46
	17	962	12.9	3.07
	3	0	3.3	0.01
	20	337	7.5	1.01
	110	5,051	77.9	1.22
	0	0	0.0	0.68
	5	58	2.6	0.25
	22	7,295	40.5	2.02
	8	986	20.0	0.24
	16	244	5.2	0.57
	22	500	4.7	0.48
	1	191	5.4	0.14
	7	78	3.7	1.77
	15	98	3.8	0.05
	395	3,019	291.3	2.25
	10	9	7.1	0.65
	1	0	0.2	0.36
	75	1,469	18.2	0.65
	30	2,089	20.8	0.37
	36	3,655	35.3	0.86

UPHAMS CORNER	8.30	0.24	1,497
WACHUSETT	1.36	0.12	52
WAKEFIELD	8.73	0.35	3,450
WALPOLE	2.82	0.14	740
WALTHAM	8.57	0.30	3,814
WAREHAM (S)	3.85	0.16	961
WAVERLEY	9.21	0.30	1,066
WEDGEMERE	6.46	0.24	69
WELLESLEY FARMS	4.63	0.23	21
WELLESLEY HILLS	4.95	0.22	1,908
WELLESLEY SQUARE	5.96	0.27	3,886
WEST CONCORD	4.67	0.19	1,290
WEST GLOUCESTER	1.90	0.14	63
WEST HINGHAM	2.27	0.17	680
WEST MEDFORD	6.60	0.25	600
WEST NATICK	3.52	0.21	434
WEST NEWTON	4.05	0.17	1,669
WEST ROXBURY	6.05	0.25	814
WESTBOROUGH	1.16	0.11	3
WEYMOUTH LANDING/EAST BRAINTREE	3.50	0.17	580
WHITMAN	4.62	0.25	307
WILMINGTON	3.38	0.22	854
WINCHESTER CENTER	5.82	0.23	2,413
WINDSOR GARDENS	1.00	0.07	1
WORCESTER	3.73	0.14	662
WYOMING HILL	8.75	0.32	1,149
YAWKEY	7.26	0.20	24,729

	66	5,640	48.2	1.62
	1	76	2.8	0.18
	153	2,034	37.2	0.78
	13	192	7.1	1.26
	180	3,532	47.1	0.57
	41	232	7.7	0.42
	52	2,857	23.0	0.41
	2	1,234	12.3	0.29
	0	596	7.9	1.16
	65	242	11.4	0.55
	147	880	17.3	1.09
	67	470	14.3	1.21
	0	83	3.8	0.84
	4	154	4.2	0.86
	35	2,791	36.9	0.73
	16	577	5.6	0.24
	55	625	20.0	0.53
	42	2,258	34.4	0.84
	0	97	0.9	0.76
	26	827	6.6	0.81
	22	642	14.1	0.50
	47	117	5.9	1.05
	94	723	16.4	0.67
	0	315	2.7	0.32
	22	19	29.3	0.31
	71	3,739	32.9	0.42
	123	7,754	62.2	1.44

Scenarios - Walking

Scenario 2 - Walk	Length (mi)	Area (sq mi)	Employment (Jobs)
ABINGTON	2.08	0.17	614
ANDERSON/WOBURN	1.66	0.13	916
ANDOVER	3.56	0.15	1,637
ASHLAND	1.14	0.10	151
ATTLEBORO	3.44	0.16	2,086
AUBURNDALE	4.69	0.16	561
AYER	2.24	0.11	238
BACK BAY	12.71	0.33	48,997
BALLARDVALE	3.11	0.20	269
BELLEVUE	4.58	0.15	852
BELMONT	5.35	0.20	1,978
BEVERLY	5.38	0.19	1,715
BEVERLY FARMS	2.96	0.20	316
BLUE HILL AVENUE	2.85	0.10	612
BOSTON LANDING	4.31	0.17	2,392
BRADFORD	3.71	0.15	194
BRAINTREE	3.43	0.13	729
BRANDEIS/ROBERTS	6.47	0.22	1,793
BRIDGEWATER	0.55	0.05	3
BROCKTON	5.68	0.23	2,960
BUZZARDS BAY (S)	4.74	0.20	322
CAMPELLO	1.37	0.07	239
CANTON CENTER	3.53	0.16	1,195
CANTON JUNCTION	2.08	0.11	523
CHELSEA	8.81	0.25	3,402
COHASSET	1.65	0.10	81
CONCORD	4.32	0.23	1,199
DEDHAM CORP. CENTER	1.45	0.09	516
EAST WEYMOUTH	1.99	0.09	68
ENDICOTT	3.58	0.15	95
FAIRMOUNT	3.04	0.11	696
FITCHBURG	3.27	0.11	1,037
FOREST HILLS	5.27	0.18	1,343
FORGE PARK/495	1.47	0.09	107
FOUR CORNERS/GENEVA AVE	3.97	0.13	719
FOXBORO (SPECIAL EVENT)	1.40	0.10	100

	Amenities (N)	Population	Building GFA (M sq ft)	Vacant Land (M sq ft)
	15	378	5.8	0.29
	26	0	9.1	0.54
	62	711	12.9	0.86
	4	246	2.3	0.55
	65	1,375	22.4	0.37
	30	944	16.1	0.14
	13	405	4.0	0.16
	566	10,030	271.0	1.17
	13	112	6.8	0.67
	33	1,131	15.3	0.73
	51	544	10.2	0.50
	105	2,611	29.0	0.48
	26	355	7.7	0.13
	29	807	12.2	0.40
	68	1,428	14.7	1.55
	9	921	6.6	0.73
	13	100	10.4	0.17
	14	640	15.0	0.44
	1	643	0.0	0.63
	64	963	30.0	1.14
	24	235	3.8	0.45
	17	321	3.3	0.43
	55	846	10.2	0.35
	5	356	4.6	0.01
	106	7,410	66.4	0.50
	6	0	0.9	1.32
	52	588	15.8	0.13
	2	41	12.0	0.15
	5	133	2.1	0.85
	5	837	10.1	0.14
	45	1,169	13.9	0.29
	26	935	12.4	0.94
	30	1,453	13.5	2.96
	3	0	0.3	1.12
	33	3,259	28.2	0.81
	0	0	0.3	0.01

FRAMINGHAM	4.16	0.16	721
FRANKLIN/DEAN COLLEGE	5.37	0.24	1,529
GLOUCESTER	5.46	0.17	1,081
GRAFTON	1.71	0.12	24
GREENBUSH	1.50	0.08	305
GREENWOOD	1.48	0.08	242
HALIFAX	0.81	0.08	0
HAMILTON/WENHAM	3.98	0.22	897
HANSON	1.05	0.09	195
HASTINGS	2.02	0.14	36
HAVERHILL	3.05	0.12	2,093
HERSEY	3.68	0.18	60
HIGHLAND	5.15	0.20	1,556
HOLBROOK/RANDOLPH	3.05	0.18	217
HYANNIS (S)	2.68	0.14	1,779
HYDE PARK	5.78	0.20	1,549
IPSWICH	3.09	0.13	2,046
ISLINGTON	3.19	0.15	897
JFK/UMASS	4.07	0.09	437
KENDAL GREEN	1.95	0.15	68
KINGSTON	0.83	0.09	0
LAWRENCE	1.96	0.15	4,249
LINCOLN	2.85	0.20	397
LITTLETON/ROUTE 495	2.20	0.15	561
LOWELL	2.75	0.11	815
LYNN	6.75	0.25	6,053
MALDEN CENTER	7.76	0.25	2,205
MANCHESTER	3.16	0.16	929
MANSFIELD	3.82	0.15	657
MELROSE HIGHLANDS	5.98	0.24	433
MELROSE/CEDAR PARK	4.93	0.22	920
MIDDLEBOROUGH/LAKEVILLE	0.93	0.09	105
MISHAWUM	2.49	0.14	2,085
MONTELLO	4.90	0.22	1,290
MONTSERRAT	5.12	0.22	420
MORTON STREET	1.71	0.06	134
NANTASKET JUNCTION	0.52	0.05	0
NATICK	7.60	0.29	2,246
NEEDHAM CENTER	8.27	0.32	2,954

	59	799	12.0	0.65
	63	1,607	17.7	0.40
	57	2,611	29.1	0.28
	0	4	0.3	0.79
	6	58	1.8	0.09
	20	76	4.3	0.23
	0	0	0.4	0.49
	40	519	10.6	0.20
	13	0	2.4	0.11
	0	186	4.4	0.18
	98	1,724	26.0	0.63
	5	587	6.5	0.67
	54	1,526	26.3	0.48
	11	169	6.0	1.37
	73	357	13.5	0.47
	74	2,024	28.2	0.85
	55	762	11.0	0.33
	15	312	8.7	0.32
	4	929	8.2	0.55
	1	70	3.1	0.70
	0	0	1.2	2.23
	36	231	39.7	0.99
	14	78	2.7	0.14
	3	0	1.4	0.71
	6	522	11.4	0.30
	141	2,661	49.2	0.78
	80	4,715	62.4	0.57
	42	417	8.2	0.62
	51	821	12.1	0.65
	43	2,019	17.6	0.24
	39	1,647	17.1	0.43
	1	287	4.0	0.98
	26	50	8.8	0.09
	30	1,136	13.2	0.59
	5	840	8.4	0.28
	16	827	8.9	0.20
	0	241	0.8	0.40
	115	2,075	28.6	0.72
	132	1,343	11.6	2.69

NEEDHAM HEIGHTS	6.08	0.25	1,799
NEEDHAM JUNCTION	1.96	0.11	938
NEWBURYPORT	3.10	0.16	719
NEWMARKET	4.93	0.17	4,793
NEWTONVILLE	7.67	0.29	2,385
NORFOLK	2.68	0.16	402
NORTH BEVERLY	5.31	0.23	884
NORTH BILLERICA	3.32	0.18	259
NORTH LEOMINSTER	3.12	0.20	594
NORTH SCITUATE	3.30	0.23	408
NORTH STATION	8.11	0.20	11,418
NORTH WILMINGTON	2.81	0.17	381
NORWOOD CENTRAL	3.90	0.18	2,579
NORWOOD DEPOT	4.58	0.20	1,107
PLIMPTONVILLE	1.28	0.09	11
PLYMOUTH	0.82	0.07	298
PORTER SQUARE	8.45	0.25	2,737
PRIDES CROSSING	2.47	0.18	211
QUINCY CENTER	4.34	0.17	893
READING	6.20	0.23	791
READVILLE	5.09	0.21	651
RIVER WORKS	2.33	0.16	30
ROCKPORT	2.65	0.12	286
ROSLINDALE VILLAGE	8.40	0.30	1,899
ROUTE 128	0.40	0.04	0
ROWLEY	1.51	0.12	40
RUGGLES	7.19	0.17	3,756
SALEM	2.39	0.08	213
SHARON	2.49	0.12	255
SHIRLEY	4.01	0.19	885
SILVER HILL	2.06	0.15	10
SOUTH ACTON	2.24	0.14	81
SOUTH ATTLEBORO	2.02	0.09	816
SOUTH STATION	7.73	0.24	58,197
SOUTH WEYMOUTH	1.78	0.11	236
SOUTHBOROUGH	0.75	0.05	5
STOUGHTON	7.08	0.25	2,398
SWAMPSCOTT	4.77	0.19	945
TALBOT AVENUE	5.23	0.17	746

	35	1,536	10.8	1.59
	25	465	3.5	0.80
	9	68	6.7	0.26
	40	306	16.1	1.26
	91	1,959	43.5	0.26
	21	107	3.3	0.52
	49	800	9.8	0.14
	5	251	7.4	0.73
	30	416	9.1	0.59
	28	243	4.0	0.53
	116	4,690	112.3	1.37
	23	166	4.0	0.55
	68	836	21.8	0.26
	55	1,083	17.4	0.35
	2	0	2.2	0.25
	6	0	10.6	0.32
	143	5,207	76.5	0.27
	4	88	3.3	0.40
	24	1,632	25.4	0.75
	49	1,229	15.0	0.37
	13	846	11.5	2.37
	1	0	3.1	0.01
	20	330	6.3	0.38
	110	3,754	67.7	1.20
	0	0	0.0	0.68
	4	58	2.2	0.15
	20	5,696	33.5	1.67
	8	830	17.4	0.18
	13	151	3.8	0.54
	22	500	3.9	0.43
	1	191	4.6	0.14
	7	78	3.2	1.62
	15	98	3.8	0.05
	297	2,654	248.2	2.17
	9	9	6.9	0.59
	1	0	0.2	0.36
	75	1,469	17.5	0.60
	29	1,945	17.8	0.35
	35	3,072	30.7	0.74

UPHAMS CORNER	6.68	0.20	1,222
WACHUSETT	1.11	0.10	9
WAKEFIELD	7.73	0.31	2,960
WALPOLE	2.54	0.13	721
WALTHAM	7.07	0.25	3,620
WAREHAM (S)	3.18	0.13	733
WAVERLEY	8.54	0.27	842
WEDGEMERE	5.39	0.20	55
WELLESLEY FARMS	3.72	0.20	21
WELLESLEY HILLS	3.96	0.18	1,856
WELLESLEY SQUARE	5.57	0.25	3,879
WEST CONCORD	3.92	0.15	1,270
WEST GLOUCESTER	1.75	0.13	63
WEST HINGHAM	1.98	0.15	680
WEST MEDFORD	5.34	0.20	584
WEST NATICK	2.88	0.18	392
WEST NEWTON	3.63	0.15	1,652
WEST ROXBURY	5.25	0.22	806
WESTBOROUGH	1.08	0.10	3
WEYMOUTH LANDING/EAST BRAINTREE	3.27	0.15	447
WHITMAN	3.87	0.21	307
WILMINGTON	2.88	0.18	789
WINCHESTER CENTER	5.09	0.19	2,361
WINDSOR GARDENS	1.00	0.07	1
WORCESTER	3.19	0.11	514
WYOMING HILL	7.23	0.28	1,059
YAWKEY	6.31	0.17	24,020

	54	4,202	41.0	1.40
	0	76	2.8	0.17
	143	2,034	33.8	0.56
	6	134	6.6	1.26
	169	2,545	40.3	0.52
	39	87	6.7	0.35
	51	2,637	20.0	0.34
	0	1,115	10.1	0.29
	0	596	6.5	0.88
	62	218	10.0	0.42
	147	880	14.0	0.81
	67	214	12.0	0.38
	0	83	3.5	0.82
	4	153	3.4	0.86
	35	2,046	30.6	0.71
	11	418	4.6	0.24
	53	596	17.1	0.50
	42	1,918	22.8	0.81
	0	97	0.9	0.56
	23	627	5.6	0.79
	22	617	11.7	0.47
	40	98	5.0	1.02
	93	549	13.7	0.66
	0	315	2.7	0.32
	20	19	28.3	0.30
	70	3,528	28.5	0.42
	103	6,802	47.5	1.28

Scenarios - Walking

Scenarios 1 & 2 - Walk	Length (mi)	Area (sq mi)	Employment (Jobs)
ABINGTON	2.52	0.20	794
ANDERSON/WOBURN	2.08	0.15	1,125
ANDOVER	4.17	0.19	2,239
ASHLAND	1.44	0.12	151
ATTLEBORO	3.67	0.18	2,108
AUBURNDALE	5.34	0.18	572
AYER	2.63	0.12	238
BACK BAY	15.20	0.39	52,264
BALLARDVALE	3.72	0.24	289
BELLEVUE	5.32	0.17	876
BELMONT	6.04	0.22	1,978
BEVERLY	6.16	0.22	2,051
BEVERLY FARMS	3.31	0.21	324
BLUE HILL AVENUE	3.43	0.11	633
BOSTON LANDING	5.76	0.22	3,443
BRADFORD	4.47	0.18	199
BRAINTREE	3.82	0.15	1,241
BRANDEIS/ROBERTS	7.27	0.26	1,813
BRIDGEWATER	0.55	0.05	3
BROCKTON	6.67	0.27	3,711
BUZZARDS BAY (S)	4.84	0.20	335
CAMPELLO	1.55	0.07	239
CANTON CENTER	4.26	0.20	1,345
CANTON JUNCTION	2.47	0.14	538
CHELSEA	10.64	0.31	5,081
COHASSET	1.65	0.10	81
CONCORD	4.82	0.26	1,199
DEDHAM CORP. CENTER	2.05	0.12	748
EAST WEYMOUTH	2.26	0.11	70
ENDICOTT	4.01	0.17	95
FAIRMOUNT	3.97	0.13	742
FITCHBURG	4.32	0.14	1,084
FOREST HILLS	6.42	0.22	1,449
FORGE PARK/495	1.82	0.11	467
FOUR CORNERS/GENEVA AVE	5.13	0.17	741
FOXBORO (SPECIAL EVENT)	1.69	0.11	100

	Amenities (N)	Population	Building GFA (M sq ft)	Vacant Land (M sq ft)
	19	456	6.8	0.44
	26	15	10.0	0.74
	77	771	16.1	0.88
	4	342	2.5	0.95
	67	1,547	24.4	0.64
	31	1,036	18.5	0.15
	13	405	4.3	0.16
	637	11,770	301.0	1.21
	13	112	7.5	0.85
	34	1,413	16.4	0.73
	51	682	11.1	0.62
	118	2,686	31.9	0.54
	26	355	8.6	0.13
	31	807	13.2	0.42
	103	1,629	19.6	1.58
	9	1,088	8.3	0.73
	24	150	12.3	0.24
	14	1,009	15.8	0.45
	1	643	0.0	0.63
	76	1,170	40.0	1.61
	26	191	3.8	0.47
	17	321	3.8	0.43
	55	939	11.4	0.36
	6	405	5.5	0.01
	131	9,663	81.9	0.60
	6	0	0.9	1.32
	52	641	17.0	0.13
	17	92	14.5	0.83
	5	346	2.4	0.85
	5	877	11.5	0.14
	47	1,473	16.4	0.33
	27	1,054	14.1	1.13
	40	1,637	16.6	3.00
	3	0	0.3	1.18
	37	4,850	37.4	0.98
	0	0	0.3	0.01

FRAMINGHAM	5.44	0.20	849
FRANKLIN/DEAN COLLEGE	6.04	0.27	1,607
GLOUCESTER	6.73	0.21	1,327
GRAFTON	1.75	0.13	24
GREENBUSH	1.86	0.10	311
GREENWOOD	1.97	0.12	251
HALIFAX	1.05	0.09	0
HAMILTON/WENHAM	4.85	0.27	905
HANSON	1.16	0.10	195
HASTINGS	2.26	0.15	36
HAVERHILL	3.96	0.16	2,257
HERSEY	4.43	0.21	80
HIGHLAND	6.05	0.24	1,689
HOLBROOK/RANDOLPH	3.39	0.21	218
HYANNIS (S)	3.04	0.16	1,904
HYDE PARK	6.27	0.23	1,573
IPSWICH	3.82	0.16	2,104
ISLINGTON	3.67	0.17	900
JFK/UMASS	5.03	0.13	500
KENDAL GREEN	2.18	0.19	68
KINGSTON	0.89	0.10	0
LAWRENCE	2.57	0.18	4,318
LINCOLN	3.44	0.24	397
LITTLETON/ROUTE 495	2.44	0.18	561
LOWELL	3.84	0.14	1,127
LYNN	8.20	0.31	6,624
MALDEN CENTER	9.55	0.31	2,468
MANCHESTER	3.58	0.19	958
MANSFIELD	4.13	0.17	674
MELROSE HIGHLANDS	7.23	0.29	460
MELROSE/CEDAR PARK	5.98	0.27	1,290
MIDDLEBOROUGH/LAKEVILLE	0.93	0.09	105
MISHAWUM	2.70	0.16	2,193
MONTELLO	5.76	0.26	1,315
MONTSERRAT	5.93	0.27	428
MORTON STREET	2.81	0.09	145
NANTASKET JUNCTION	0.64	0.05	0
NATICK	8.74	0.33	2,258
NEEDHAM CENTER	9.48	0.37	3,004

	66	1,035	15.7	0.81
	66	1,625	19.2	0.49
	75	2,888	35.9	0.30
	0	4	0.3	0.79
	6	58	2.2	0.10
	20	158	5.8	0.39
	0	0	0.5	0.49
	40	728	13.0	0.28
	13	21	2.6	0.11
	0	186	4.8	0.18
	116	2,180	31.9	0.75
	6	755	7.9	0.68
	68	1,872	17.0	0.51
	11	276	6.6	1.39
	75	538	14.2	0.50
	76	2,115	31.6	0.91
	61	975	14.0	0.35
	15	516	9.5	0.32
	9	1,716	15.4	0.58
	1	126	4.1	0.83
	0	0	1.4	2.23
	40	334	40.3	1.64
	14	81	3.6	0.14
	3	0	1.6	0.89
	9	732	14.3	0.40
	149	3,278	58.4	1.02
	88	5,583	70.8	0.58
	46	417	9.1	0.62
	52	934	13.5	0.69
	45	2,074	20.3	0.35
	59	2,040	21.5	0.44
	1	287	4.1	0.98
	27	63	10.3	0.09
	30	1,625	15.1	0.64
	6	927	9.4	0.34
	18	1,544	14.4	0.55
	0	188	0.7	0.64
	117	2,338	30.9	0.87
	138	1,440	13.9	2.75

NEEDHAM HEIGHTS	7.45	0.31	1,937
NEEDHAM JUNCTION	2.01	0.11	1,091
NEWBURYPORT	3.76	0.19	719
NEWMARKET	5.48	0.21	5,689
NEWTONVILLE	8.81	0.35	3,171
NORFOLK	2.81	0.17	405
NORTH BEVERLY	6.37	0.29	919
NORTH BILLERICA	4.06	0.22	260
NORTH LEOMINSTER	4.28	0.25	677
NORTH SCITUATE	3.59	0.25	408
NORTH STATION	9.21	0.23	14,021
NORTH WILMINGTON	3.21	0.21	381
NORWOOD CENTRAL	4.55	0.20	2,772
NORWOOD DEPOT	5.09	0.22	1,335
PLIMPTONVILLE	1.53	0.10	14
PLYMOUTH	0.82	0.07	298
PORTER SQUARE	10.13	0.30	3,052
PRIDES CROSSING	2.64	0.20	211
QUINCY CENTER	5.04	0.20	1,723
READING	7.38	0.28	1,185
READVILLE	5.73	0.23	682
RIVER WORKS	2.63	0.18	69
ROCKPORT	3.28	0.15	301
ROSLINDALE VILLAGE	9.57	0.36	1,961
ROUTE 128	0.40	0.04	0
ROWLEY	1.71	0.14	41
RUGGLES	8.46	0.21	3,843
SALEM	2.98	0.10	449
SHARON	2.88	0.15	328
SHIRLEY	4.57	0.22	916
SILVER HILL	2.34	0.18	17
SOUTH ACTON	2.75	0.18	86
SOUTH ATTLEBORO	2.14	0.09	816
SOUTH STATION	9.19	0.28	71,054
SOUTH WEYMOUTH	1.96	0.12	240
SOUTHBOROUGH	0.75	0.06	5
STOUGHTON	7.55	0.27	2,425
SWAMPSCOTT	5.67	0.23	1,049
TALBOT AVENUE	6.29	0.20	812

	36	1,639	12.7	1.96
	25	544	3.6	0.92
	9	68	7.2	0.74
	54	357	19.4	1.39
	93	2,329	51.5	0.33
	22	107	3.6	0.59
	49	882	11.5	0.86
	5	296	8.5	0.95
	32	507	10.9	0.74
	28	243	4.2	0.58
	123	5,339	119.3	1.59
	23	228	5.5	0.67
	79	882	24.6	0.28
	69	1,443	20.5	0.41
	2	0	2.8	0.25
	6	0	10.6	0.32
	159	5,939	92.3	0.28
	4	93	3.6	0.40
	37	1,747	35.7	0.77
	64	1,324	17.7	0.46
	17	962	13.6	3.07
	3	0	3.3	0.01
	20	465	7.8	1.01
	111	5,118	79.0	1.22
	0	0	0.0	0.68
	5	58	2.6	0.25
	22	7,295	40.5	2.02
	8	986	20.0	0.24
	17	244	5.1	0.57
	22	500	4.7	0.48
	1	191	5.4	0.14
	7	78	3.7	1.77
	15	98	3.8	0.05
	413	3,103	301.6	2.26
	10	9	7.1	0.65
	1	0	0.2	0.36
	79	1,469	18.4	0.65
	30	2,089	21.1	0.38
	40	3,750	36.6	0.86

UPHAMS CORNER	8.30	0.24	1,497
WACHUSETT	1.36	0.12	52
WAKEFIELD	9.16	0.36	3,497
WALPOLE	2.82	0.14	740
WALTHAM	9.15	0.32	4,028
WAREHAM (S)	3.85	0.16	961
WAVERLEY	9.46	0.32	1,074
WEDGEMERE	6.47	0.24	69
WELLESLEY FARMS	4.63	0.23	21
WELLESLEY HILLS	4.95	0.22	1,908
WELLESLEY SQUARE	6.35	0.29	3,950
WEST CONCORD	4.67	0.19	1,290
WEST GLOUCESTER	1.90	0.14	63
WEST HINGHAM	2.27	0.17	680
WEST MEDFORD	6.90	0.26	663
WEST NATICK	3.74	0.22	434
WEST NEWTON	4.56	0.19	1,671
WEST ROXBURY	6.05	0.25	814
WESTBOROUGH	1.16	0.11	3
WEYMOUTH LANDING/EAST BRAINTREE	3.52	0.17	580
WHITMAN	4.62	0.25	307
WILMINGTON	3.46	0.23	911
WINCHESTER CENTER	5.92	0.23	2,413
WINDSOR GARDENS	1.00	0.07	1
WORCESTER	4.41	0.15	2,380
WYOMING HILL	8.84	0.33	1,149
YAWKEY	7.92	0.22	24,969

	66	5,640	48.2	1.62
	1	76	2.8	0.18
	157	2,034	38.8	0.79
	13	192	7.1	1.26
	197	3,685	48.9	0.61
	41	232	7.7	0.42
	54	3,004	24.0	0.41
	2	1,234	12.3	0.29
	0	596	7.9	1.16
	65	242	11.4	0.55
	152	880	17.7	1.09
	67	470	14.3	1.21
	0	83	3.8	0.84
	4	154	4.2	0.86
	35	2,791	38.2	0.78
	16	616	5.9	0.25
	56	726	22.5	0.53
	42	2,258	34.4	0.84
	0	97	0.9	0.76
	26	827	6.7	0.81
	22	642	14.1	0.50
	52	117	6.1	1.05
	94	723	16.5	0.67
	0	315	2.7	0.32
	43	29	37.4	0.31
	71	4,431	33.1	0.42
	132	8,231	63.5	1.66

Scenarios - Bicycle

Scenario 3 - Bicycle	Length (mi)	Area (sq mi)	Employment (Jobs)	Amenities (N)	Population
ABINGTON	22.27	1.54	1,749	91	2,329
ANDERSON/WOBURN	8.21	0.46	4,518	67	345
ANDOVER	22.95	1.24	5,844	159	3,262
ASHLAND	19.31	1.23	2,256	57	1,779
ATTLEBORO	35.51	1.63	7,731	144	9,138
AUBURNDALE	20.04	0.80	1,745	55	4,849
AYER	16.89	0.87	1,290	70	2,272
BACK BAY	28.06	0.77	75,782	938	24,736
BALLARDVALE	16.62	1.17	796	14	1,190
BELLEVUE	20.28	0.47	1,007	36	4,127
BELMONT	31.40	1.28	2,951	88	5,553
BEVERLY	24.55	1.02	5,164	273	9,429
BEVERLY FARMS	9.74	0.72	494	28	747
BLUE HILL AVENUE	23.48	0.69	1,765	62	6,197
BOSTON LANDING	42.40	1.45	16,134	493	27,000
BRADFORD	26.09	0.81	1,236	47	4,913
BRAINTREE	15.97	0.71	3,441	92	2,745
BRANDEIS/ROBERTS	18.04	0.72	14,453	26	1,864
BRIDGEWATER	1.62	0.14	27	5	684
BROCKTON	30.59	1.26	7,644	194	10,733
BUZZARDS BAY (S)	24.51	1.15	2,184	115	1,412
CAMPELLO	16.75	0.83	2,632	117	6,720
CANTON CENTER	17.70	1.18	2,032	77	3,624
CANTON JUNCTION	9.36	0.51	981	18	664
CHELSEA	30.21	1.07	10,110	238	22,945
COHASSET	9.52	0.72	881	33	392
CONCORD	21.90	1.43	4,942	143	1,909
DEDHAM CORP. CENTER	14.92	0.41	3,630	90	365
EAST WEYMOUTH	12.94	0.67	1,071	58	2,416
ENDICOTT	27.28	1.29	2,208	47	6,131
FAIRMOUNT	12.97	0.52	1,277	50	4,587
FITCHBURG	19.63	0.75	2,818	73	7,087
FOREST HILLS	30.96	1.15	5,890	168	10,071
FORGE PARK/495	5.00	0.34	1,925	14	90

	Building GFA (M sq ft)	Vacant Land (M sq ft)	Bike Path (mi)	Bike Lane (mi)	Bike Route (mi)	Bike Facilities (mi)
	43.1	2.62	-	-	-	-
	28.1	1.89	-	-	-	-
	51.5	3.36	-	-	-	-
	29.1	6.14	663	-	-	663
	122.9	6.01	4,563	-	-	4,563
	66.0	0.93	-	-	-	-
	24.9	2.08	-	-	-	-
	489.5	2.36	-	-	-	-
	24.9	2.52	-	-	-	-
	71.1	1.13	727	969	-	1,696
	64.5	3.25	-	-	-	-
	87.3	2.49	-	-	-	-
	16.0	3.02	-	-	-	-
	69.3	2.82	2,211	6,863	-	9,074
	206.8	5.32	-	-	-	-
	40.6	1.53	-	-	-	-
	41.4	1.59	-	-	-	-
	29.0	1.74	-	-	-	-
	0.3	1.56	-	-	-	-
	108.2	6.29	-	-	-	-
	24.1	4.31	59	1,764	-	1,823
	53.5	2.08	-	-	-	-
	39.8	2.43	-	-	-	-
	14.8	0.58	-	-	-	-
	210.6	2.44	-	-	-	-
	8.6	4.49	1,502	867	-	2,369
	68.9	2.81	-	-	-	-
	25.2	1.76	641	1,954	-	2,595
	21.1	2.25	1,215	-	-	1,215
	90.4	2.06	679	3,554	756	4,989
	51.7	1.41	1,490	2,606	-	4,097
	63.6	2.61	-	-	-	-
	108.6	6.11	-	-	-	-
	5.6	2.30	-	-	-	-

FOUR CORNERS/ GENEVA AVE	13.96	0.46	1,755	80	11,382
FOXBORO (SPECIAL EVENT)	15.86	1.07	2,749	13	806
FRAMINGHAM	45.43	2.28	10,037	275	12,612
FRANKLIN/DEAN COLLEGE	23.15	1.20	3,458	122	3,885
GLOUCESTER	20.18	0.69	3,613	162	7,216
GRAFTON	7.17	0.63	828	3	264
GREENBUSH	15.17	1.12	994	30	275
GREENWOOD	21.78	1.00	626	41	3,710
HALIFAX	10.98	0.80	34	4	913
HAMILTON/WENHAM	26.89	1.72	1,904	62	1,914
HANSON	9.51	0.86	350	25	230
HASTINGS	8.95	0.68	105	7	476
HAVERHILL	23.91	1.21	6,580	235	11,233
HERSEY	23.55	1.08	268	15	4,732
HIGHLAND	18.69	0.69	2,118	84	5,265
HOLBROOK/ RANDOLPH	28.39	1.57	2,596	126	4,743
HYANNIS (S)	13.27	0.63	6,457	181	1,393
HYDE PARK	20.98	0.99	2,622	124	7,650
IPSWICH	16.96	0.89	3,328	105	3,099
ISLINGTON	14.64	1.12	7,424	51	2,504
JFK/UMASS	13.27	0.37	2,345	39	3,707
KENDAL GREEN	9.47	0.76	1,907	14	787
KINGSTON	3.35	0.32	299	17	22
LAWRENCE	38.90	1.70	12,811	370	16,343
LINCOLN	10.72	0.88	580	15	179
LITTLETON/ROUTE 495	7.91	0.66	920	7	82
LOWELL	22.31	0.74	3,386	147	10,455
LYNN	29.26	1.14	11,748	304	20,625
MALDEN CENTER	49.19	1.69	8,252	318	24,374
MANCHESTER	15.02	0.97	1,233	55	1,216
MANSFIELD	18.15	0.96	3,149	108	2,639
MELROSE HIGHLANDS	31.67	1.50	1,763	82	8,321
MELROSE/CEDAR PARK	18.13	0.83	4,733	77	5,591
MIDDLEBOROUGH/ LAKEVILLE	8.85	0.66	1,218	43	735
MISHAWUM	14.01	0.85	5,543	100	1,789

	93.7	2.56	-	-	-	-
	30.4	3.59	-	-	-	-
	103.2	14.41	1,474	1,814	-	3,287
	48.8	2.74	-	-	-	-
	86.1	2.63	-	-	-	-
	1.3	2.44	-	-	-	-
	13.1	3.24	1,318	-	-	1,318
	39.6	2.96	-	-	-	-
	8.9	1.00	-	-	-	-
	54.2	3.39	-	-	-	-
	9.9	2.09	-	-	-	-
	21.7	0.43	-	-	-	-
	115.5	3.31	-	-	-	-
	48.2	1.88	111	-	1,679	1,790
	89.4	0.83	-	-	-	-
	60.5	6.09	-	-	-	-
	38.5	2.80	445	-	-	445
	81.5	3.28	3,861	7,441	227	11,529
	42.4	1.93	-	-	-	-
	51.3	1.60	-	811	694	1,505
	39.9	1.40	-	-	-	-
	24.1	1.89	-	-	-	-
	8.9	2.54	164	-	-	164
	256.7	6.94	-	-	-	-
	8.7	0.50	-	-	-	-
	8.9	3.61	-	-	-	-
	102.5	1.76	-	-	-	-
	159.2	2.56	-	-	-	-
	218.6	2.64	-	-	-	-
	27.5	2.25	-	-	-	-
	52.6	3.53	462	-	-	462
	89.5	2.55	-	-	-	-
	60.4	1.42	-	-	-	-
	16.4	2.66	1,824	525	-	2,348
	46.4	1.49	-	-	-	-

MONTELLO	38.17	1.89	3,249	120	9,007
MONTSERRAT	32.11	1.55	6,895	58	5,087
MORTON STREET	18.78	0.70	1,410	81	11,179
NANTASKET JUNCTION	5.59	0.40	34	0	330
NATICK	42.00	1.96	5,107	194	7,677
NEEDHAM CENTER	24.55	1.26	3,745	150	4,982
NEEDHAM HEIGHTS	24.56	1.12	6,048	50	5,499
NEEDHAM JUNCTION	10.63	0.46	1,238	31	1,726
NEWBURYPORT	20.30	1.21	3,948	57	1,142
NEWMARKET	16.17	0.61	10,860	119	3,602
NEWTONVILLE	50.06	2.12	10,866	255	13,956
NORFOLK	13.02	1.02	957	29	254
NORTH BEVERLY	18.45	1.02	2,160	86	2,330
NORTH BILLERICA	20.83	1.34	2,584	31	2,022
NORTH LEOMINSTER	23.20	1.40	2,022	61	2,060
NORTH SCITUATE	17.95	1.31	1,139	70	721
NORTH STATION	18.78	0.47	22,828	296	10,331
NORTH WILMINGTON	20.35	1.35	769	35	1,227
NORWOOD CENTRAL	22.71	1.07	4,658	131	5,110
NORWOOD DEPOT	22.96	0.97	3,208	109	4,880
PLIMPTONVILLE	18.01	1.10	679	38	2,202
PLYMOUTH	8.60	0.54	1,966	81	1,161
PORTER SQUARE	39.01	1.19	11,874	453	24,260
PRIDES CROSSING	8.19	0.63	993	7	847
QUINCY CENTER	29.13	1.15	8,827	159	7,693
READING	43.12	1.97	4,366	189	8,101
READVILLE	23.39	1.02	2,035	76	3,620
RIVER WORKS	19.46	0.94	6,835	121	6,141
ROCKPORT	14.36	0.73	1,229	59	1,885
ROSLINDALE VILLAGE	20.68	0.90	2,681	153	11,340
ROUTE 128	0.81	0.10	0	0	0
ROWLEY	8.86	0.66	399	23	92
RUGGLES	29.47	0.79	9,994	101	18,278
SALEM	14.75	0.50	5,124	177	5,001
SHARON	13.38	0.83	1,203	39	1,388
SHIRLEY	19.13	1.27	1,771	32	1,038
SILVER HILL	8.97	0.67	67	1	781
SOUTH ACTON	14.51	1.09	403	22	810
SOUTH ATTLEBORO	4.53	0.25	831	16	440

	84.2	3.72	-	-	-	-
	55.9	4.18	-	-	-	-
	108.8	2.97	-	917	-	917
	6.6	2.97	905	1,097	-	2,002
	84.4	3.35	-	-	-	-
	49.5	3.89	-	-	-	-
	42.6	5.45	-	-	-	-
	14.0	1.17	432	-	-	432
	50.7	5.24	-	-	-	-
	66.2	4.12	-	-	-	-
	252.6	2.56	-	-	-	-
	19.0	1.69	-	-	-	-
	28.1	3.56	-	-	-	-
	30.1	3.59	-	-	-	-
	55.9	4.48	-	-	-	-
	21.1	3.50	-	-	-	-
	203.4	2.44	-	-	-	-
	22.0	4.99	-	-	-	-
	90.6	2.11	-	-	-	-
	70.8	1.79	-	-	-	-
	41.9	2.14	31	-	-	31
	28.3	1.82	-	-	-	-
	326.3	1.42	-	-	-	-
	8.7	0.85	-	-	-	-
	139.7	2.91	142	7,766	213	8,121
	86.7	3.07	-	-	-	-
	59.3	8.65	4,746	5,211	696	10,653
	49.5	2.71	-	-	-	-
	38.4	2.62	-	-	-	-
	180.4	1.98	-	93	-	93
	0.0	0.68	-	10	-	10
	13.4	1.57	-	-	-	-
	150.0	9.60	-	-	-	-
	96.1	1.69	-	-	-	-
	33.2	1.28	-	-	-	-
	16.1	7.89	-	-	-	-
	20.0	1.12	-	-	-	-
	24.3	4.71	-	-	-	-
	6.4	0.74	-	-	-	-

SOUTH STATION	18.25	0.57	117,096	706	8,011
SOUTH WEYMOUTH	16.87	1.14	777	41	774
SOUTHBOROUGH	8.62	0.67	82	5	220
STOUGHTON	38.07	1.85	5,025	166	6,708
SWAMPSCOTT	35.56	1.35	3,312	145	14,621
TALBOT AVENUE	23.21	0.77	3,437	168	14,301
UPHAMS CORNER	25.06	0.77	3,398	163	17,960
WACHUSETT	6.66	0.56	526	5	176
WAKEFIELD	44.50	2.06	7,015	252	9,922
WALPOLE	20.65	1.38	2,527	108	1,677
WALTHAM	45.20	1.68	9,976	455	19,042
WAREHAM (S)	25.80	1.58	3,169	69	1,373
WAVERLEY	41.04	1.58	6,337	172	14,102
WEDGEMERE	29.84	1.37	477	7	6,084
WELLESLEY FARMS	19.03	1.03	992	15	2,198
WELLESLEY HILLS	21.82	1.15	2,397	69	2,353
WELLESLEY SQUARE	30.56	1.50	5,688	190	4,748
WEST CONCORD	23.14	1.25	3,174	99	2,443
WEST GLOUCESTER	8.95	0.63	514	12	437
WEST HINGHAM	12.40	0.89	1,863	71	1,188
WEST MEDFORD	45.83	1.65	2,426	107	14,235
WEST NATICK	20.39	1.03	1,841	71	5,120
WEST NEWTON	25.05	1.04	3,075	92	5,531
WEST ROXBURY	28.05	1.24	2,962	112	8,580
WESTBOROUGH	6.34	0.44	162	2	322
WEYMOUTH LANDING/ EAST BRAINTREE	26.05	1.30	2,710	119	6,680
WHITMAN	33.33	1.93	2,436	105	5,409
WILMINGTON	29.24	1.87	3,924	146	2,533
WINCHESTER CENTER	25.22	1.14	4,250	164	5,516
WINDSOR GARDENS	5.36	0.38	405	1	1,135
WORCESTER	18.65	0.73	15,433	190	4,301
WYOMING HILL	25.97	1.17	2,494	117	9,540
YAWKEY	23.52	0.73	79,728	293	21,224

	532.2	4.59	-	-	-	-
	26.4	8.91	-	1,741	92	1,833
	5.5	12.06	-	-	-	-
	65.5	6.48	-	-	-	-
	107.5	1.57	-	-	-	-
	138.1	3.23	-	-	-	-
	151.9	3.41	-	-	-	-
	7.0	2.82	-	-	-	-
	116.4	4.79	-	-	-	-
	55.2	6.75	-	-	-	-
	180.8	3.10	-	-	-	-
	42.6	9.34	3,661	5,108	-	8,769
	110.1	8.43	-	-	-	-
	72.4	1.31	-	-	-	-
	35.7	2.61	-	-	-	-
	49.1	3.19	-	-	-	-
	56.1	3.76	-	-	-	-
	55.6	3.79	-	-	-	-
	13.4	2.87	-	-	-	-
	33.8	2.46	189	-	148	336
	174.2	4.71	-	-	-	-
	34.2	2.32	526	-	-	526
	108.7	1.64	-	-	-	-
	146.2	3.61	639	2,500	-	3,140
	6.3	2.09	-	-	-	-
	52.8	2.39	172	-	-	172
	84.0	5.60	108	-	-	108
	34.1	5.32	-	-	-	-
	69.4	1.73	-	-	-	-
	15.2	1.45	-	-	-	-
	142.4	1.95	600	659	-	1,259
	85.5	1.54	-	-	-	-
	258.3	2.75	-	-	-	-

Scenarios - Bicycle

Scenario 4 - Bicycle	Length (mi)	Area (sq mi)	Employment (Jobs)	Amenities (N)	Population
ABINGTON	14.7	1.05	1,409	68	1,490
ANDERSON/WOBURN	6.4	0.40	4,368	53	216
ANDOVER	16.0	0.83	4,284	154	2,723
ASHLAND	12.1	0.71	1,007	43	1,446
ATTLEBORO	25.2	1.12	6,966	130	7,598
AUBURNDALE	18.8	0.68	1,751	54	4,250
AYER	12.2	0.62	1,007	51	1,902
BACK BAY	46.9	1.35	94,308	1,403	46,532
BALLARDVALE	11.1	0.78	545	14	828
BELLEVUE	21.8	0.57	1,033	36	5,286
BELMONT	28.5	1.13	3,104	85	4,601
BEVERLY	25.0	0.97	5,114	271	10,041
BEVERLY FARMS	9.0	0.63	490	28	747
BLUE HILL AVENUE	23.4	0.66	1,790	63	5,994
BOSTON LANDING	50.4	1.68	18,582	531	30,924
BRADFORD	19.7	0.66	1,347	51	3,994
BRAINTREE	15.7	0.75	4,235	104	2,569
BRANDEIS/ROBERTS	15.2	0.56	3,965	22	1,840
BRIDGEWATER	1.1	0.10	13	3	643
BROCKTON	26.6	1.08	7,475	164	9,375
BUZZARDS BAY (S)	21.1	0.98	1,968	109	1,120
CAMPELLO	11.4	0.51	1,998	98	4,935
CANTON CENTER	10.9	0.69	1,861	69	2,138
CANTON JUNCTION	6.9	0.39	799	12	604
CHELSEA	33.2	1.12	12,092	268	23,945
COHASSET	7.3	0.52	753	25	55
CONCORD	18.6	1.12	4,264	130	1,588
DEDHAM CORP. CENTER	12.3	0.37	3,496	79	317
EAST WEYMOUTH	9.3	0.46	864	51	1,590
ENDICOTT	24.9	1.19	2,688	51	5,680
FAIRMOUNT	11.8	0.46	1,277	56	4,743
FITCHBURG	20.8	0.74	4,001	84	7,078
FOREST HILLS	34.8	1.35	5,866	164	12,135
FORGE PARK/495	6.1	0.42	2,493	24	8

	Building GFA (M sq ft)	Vacant Land (M sq ft)	Bike Path (mi)	Bike Lane (mi)	Bike Route (mi)	Bike Facilities (mi)
	30.7	1.86	-	-	-	-
	24.3	1.89	-	-	-	-
	42.5	1.98	-	-	-	-
	19.7	2.52	488	-	-	488
	94.4	5.13	2,891	-	-	2,891
	55.8	0.78	-	-	-	-
	19.3	1.50	-	-	-	-
	704.0	5.27	-	-	-	-
	17.2	1.43	-	-	-	-
	85.8	1.30	575	168	-	743
	59.7	3.40	-	-	-	-
	88.8	2.09	-	-	-	-
	15.2	2.81	-	-	-	-
	65.5	2.21	2,055	7,162	100	9,317
	223.7	6.78	-	-	-	-
	35.6	1.47	-	-	-	-
	40.4	1.78	-	-	-	-
	23.7	1.41	-	-	-	-
	0.1	1.39	-	-	-	-
	104.5	6.10	-	-	-	-
	20.6	3.50	59	1,156	-	1,215
	37.1	1.25	-	-	-	-
	27.6	1.86	-	-	-	-
	11.6	0.50	-	-	-	-
	231.6	2.82	-	-	-	-
	6.0	3.59	1,502	867	-	2,369
	60.9	2.13	-	-	-	-
	23.1	1.68	641	1,691	-	2,332
	15.3	1.78	1,186	-	-	1,186
	81.8	1.71	679	3,504	687	4,871
	47.1	1.62	1,923	2,887	-	4,810
	76.3	2.75	-	-	-	-
	120.8	6.38	-	-	-	-
	5.8	2.30	-	-	-	-

FOUR CORNERS/ GENEVA AVE	20.6	0.66	2,520	106	14,357
FOXBORO (SPECIAL EVENT)	17.1	1.08	3,732	60	828
FRAMINGHAM	34.2	1.64	8,530	240	8,522
FRANKLIN/DEAN COLLEGE	19.5	0.99	3,543	124	3,506
GLOUCESTER	17.0	0.55	3,787	175	6,422
GRAFTON	6.1	0.51	828	3	264
GREENBUSH	10.2	0.69	807	26	231
GREENWOOD	14.7	0.67	576	38	2,728
HALIFAX	5.4	0.40	22	3	93
HAMILTON/WENHAM	20.8	1.28	1,713	58	1,831
HANSON	5.9	0.50	300	21	137
HASTINGS	7.0	0.49	102	6	313
HAVERHILL	17.2	0.79	4,981	198	8,533
HERSEY	20.1	0.90	221	13	4,039
HIGHLAND	16.1	0.61	1,811	70	5,143
HOLBROOK/ RANDOLPH	18.5	1.03	1,586	89	3,407
HYANNIS (S)	18.1	0.90	7,666	305	2,486
HYDE PARK	21.3	1.01	2,739	128	8,445
IPSWICH	14.0	0.69	3,307	103	2,948
ISLINGTON	13.2	0.92	3,536	47	2,443
JFK/UMASS	26.6	0.92	4,487	111	15,502
KENDAL GREEN	6.7	0.54	1,441	5	615
KINGSTON	2.4	0.25	299	17	0
LAWRENCE	30.9	1.34	10,954	283	13,239
LINCOLN	7.8	0.62	564	15	170
LITTLETON/ROUTE 495	6.0	0.46	834	5	82
LOWELL	20.5	0.67	5,493	159	8,346
LYNN	36.7	1.46	12,897	372	28,807
MALDEN CENTER	46.5	1.57	10,368	320	22,443
MANCHESTER	11.1	0.69	1,161	53	1,157
MANSFIELD	23.9	1.27	3,250	113	3,899
MELROSE HIGHLANDS	25.5	1.15	1,484	66	6,597
MELROSE/CEDAR PARK	16.0	0.71	4,650	76	4,912
MIDDLEBOROUGH/ LAKEVILLE	7.3	0.55	1,138	41	554
MISHAWUM	9.5	0.57	4,795	93	724

	123.2	2.96	-	-	-	-
	30.3	3.73	-	-	-	-
	81.9	12.46	1,474	1,565	-	3,038
	43.9	2.42	-	-	-	-
	79.2	1.84	-	-	-	-
	0.9	2.38	-	-	-	-
	7.8	1.34	819	-	-	819
	28.0	1.31	-	-	-	-
	3.3	0.57	-	-	-	-
	45.6	2.53	-	-	-	-
	6.9	1.58	-	-	-	-
	15.7	0.38	-	-	-	-
	87.8	2.54	-	-	-	-
	40.1	1.36	111	-	1,390	1,501
	59.4	0.73	-	-	-	-
	40.7	3.89	-	-	-	-
	58.1	2.96	445	-	-	445
	86.1	4.02	3,500	6,693	227	10,421
	37.7	1.77	-	-	-	-
	45.6	1.33	-	811	413	1,224
	103.7	3.65	-	-	-	-
	13.8	1.39	-	-	-	-
	6.1	2.54	164	-	-	164
	204.1	5.28	-	-	-	-
	6.3	0.34	-	-	-	-
	7.5	2.17	-	-	-	-
	98.4	2.27	-	-	-	-
	199.2	3.31	-	-	-	-
	206.1	2.76	-	-	-	-
	24.2	1.25	-	-	-	-
	65.8	4.82	512	-	-	512
	73.0	2.10	-	-	-	-
	52.0	1.37	-	-	-	-
	12.0	2.56	1,666	525	-	2,191
	32.5	1.02	-	-	-	-

MONTELLO	24.6	1.18	2,826	96	5,615
MONTSERRAT	25.2	1.20	1,934	40	4,298
MORTON STREET	22.2	0.86	1,707	102	13,914
NANTASKET JUNCTION	5.1	0.38	34	0	355
NATICK	35.1	1.58	4,999	190	6,828
NEEDHAM CENTER	21.3	1.03	3,550	145	4,442
NEEDHAM HEIGHTS	20.5	0.91	3,326	47	4,817
NEEDHAM JUNCTION	8.6	0.36	1,225	31	1,501
NEWBURYPORT	22.4	1.25	4,008	68	1,710
NEWMARKET	25.1	0.78	24,968	146	6,159
NEWTONVILLE	52.1	2.19	11,031	263	14,556
NORFOLK	9.0	0.69	945	28	174
NORTH BEVERLY	18.1	1.01	2,773	85	2,145
NORTH BILLERICA	14.0	0.86	471	12	1,733
NORTH LEOMINSTER	14.5	0.87	1,479	52	969
NORTH SCITUATE	12.4	0.91	1,106	67	596
NORTH STATION	43.0	1.09	63,014	739	22,544
NORTH WILMINGTON	13.2	0.90	481	31	889
NORWOOD CENTRAL	17.2	0.81	4,605	128	3,770
NORWOOD DEPOT	15.8	0.68	2,935	103	3,576
PLIMPTONVILLE	9.5	0.62	362	9	994
PLYMOUTH	4.1	0.27	1,323	43	401
PORTER SQUARE	77.6	2.40	23,420	805	45,807
PRIDES CROSSING	7.1	0.58	986	7	847
QUINCY CENTER	23.5	0.93	9,306	167	6,771
READING	35.1	1.56	3,688	165	6,258
READVILLE	22.9	1.00	1,980	72	3,431
RIVER WORKS	16.0	0.77	6,453	104	3,850
ROCKPORT	10.4	0.52	719	37	1,452
ROSLINDALE VILLAGE	25.8	1.12	2,859	153	15,548
ROUTE 128	0.7	0.08	0	0	0
ROWLEY	5.3	0.42	253	13	60
RUGGLES	46.5	1.20	21,011	302	31,967
SALEM	11.0	0.38	5,017	132	3,918
SHARON	10.9	0.63	1,117	39	1,309
SHIRLEY	12.8	0.82	1,748	30	877
SILVER HILL	6.3	0.47	53	1	630
SOUTH ACTON	10.9	0.81	336	20	484
SOUTH ATTLEBORO	6.5	0.32	1,071	20	629

	58.0	2.24	-	-	-	-
	42.0	3.30	-	-	-	-
	136.2	3.04	-	967	-	967
	6.0	2.95	807	1,097	-	1,904
	77.0	2.96	-	-	-	-
	40.5	3.81	-	-	-	-
	36.7	4.17	-	-	-	-
	11.5	1.14	337	-	-	337
	55.7	5.80	-	-	-	-
	117.9	4.90	-	-	-	-
	264.7	3.06	-	-	-	-
	13.3	1.32	-	-	-	-
	28.8	2.32	-	-	-	-
	19.9	2.16	-	-	-	-
	37.0	2.13	-	-	-	-
	15.2	2.61	-	-	-	-
	443.6	5.65	-	-	-	-
	15.4	1.58	-	-	-	-
	75.2	1.59	-	-	-	-
	54.3	1.09	-	-	-	-
	21.5	1.46	-	-	-	-
	17.9	0.95	-	-	-	-
	638.7	3.84	-	-	-	-
	8.5	0.63	-	-	-	-
	128.8	2.56	214	7,341	213	7,769
	72.0	2.48	-	-	-	-
	50.3	8.24	4,276	4,974	655	9,904
	34.6	1.80	-	-	-	-
	26.2	2.23	-	-	-	-
	208.3	2.98	-	-	-	-
	0.0	0.68	-	10	-	10
	7.7	0.95	-	-	-	-
	250.3	11.46	-	-	-	-
	78.2	1.56	-	-	-	-
	27.0	1.14	-	-	-	-
	12.0	4.10	-	-	-	-
	14.1	0.62	-	-	-	-
	18.8	4.07	-	-	-	-
	8.3	1.10	-	-	-	-

SOUTH STATION	38.1	1.20	193,386	1,397	13,139
SOUTH WEYMOUTH	13.2	0.87	683	25	574
SOUTHBOROUGH	5.1	0.38	77	4	73
STOUGHTON	28.6	1.29	4,595	138	5,446
SWAMPSCOTT	24.5	0.92	2,932	117	9,835
TALBOT AVENUE	26.7	0.84	2,899	139	15,127
UPHAMS CORNER	28.3	0.86	3,747	173	19,568
WACHUSETT	3.7	0.31	119	4	81
WAKEFIELD	33.4	1.50	6,018	239	7,556
WALPOLE	15.8	1.05	2,369	104	1,074
WALTHAM	42.2	1.54	20,390	450	19,978
WAREHAM (S)	23.7	1.46	2,849	71	1,281
WAVERLEY	37.0	1.46	6,285	161	12,971
WEDGEMERE	23.7	1.08	309	6	4,298
WELLESLEY FARMS	13.9	0.74	173	8	1,549
WELLESLEY HILLS	16.2	0.85	2,346	68	1,837
WELLESLEY SQUARE	22.5	1.04	5,388	187	3,172
WEST CONCORD	18.8	0.99	2,467	86	2,075
WEST GLOUCESTER	6.4	0.46	431	10	366
WEST HINGHAM	8.7	0.64	1,586	59	781
WEST MEDFORD	34.4	1.26	1,616	80	10,970
WEST NATICK	15.1	0.80	1,745	63	4,420
WEST NEWTON	27.8	1.24	3,678	95	6,280
WEST ROXBURY	26.2	1.12	2,921	104	7,818
WESTBOROUGH	4.6	0.30	146	1	283
WEYMOUTH LANDING/ EAST BRAINTREE	16.5	0.79	1,745	76	4,179
WHITMAN	27.0	1.46	2,059	94	4,936
WILMINGTON	19.2	1.16	2,469	125	1,721
WINCHESTER CENTER	22.3	0.97	3,759	149	4,577
WINDSOR GARDENS	2.9	0.21	40	0	520
WORCESTER	27.3	0.95	21,676	313	6,250
WYOMING HILL	21.4	0.99	2,278	108	8,405
YAWKEY	38.4	1.39	59,724	582	36,253

	882.0	8.89	-	-	-	-
	21.4	7.57	-	1,741	92	1,833
	2.8	1.52	-	-	-	-
	52.9	5.06	-	-	-	-
	74.1	1.27	-	-	-	-
	142.8	3.78	-	-	-	-
	167.0	3.91	-	-	-	-
	5.0	0.98	-	-	-	-
	92.1	3.81	-	-	-	-
	43.7	6.07	-	-	-	-
	181.1	2.74	-	-	-	-
	36.2	9.00	3,819	5,108	-	8,927
	105.3	7.78	-	-	-	-
	57.0	0.91	-	-	-	-
	26.5	1.93	-	-	-	-
	36.6	2.56	-	-	-	-
	40.4	3.24	-	-	-	-
	46.2	3.35	-	-	-	-
	10.5	2.30	-	-	-	-
	22.9	2.25	-	-	-	-
	134.3	3.16	-	-	-	-
	24.7	1.70	141	-	-	141
	125.0	1.73	-	-	-	-
	136.9	3.20	639	2,517	-	3,156
	4.8	1.43	-	-	-	-
	34.2	1.61	145	-	-	145
	68.0	3.45	-	-	-	-
	23.1	3.34	-	-	-	-
	60.7	1.53	-	-	-	-
	8.0	0.74	-	-	-	-
	199.7	2.61	702	3,027	-	3,729
	76.4	1.28	-	-	-	-
	383.3	5.16	-	-	-	-

Scenarios - Bicycle

Scenario 3 & 4 - Bicycle	Length (mi)	Area (sq mi)	Employment (Jobs)	Amenities (N)	Population
ABINGTON	24.3	1.66	1,803	94	2,712
ANDERSON/WOBURN	9.1	0.46	4,518	67	345
ANDOVER	26.7	1.48	5,927	161	4,384
ASHLAND	20.2	1.30	2,260	58	1,819
ATTLEBORO	37.8	1.75	8,043	153	9,527
AUBURNDALE	22.2	0.87	1,790	55	5,069
AYER	20.0	1.05	1,374	74	2,457
BACK BAY	48.3	1.40	96,952	1,451	48,718
BALLARDVALE	16.8	1.18	796	14	1,190
BELLEVUE	25.2	0.66	1,065	36	6,072
BELMONT	38.6	1.57	3,423	98	6,658
BEVERLY	29.9	1.23	5,542	278	11,264
BEVERLY FARMS	9.7	0.72	494	28	747
BLUE HILL AVENUE	27.3	0.81	1,826	64	7,205
BOSTON LANDING	63.2	2.08	20,648	608	37,280
BRADFORD	29.0	0.92	1,401	52	5,484
BRAINTREE	23.1	1.13	4,572	127	3,850
BRANDEIS/ROBERTS	19.1	0.72	14,453	26	1,864
BRIDGEWATER	1.8	0.15	34	8	684
BROCKTON	45.3	1.83	9,008	229	17,017
BUZZARDS BAY (S)	27.1	1.29	2,439	123	1,568
CAMPELLO	20.1	0.98	2,668	117	8,662
CANTON CENTER	17.7	1.18	2,032	77	3,624
CANTON JUNCTION	9.5	0.52	1,052	18	664
CHELSEA	42.9	1.65	15,903	299	27,681
COHASSET	9.9	0.75	884	33	392
CONCORD	24.0	1.60	4,956	143	2,175
DEDHAM CORP. CENTER	17.2	0.44	3,984	100	396
EAST WEYMOUTH	13.1	0.68	1,071	58	2,416
ENDICOTT	28.2	1.34	2,839	53	6,214
FAIRMOUNT	15.9	0.64	1,499	60	6,253
FITCHBURG	25.5	0.94	4,306	93	8,463
FOREST HILLS	41.6	1.57	6,716	191	13,192
FORGE PARK/495	9.8	0.69	4,628	77	389

	Building GFA (M sq ft)	Vacant Land (M sq ft)	Bike Path (mi)	Bike Lane (mi)	Bike Route (mi)	Bike Facilities (mi)
	45.5	2.79	-	-	-	-
	28.1	1.89	-	-	-	-
	58.3	3.55	-	-	-	-
	30.9	6.30	663	-	-	663
	130.6	6.07	4,563	-	-	4,563
	69.2	1.21	-	-	-	-
	28.5	3.08	-	-	-	-
	725.1	5.45	-	-	-	-
	25.0	2.52	-	-	-	-
	96.7	1.35	752	1,004	-	1,757
	82.4	3.78	-	-	-	-
	100.6	2.70	-	-	-	-
	16.0	3.02	-	-	-	-
	77.7	3.05	2,318	7,364	100	9,782
	261.8	7.70	-	-	-	-
	45.0	1.55	-	-	-	-
	54.1	2.59	-	-	-	-
	29.1	1.74	-	-	-	-
	0.5	1.57	-	-	-	-
	155.6	7.55	-	-	-	-
	27.5	4.53	59	1,764	-	1,823
	62.6	2.20	-	-	-	-
	39.8	2.43	-	-	-	-
	15.3	0.58	-	-	-	-
	284.0	4.79	-	-	-	-
	9.2	4.53	1,502	867	-	2,369
	73.6	2.97	-	-	-	-
	26.5	1.85	641	2,185	-	2,826
	21.4	2.25	1,215	-	-	1,215
	93.5	2.11	819	3,554	756	5,129
	65.6	1.89	2,094	2,942	-	5,035
	87.1	3.08	-	-	-	-
	136.6	6.85	-	-	-	-
	12.3	3.32	-	-	-	-

FOUR CORNERS/ GENEVA AVE	26.3	0.86	2,835	125	17,924
FOXBORO (SPECIAL EVENT)	21.6	1.37	3,806	66	932
FRAMINGHAM	46.5	2.33	14,605	281	12,869
FRANKLIN/DEAN COLLEGE	29.4	1.58	4,498	146	4,445
GLOUCESTER	21.4	0.72	4,149	197	7,325
GRAFTON	7.9	0.69	878	3	264
GREENBUSH	15.2	1.12	994	30	275
GREENWOOD	21.8	1.00	626	41	3,710
HALIFAX	11.1	0.80	34	4	913
HAMILTON/WENHAM	28.6	1.84	1,914	62	2,033
HANSON	9.6	0.87	350	25	230
HASTINGS	8.9	0.68	105	7	476
HAVERHILL	27.7	1.37	6,670	242	12,640
HERSEY	24.1	1.11	268	15	4,934
HIGHLAND	20.1	0.74	2,138	84	5,986
HOLBROOK/ RANDOLPH	29.3	1.62	2,996	133	5,063
HYANNIS (S)	24.8	1.22	10,344	347	3,319
HYDE PARK	24.0	1.16	2,838	134	9,066
IPSWICH	20.1	1.10	3,340	107	3,458
ISLINGTON	18.5	1.48	8,616	71	2,825
JFK/UMASS	29.0	1.03	5,125	137	17,268
KENDAL GREEN	9.5	0.76	1,907	14	787
KINGSTON	3.3	0.32	299	17	22
LAWRENCE	42.6	1.84	16,137	431	18,264
LINCOLN	10.7	0.88	580	15	179
LITTLETON/ROUTE 495	7.9	0.66	920	7	82
LOWELL	40.6	1.36	10,352	384	19,569
LYNN	48.0	1.89	13,784	422	35,387
MALDEN CENTER	72.3	2.45	12,839	407	34,659
MANCHESTER	16.8	1.05	1,526	55	1,515
MANSFIELD	33.9	2.02	4,189	141	4,628
MELROSE HIGHLANDS	32.9	1.52	1,767	82	8,321
MELROSE/CEDAR PARK	18.3	0.87	4,741	78	5,952
MIDDLEBOROUGH/ LAKEVILLE	9.0	0.68	1,218	43	837
MISHAWUM	15.5	1.02	7,216	130	1,851

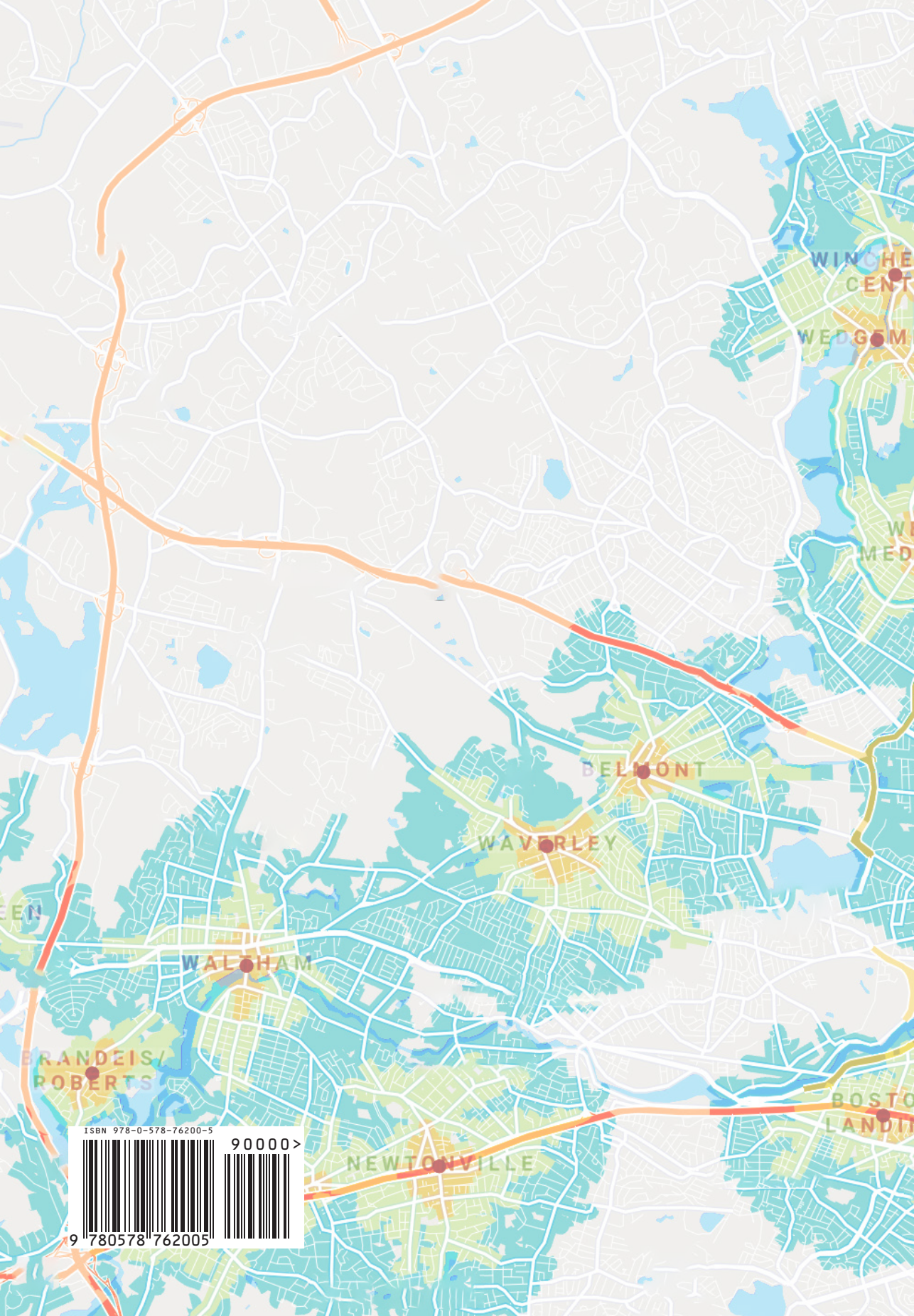
	156.7	3.58	-	-	-	-
	35.9	7.69	-	-	-	-
	107.1	14.59	1,474	1,814	-	3,287
	61.5	3.40	-	-	-	-
	91.2	2.73	-	-	-	-
	1.5	2.60	-	-	-	-
	13.1	3.24	1,318	-	-	1,318
	39.6	2.96	-	-	-	-
	8.9	1.00	-	-	-	-
	57.5	3.63	-	-	-	-
	9.9	2.09	-	-	-	-
	21.7	0.43	-	-	-	-
	124.8	3.34	-	-	-	-
	49.3	1.88	111	-	1,679	1,790
	96.7	1.18	-	-	-	-
	64.2	6.87	-	-	-	-
	70.2	5.02	445	-	-	445
	93.6	4.46	3,974	7,838	227	12,040
	45.9	2.30	-	-	-	-
	63.8	2.55	-	811	788	1,599
	121.1	7.00	-	-	-	-
	24.1	1.89	-	-	-	-
	8.9	2.54	164	-	-	164
	283.3	7.20	-	-	-	-
	8.7	0.50	-	-	-	-
	8.9	3.61	-	-	-	-
	222.5	3.94	-	-	-	-
	238.9	4.07	-	-	-	-
	292.8	3.82	-	-	-	-
	30.8	2.38	-	-	-	-
	87.3	6.89	761	-	-	761
	90.8	2.56	-	-	-	-
	62.9	1.45	-	-	-	-
	17.5	2.78	1,824	525	-	2,348
	57.7	1.95	-	-	-	-

MONTELLO	41.2	2.06	3,588	128	9,338
MONTSERRAT	33.6	1.56	6,904	58	5,140
MORTON STREET	24.8	1.01	1,920	110	16,695
NANTASKET JUNCTION	6.2	0.40	34	0	330
NATICK	43.8	2.11	5,128	198	7,677
NEEDHAM CENTER	25.0	1.29	3,748	151	4,982
NEEDHAM HEIGHTS	24.7	1.13	6,048	50	5,499
NEEDHAM JUNCTION	10.6	0.46	1,238	31	1,726
NEWBURYPORT	27.1	1.55	4,305	75	2,318
NEWMARKET	28.9	0.88	26,686	165	7,645
NEWTONVILLE	56.2	2.40	11,600	277	15,815
NORFOLK	13.0	1.03	957	29	254
NORTH BEVERLY	22.3	1.25	3,779	105	2,604
NORTH BILLERICA	21.7	1.39	2,593	31	2,105
NORTH LEOMINSTER	23.3	1.41	2,022	61	2,060
NORTH SCITUATE	18.1	1.32	1,139	70	721
NORTH STATION	47.4	1.22	70,942	895	27,006
NORTH WILMINGTON	20.7	1.37	769	35	1,227
NORWOOD CENTRAL	22.9	1.08	4,661	131	5,110
NORWOOD DEPOT	23.6	0.97	3,208	109	4,880
PLIMPTONVILLE	18.0	1.10	679	38	2,202
PLYMOUTH	8.6	0.55	1,966	81	1,304
PORTER SQUARE	88.5	2.77	25,568	870	52,661
PRIDES CROSSING	8.2	0.63	993	7	847
QUINCY CENTER	34.1	1.35	10,850	204	9,546
READING	43.7	1.99	4,366	189	8,101
READVILLE	26.0	1.18	2,036	77	4,070
RIVER WORKS	24.6	1.15	6,849	124	6,416
ROCKPORT	14.7	0.75	1,229	59	2,009
ROSLINDALE VILLAGE	31.0	1.34	3,220	178	17,034
ROUTE 128	0.8	0.10	0	0	0
ROWLEY	8.9	0.66	399	23	92
RUGGLES	54.7	1.44	37,129	327	38,328
SALEM	19.5	0.69	6,432	207	7,475
SHARON	14.4	0.92	1,208	39	1,512
SHIRLEY	19.1	1.27	1,771	32	1,038
SILVER HILL	9.0	0.67	67	1	781
SOUTH ACTON	15.8	1.18	404	22	881
SOUTH ATTLEBORO	10.4	0.50	1,343	38	986

	90.0	3.99	-	-	-	-
	56.4	4.18	-	-	-	-
	157.8	4.07	-	967	-	967
	6.6	2.97	905	1,097	-	2,002
	86.9	3.52	-	-	-	-
	50.2	4.12	-	-	-	-
	42.6	5.45	-	-	-	-
	14.0	1.17	432	-	-	432
	70.1	6.34	-	-	-	-
	138.2	6.62	-	-	-	-
	284.5	3.72	-	-	-	-
	19.2	1.69	-	-	-	-
	36.0	4.18	-	-	-	-
	31.0	3.97	-	-	-	-
	55.9	4.48	-	-	-	-
	21.2	3.50	-	-	-	-
	478.0	7.11	-	-	-	-
	22.1	5.06	-	-	-	-
	90.9	2.11	-	-	-	-
	70.8	1.79	-	-	-	-
	41.9	2.14	31	-	-	31
	28.5	1.91	-	-	-	-
	720.0	3.94	-	-	-	-
	8.7	0.85	-	-	-	-
	169.7	3.07	365	8,515	213	9,093
	86.9	3.61	-	-	-	-
	61.1	8.96	4,819	5,211	696	10,727
	53.9	3.67	-	-	-	-
	39.2	2.64	-	-	-	-
	233.9	3.61	-	198	-	198
	0.0	0.68	-	10	-	10
	13.4	1.57	-	-	-	-
	309.2	12.05	-	-	-	-
	124.0	2.11	-	-	-	-
	33.9	1.40	-	-	-	-
	16.1	7.89	-	-	-	-
	20.0	1.12	-	-	-	-
	26.0	4.98	-	-	-	-
	15.6	1.66	-	-	-	-

SOUTH STATION	40.5	1.29	197,699	1,480	14,722
SOUTH WEYMOUTH	16.9	1.14	777	41	774
SOUTHBOROUGH	8.6	0.67	82	5	220
STOUGHTON	38.6	1.88	5,042	166	6,708
SWAMPSCOTT	37.7	1.42	3,405	146	15,775
TALBOT AVENUE	34.2	1.04	3,949	183	18,294
UPHAMS CORNER	34.5	1.12	4,718	224	24,876
WACHUSETT	6.7	0.57	568	5	176
WAKEFIELD	44.8	2.08	7,021	252	9,994
WALPOLE	21.8	1.45	2,530	109	1,943
WALTHAM	58.4	2.22	21,740	522	24,810
WAREHAM (S)	26.4	1.65	3,267	72	1,548
WAVERLEY	44.8	1.78	7,225	180	14,512
WEDGEMERE	31.0	1.41	477	7	6,140
WELLESLEY FARMS	19.2	1.03	995	15	2,356
WELLESLEY HILLS	22.8	1.20	2,418	69	2,381
WELLESLEY SQUARE	32.3	1.61	5,701	191	4,936
WEST CONCORD	24.0	1.30	3,174	99	2,945
WEST GLOUCESTER	9.5	0.66	522	13	437
WEST HINGHAM	13.6	0.95	2,163	88	1,364
WEST MEDFORD	54.3	1.94	3,074	151	16,756
WEST NATICK	24.2	1.25	2,385	84	6,428
WEST NEWTON	33.9	1.52	4,388	100	7,721
WEST ROXBURY	30.1	1.31	5,573	116	8,840
WESTBOROUGH	6.3	0.44	162	2	322
WEYMOUTH LANDING/ EAST BRAINTREE	26.5	1.32	2,744	120	6,680
WHITMAN	34.6	2.05	2,542	113	5,543
WILMINGTON	29.2	1.87	3,924	146	2,533
WINCHESTER CENTER	30.3	1.35	4,884	172	6,285
WINDSOR GARDENS	5.4	0.38	405	1	1,135
WORCESTER	41.2	1.45	24,288	404	11,628
WYOMING HILL	27.4	1.26	2,786	117	9,778
YAWKEY	41.9	1.56	92,695	614	41,329

	909.4	10.27	-	-	-	-
	26.4	8.91	-	1,741	92	1,833
	5.5	12.06	-	-	-	-
	66.0	6.55	-	-	-	-
	113.7	1.59	-	-	-	-
	175.6	4.23	-	-	-	-
	220.4	4.80	-	-	-	-
	7.0	2.87	-	-	-	-
	117.0	4.80	-	-	-	-
	57.9	6.91	-	-	-	-
	236.0	3.83	-	-	-	-
	43.6	9.90	3,819	5,108	-	8,927
	119.0	11.26	-	-	-	-
	73.7	1.32	-	-	-	-
	36.0	2.64	-	-	-	-
	49.5	3.20	-	-	-	-
	58.9	3.78	-	-	-	-
	55.6	3.95	-	-	-	-
	14.0	2.92	-	-	-	-
	38.1	2.81	189	-	245	434
	199.0	5.26	-	-	-	-
	41.7	3.22	526	-	-	526
	151.8	2.04	-	-	-	-
	154.3	3.74	639	2,573	-	3,213
	6.3	2.09	-	-	-	-
	53.1	2.57	172	-	-	172
	88.4	6.74	108	-	-	108
	34.1	5.32	-	-	-	-
	81.3	1.87	-	-	-	-
	15.2	1.45	-	-	-	-
	268.6	4.49	1,504	3,118	-	4,622
	89.8	2.14	-	-	-	-
	424.0	5.46	-	-	-	-



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