Red Line Life Science Study

Executive Summary

April 2019

Project Background

In 2018, the municipalities of Braintree, Quincy, and Somerville asked the Metropolitan Area Planning Council (MAPC) to assist them in better understanding their individual and collective competitive advantages for attracting and growing businesses in the life science sector. As the Regional Planning Agency for the Boston Metro area, MAPC leveraged its expertise in economic development, corridor planning, real estate development, and stakeholder engagement to:

1. Evaluate the competitive advantages of the three municipalities toward supporting and expanding Life Science businesses.
2. Identify areas of opportunity and tools that the municipalities can use to strengthen their local life science sectors.

The project was supported by funding from the Commonwealth's District Local Technical Assistance fund and financial support from the municipalities of Braintree, Quincy, and Somerville.

Key Findings

MAPC's research indicates that while the three municipalities face strong competition from the established life science clusters and corridors in the state, they all have regionally unique assets that can be leveraged to support and expand existing activities and attract complementary businesses within the life science ecosystem.

Braintree

Braintree has competitively-priced industrial real estate and a surplus of available space that, if modernized, could support downstream and step-up businesses.

Quincy

The Quincy College Biotechnology program provides a regionally unique asset that could be leveraged to provide talent throughout the Red Line Corridor. It could also help catalyze new development opportunities via private sector partnerships.

Somerville

Somerville is well positioned to absorb demand from the core Cambridge/Boston market, but needs to produce move-in ready space to tap the locally available talent. Price points for new space will determine business accessibility.

Challenges

While these municipalities have some exciting opportunities, there are still a number of challenges to overcome:

Businesses increasingly make location decisions related to accessing workforce, and the three municipalities face strong competition in terms of business attraction from outside communities with larger and more diverse labor pools.

Variabilities in the real estate market of the three municipalities have not yielded the creation of move-in ready space to accommodate new or growing life science businesses, a key component of business attraction.

Collectively, the Red Line Life Science Corridor communities lack the resources to effectively market themselves and coordinate collective assets that might lead to more corridor business retention/ expansion outside of the core Cambridge and Boston areas.

Overcoming these challenges will require leadership from both municipal executives and staff, who will need to implement strategies designed to leverage each municipality's position within the regional life science ecosystem. Collectively the three municipalities could distinguish themselves as innovators within the sector and set new precedents for how municipal government can play a role in business development within a regional cluster.

To overcome these challenges, MAPC created recommendations for the municipalities, summarized to the right:

CHALLENGE ONE
Local Workforce

Short Term	Mid Term	Long Term
Work with local businesses and community high schools and colleges to participate in the MSLC High School Apprenticeship Challenge and Internship Challenge.	Implement a biotech/life science program at local technical high schools. Leverage connections with existing high school biotech programs in the region to share lessons learned and best practices (Brockton, Cambridge). Leverage Mass Life Sciences STEM Equipment and Supplies Grant Program.	Convene local and regional stakeholders in the education, workforce development, and economic development sectors to discuss programming synergies, networks, and connections within the life science industry. Create an action plan for establishing a partnership pathway with local life science businesses and training the local/regional talent pool.

CHALLENGE TWO
Real Estate Production

Short Term	Mid Term	Long Term
Undertake detailed soft site analysis to evaluate likely development sites or office to lab conversions, including an evaluation of properties within Opportunity Zones.	Assess financial feasibility of market driven lab or building retrofit for life science uses on possible development sites through a Pro Forma or residual land value analysis. Evaluate state or federal gap funding sources that could support real estate development.	Explore the creation of a funding source dedicated to the support of gap financing or capital equipment upgrades for life science oriented uses.

CHALLENGE THREE
Regional Collaboration and Marketing

Short Term	Mid Term	Long Term
Work with local businesses and institutions to host open houses for state and industry representatives, real estate developers, and venture capital firms.	Increase the presence and impact of the Red Line Corridor via upgrades to the website, marketing visibility, and program staffing.	As part of the Regional Economic Development Compact, designate an ombudsman or designated service provider to track and cultivate a pipeline of growth stage companies, inventory properties appropriate for life science use, work with businesses / developers on zoning and permitting issues, and accessing state incentives.

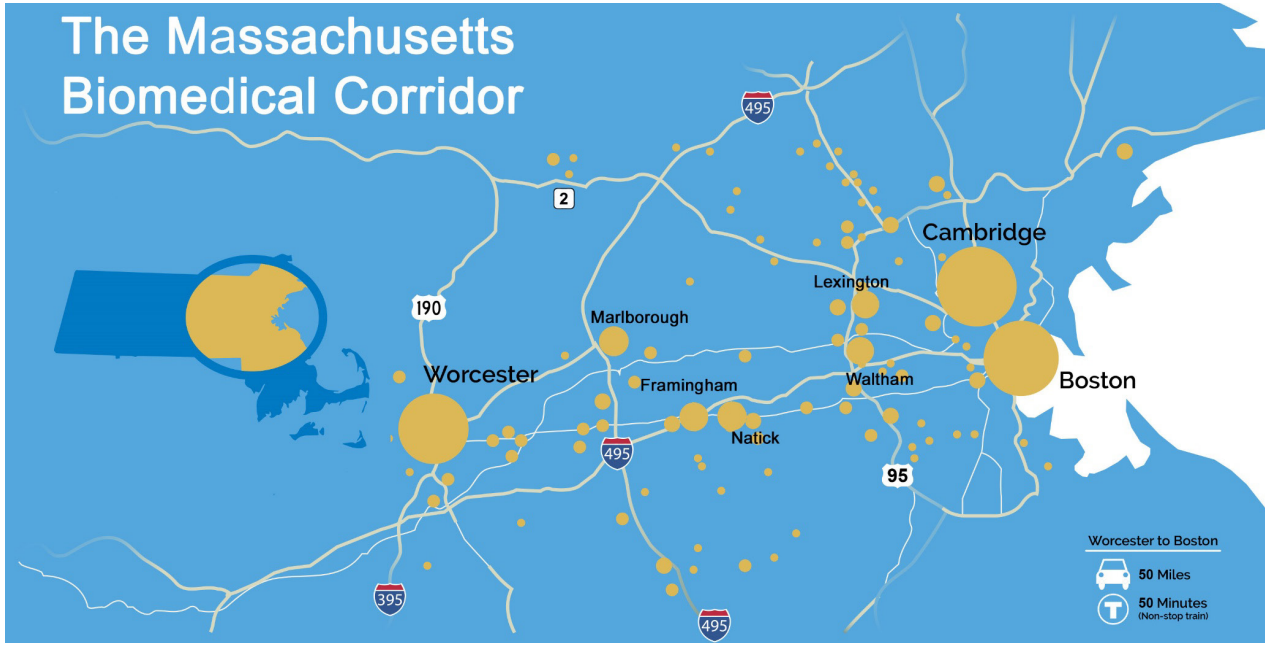
DETAILED FINDINGS

Introduction

Discussing the Boston region's dominance within the life science industry has almost become something of a cliché. With over 90,000 employees, 2,000 businesses, and 25 million square feet of lab space, Boston is the leader nationally—and arguably globally—in life science research and development and business growth[1].

While the explosion of growth has been by and large concentrated in the two epicenters of industry innovation—Kendall Square and, more recently, the Seaport—municipalities outside of Cambridge and Boston have also benefited from these businesses. The technology parks along Route 2, I-95, and the Mass Pike[1] that at one time housed the region's first generation of web and tech companies have become repurposed as regional or global headquarters for some of the world's largest life science businesses. That expansion has been doubly fueled by a secondary industry cluster growing out of Worcester and pushing east, which features many of the same ecosystem features as Cambridge and Boston, albeit on a slightly smaller scale.

Aiming to leverage Metro Boston's transportation infrastructure to connect different elements within the life science ecosystem, the five communities connected by the Red Line – Somerville, Cambridge, Boston, Quincy, and Braintree - formed a regional collaborative known as the Red Line Life Sciences Corridor to attract and retain businesses and the jobs they support. This collaborative has aimed to foster life science sector growth across municipal boundaries and further the brand of the Boston region within the sector.



Source: Mass BioEd

Since the designation of the collaborative, municipal representatives have worked together to market the corridor at industry events and support business development where possible. Now, five years into the collaborative, and despite its best efforts, the sector has continued to grow and develop along the pre-established east/west path between Kendall and Worcester, with little activity in the outlying Red Line Corridor municipalities.

Research Context

There is a wealth of published literature that discusses the elements needed to establish a life science cluster. However, the notion of clustering itself is regional (and often evaluated at the state[2] or even national[3] scale), and despite the amount of research that has been done on the topic, few resources evaluate steps that individual municipal jurisdictions can take to enhance their role within a regional cluster such as Metro Boston.

The focus of this report is to lay out those steps through a comprehensive evaluation of the communities' strengths and opportunity areas within three categories: workforce, real estate, and life science ecosystem. While this research is specific to the communities of Braintree, Quincy, and Somerville, this assessment process could be adopted by other municipalities in the future.

MAPC arrived at its final recommendations through three distinct phases of work:

1. Interviews with representatives from major regional and state industry organizations and associations, real estate developers, and businesses.

2. An extensive review of published literature, plans, and reports on life science clustering in the Boston region and beyond.

[1] Mass BioEd

[2] BioOhio

[3] Life Sciences Industrial Strategy (UK)

3. A rigorous quantitative analysis of the municipalities' strengths in available workforce, real estate, and elements of the life science ecosystem, as compared to four similar regional communities that have exhibited strong life science business attraction – Woburn, Watertown, Waltham, and Canton.

CONTEXT: THE THREE MUNICIPALITIES

Braintree

Farthest from the core Boston/Cambridge ecosystem, Braintree has found itself in a unique and advantageous position to build its contingent of life science businesses by leveraging vacant industrial real estate and low rental rates.

Citra Labs, A Biomet Biologics Company, a longtime Braintree operator known for manufacturing blood therapeutics, was recently purchased by Zimmer Biomet, a global producer of primarily orthopedic related medical devices. The Citra facility is being repositioned as a flagship facility for manufacturing both blood-related products and advanced medical devices in the orthopedic field. The business is scaling up its production workforce and will likely expand its facility in coming years.

At the same time, Haemonetics, a large-scale blood management and supply firm, is relocating from its long-time headquarters in Braintree to Boston, leaving an open question as to what will become of its hybrid office and lab space.

Quincy

Moving north, Quincy is also experiencing a timely moment to consider the best ways to expand life science presence.

The City has engaged in an ambitious plan to redevelop key areas of its downtown with FoxRock LLC, a master developer with extensive experience in the medical and life science fields.

In addition, Quincy College's Biotechnology and Good Manufacturing Practice program has been steadily expanding and currently serves as one of the only programs of its type in the state of Massachusetts.

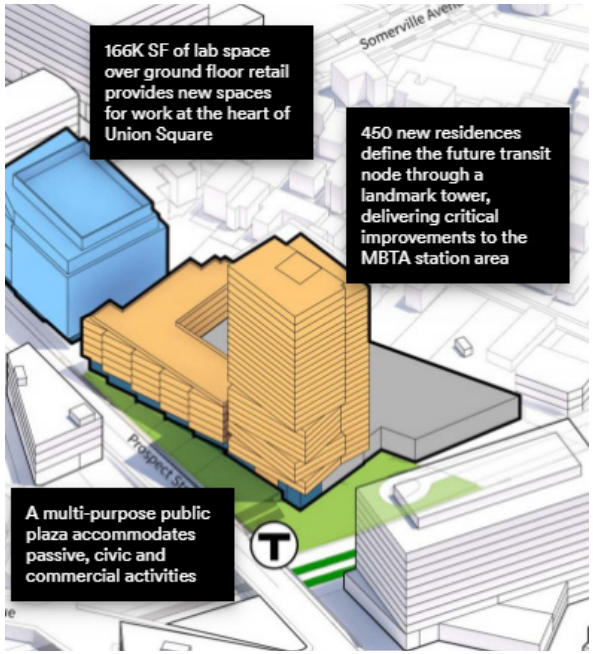
The possibilities of opening up space for new life science companies or converting some of Quincy's abundant office space into labs are beginning to appear.

Somerville

Finally, Somerville, with its direct proximity to Kendall Square but limited available real estate is actively building speculative lab space as part of the Union Square redevelopment.

An expected 250,000 square feet of space is expected to come online in the coming years. However, some of the city's existing life science businesses are feeling an immediate crunch for space.

Finch Therapeutics has expanded rapidly inside its Inner Belt location, but other businesses haven't been able to find appropriate spaces and have been forced to seek locations elsewhere. Managing the existing business stock and tapping into the incumbent workforce are big opportunities for the city in the near term.



Research Elements

WORKFORCE

If there is one element above all that is critical to the continued success of the life science industry in the Boston region, it is available and skilled labor. The overall employment in the life science industry has grown 20 percent in the last four years, and shows no signs of slowing down[4]. Businesses are taking a demographic approach to workforce attraction and retention, and are doing anything they can to bring in the highly-valued millennial age cohort[5]. This means locating in denser, transit-accessible locations and building out amenity-rich facilities to incentivize employee retention.

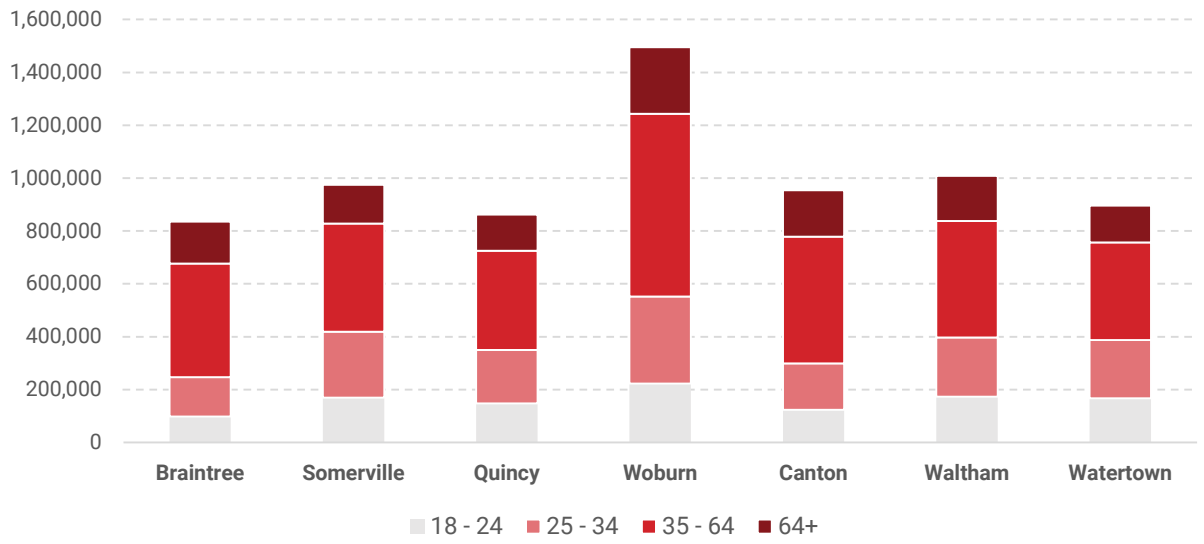
Tied in with the issue of workforce attraction are the issues of transportation and housing affordability. The region's traffic congestion is now legendary and housing costs have reached unprecedented peaks. These factors, in addition to the region's aging population, make it a difficult task to retain workers who can contribute and lead innovation. Many of the businesses in the area rely on immigrant labor to fill in these critical workforce needs via H1V visas. However, recent federal policies have begun to impact that labor pool as well, particularly from Muslim-majority countries[6].

However, it is not only PhD-level scientists who are in demand. The life science industry is in need of positions across a range of occupations and skill levels, with a growing demand for manufacturing employees spurred by a movement toward more customized personal therapeutics[7] and increased activity in medical device production[8].

While all three municipalities are part of the Boston core area, they each have geographic constraints

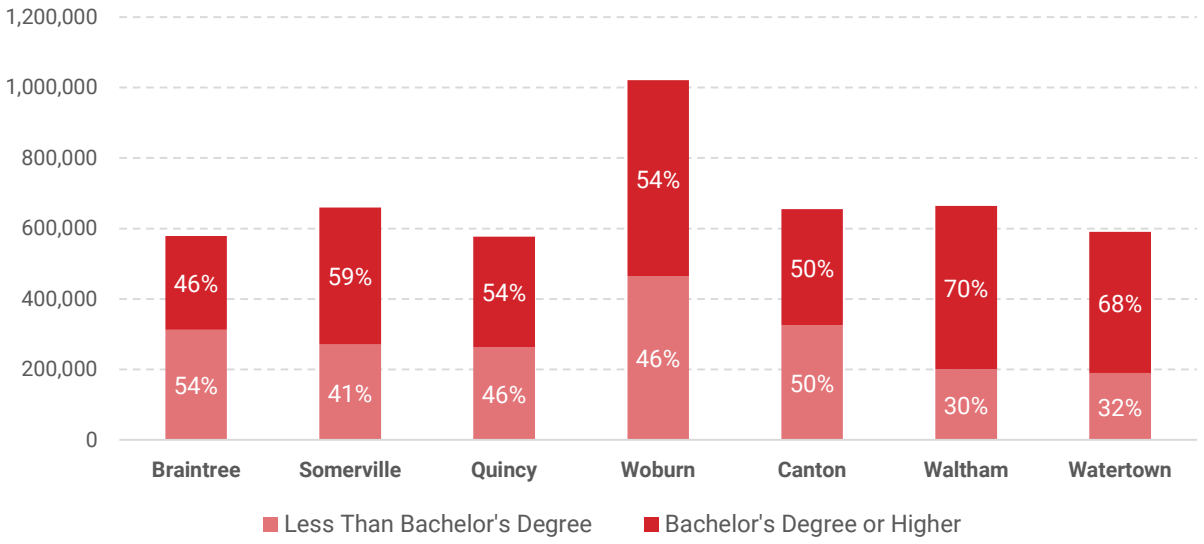
[4] Mass BioEd, 2019 Employment Outlook
[5] King St Properties, REBA 10/2018
[6] Meg Driscoll, Pharmalogics Recruiting. 3/11/2018
[7] Nodal Life Science Capabilities in Gateway Cities, MIT
[8] Jon Weaver, WBI

Workforce Available by Age - 30 Minute Drive Time From Selected Locations



Source: CTPS TAZ, ACS 5 Year 2016

Workforce Available by Education - 30 Minute Drive Time From Selected Locations



Source: CTPS TAZ, ACS 5 Year 2016

that dictate their immediately available labor. The four case study municipalities all exhibited strengths in terms of workforce availability with either larger, more educated, or younger labor sheds as compared to the three Red Line Corridor municipalities.

Braintree

Braintree exhibited the most challenges in terms of workforce access. The Braintree labor shed was the smallest, skewed the oldest, and had the smallest cohort of residents with a bachelor's degree or higher.

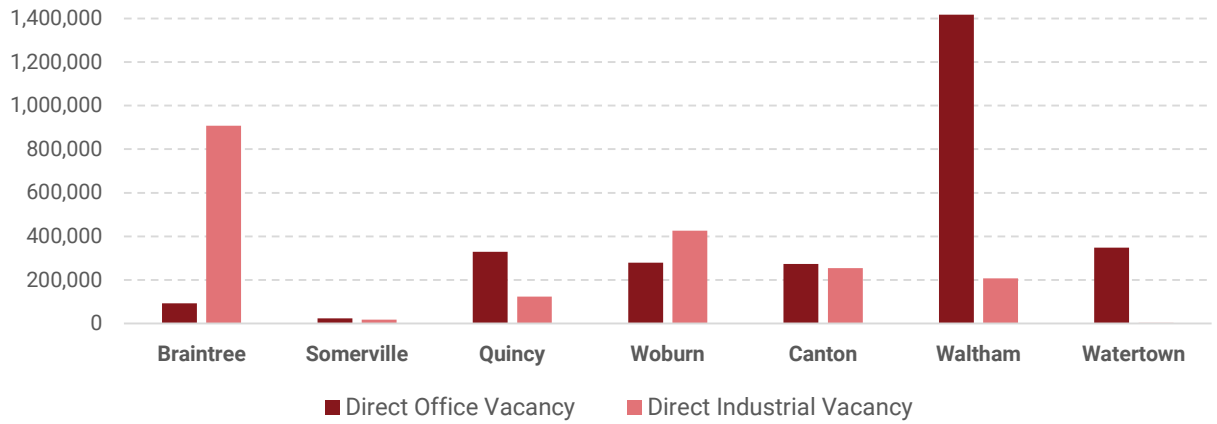
Quincy

Quincy fell in the middle of the pack in terms of most workforce indicators. The overall labor shed, like Braintree, was constrained and on the smaller side. However, the Quincy labor shed had a relatively even percentage of millennial aged workers (25 – 34) and educated workers as compared to the case study municipalities.

Somerville

Of the three municipalities evaluated, Somerville has the strongest advantage in terms of workforce. Its location north of Boston gives it access to much of the labor shed that feeds the core life science cluster. The Somerville labor shed has a high contingent of both millennial and educated workers.

Direct Vacancy by Square Feet



Source: CoStar 2018

REAL ESTATE

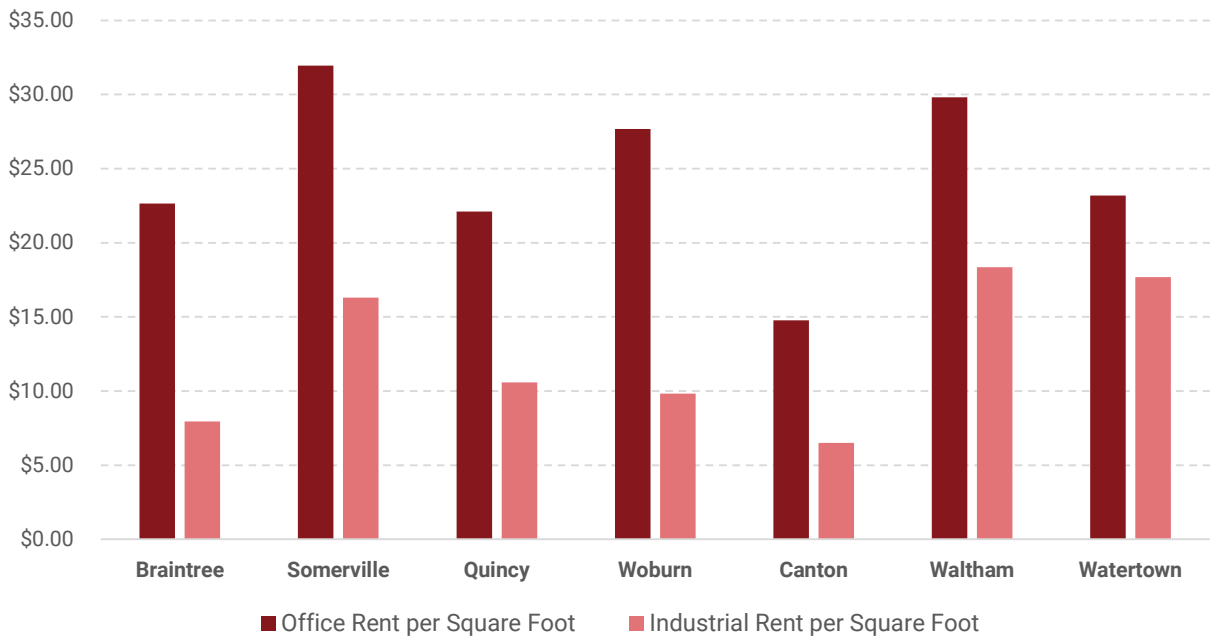
In addition to workforce, experts within the life science industry pointed to the critical role that available and appropriate real estate plays in attracting and retaining life science businesses. Due to the velocity with which business moves within the sector, driven in large part by fast-moving venture capital, the availability of move-in ready real estate may be the final factor leading a business toward location decisions. The acceptance of venture capital essentially starts a ticking clock for businesses to commercialize products or prove progress to attract more venture. Most newly-minted businesses don't have time to waste fitting out a lab.

It is important to note that businesses at different stages in their life cycle and within different segments of the life science industry will have different spatial, locational, and price point requirements. Businesses with commercialized products—such as medical device manufacturers—don't have the same incentive to locate near academic institutions or research hospitals as start-up phase operators do, because they no longer need the resources those establishments provide (such as specialized equipment or research staff). Similarly, businesses with limited venture funding or those seeking to avoid venture capital are less likely to be able to afford premium lab space in Kendall Square or the Seaport, where rents are pushing $80 per square foot[10].

Life science-equipped spaces are not cheap to build and office-to-lab or industrial-to-lab retrofits often require certain existing building infrastructure. The cost of construction leads these spaces to be built in locations where market rents support development under current conditions. Therefore, the pattern of development

[10] Tom Weaver, MassBioMedic, 2/11/2018

Rents by Square Feet



Source: CoStar 2018

is reinforced toward already established locations and it is difficult to encourage new development or conversion in markets that aren't proven successes. The mismatch between market rents and construction costs presents a chicken and egg challenge for the communities of Braintree and to some extent Quincy. It may be the case that until the rental markets in these communities catch up to support construction costs, any new life science development or spatial conversion will be driven by established businesses or owner-occupant users, unless there is subsidy from the state or municipal government.

However, the development community has been steadily marching south of the Seaport district in search of opportunity sites for both high class office and lab space. Development proposals for the former Boston Globe site (135 Morrissey Blvd)[11] and Bayside Expo Center[12] both include planned space for lab users and, while neither project has broken ground yet, those proposals may be indicative of the appetite for developers to explore non-traditional sites near transit connections.

With the exception of Watertown, the comparative municipalities all exhibited clear advantages in terms of the scale of space available in their communities.

[14] http://www.bostonplans.org/projects/development-projects/135-morrissey-boulevard

[15] https://www.bostonglobe.com/business/2018/09/11/imagining-corporate-campus-umass-nearing-decision-developer-for-bayside/BktSTwjImdg2PIpM8ESAZK/story.html

Braintree

While Braintree has a relatively small amount of office and industrial space overall, it does have several large-scale industrial properties that are empty and contribute to a near 50 percent industrial vacancy rate. The high vacancy rate combined with low rent prices per square foot set the stage for future revitalization efforts, pending appropriate financing and users.

Quincy

Quincy's real estate advantage comes from its large office portfolio. The City has ample available office space and comparable rents to the other municipalities evaluated. It is unclear whether the construction costs associated with office-to-lab conversions would make economic sense under current conditions, but new development in the downtown area may be pointing to a market interest in Quincy Center with leverage from Quincy College's presence.

Somerville

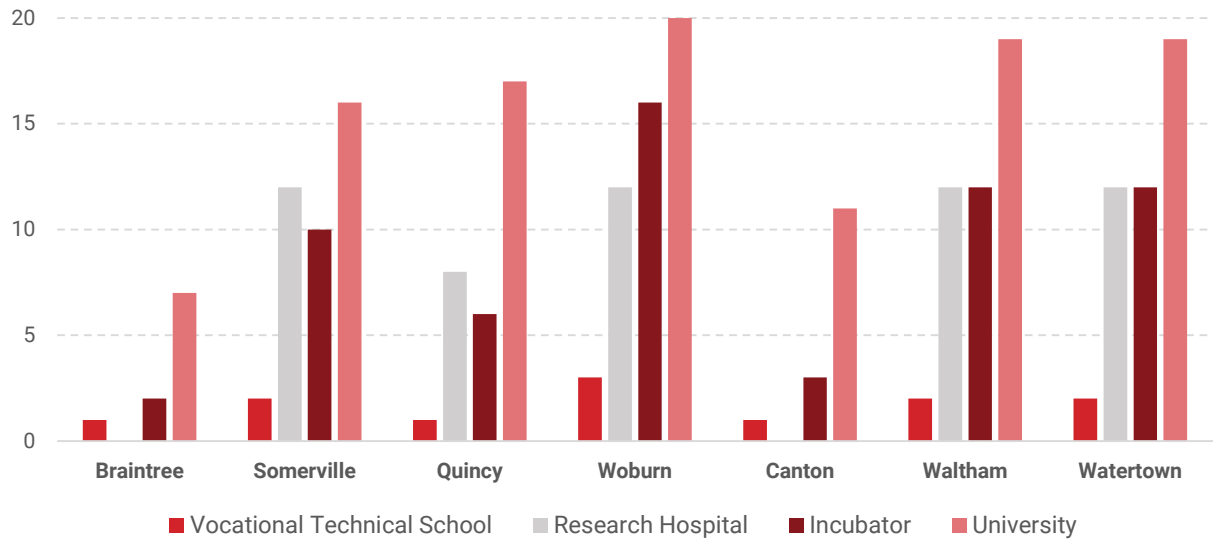
Somerville displays a strong rental market for both industrial and office spaces, which sets the stage to encourage new development, as exhibited by ongoing activities in Union Square. The challenge that Somerville will need to grapple with is how to continue to bring space online that has accessible rents for a range of businesses and allows for the integration of production to ensure a range of job types in the city.

ECOSYSTEM

The third critical element of business attraction is proximity to the various support components within the life science ecosystem. These components are traditionally categorized as research hospitals, universities, incubator spaces, and similar businesses. For purposes of this work, we have included vocational technical schools whether they have a life science program or not.

MAPC found that the municipalities with better access to the 95 belt had stronger relationships to the ecosystem elements assessed, with the exception of Canton, which finds its strength squarely in the manufacturing sector. Somerville scored the strongest in relation to the life science ecosystem, again due to its proximity with Kendall, the Seaport district, and the Route 2 and MassPike corridors.

Life Science Ecosystem Support Components Within a 30-Minute Drive



Sources: MassBio, MassBio Ed, Mass DOE, Mass Life Sciences

OUR LIFE SCIENCE CATEGORIES

The type and strength of a municipality's life science ecosystem is particularly important for understanding the type and stage of business a municipality is positioned to attract. For the purposes of this work, MAPC has classified businesses as falling into three categories within the life sciences. These three business types all have different spatial requirements, whether they are office, lab, or industrial users.

Upstream: Early stage businesses engaged in the research and development of new drugs or devices. Typically supported by venture, angel, or NIH capital.

Downstream: Businesses that engage or assist with the commercialization and production of upstream business products.

Support: Business entities that don't play a direct role in the development or commercialization of a life science product but support the ecosystem in some way.

Braintree

MAPC's analysis indicates that Braintree is the most competitive downstream business.

Quincy

Quincy has strengths in all three categories due to its dynamic real estate, workforce, and ecosystem access.

Somerville

Somerville is best positioned to support upstream businesses.

RECOMMENDATIONS

Through a comprehensive evaluation of the communities' strengths and opportunities, MAPC's recommendations are focused on the three elements of a life science ecosystem that municipal actors can most accessibly influence: workforce, real estate, and regional collaboration/marketing. See the full recommendations on the next page.

RECOMMENDATIONS: RED LINE LIFE SCIENCE CORRIDOR STUDY

CHALLENGE ONE
Local Workforce Availability

Businesses increasingly make decisions related to accessing workforce and Somerville, Quincy, and Braintree face strong competition in terms of workforce attraction from outside communities.

SHORT TERM

Work with local businesses and community high schools and colleges to participate in the MSLC High School Apprenticeship Challenge and Internship Challenge.

MID TERM

Implement a biotech / life science program at local technical high schools. Leverage connections with existing HS biotech programs in the region to share lessons learned and best practices (Brockton, Cambridge). Leverage Mass Life Sciences STEM Equipment and Supplies Grant Program.

LONG TERM

Convene local and regional stakeholders in the education, workforce development, and economic development sectors to discuss programming synergies, networks, and connections within the life science industry. Create an action plan for establishing a partnership pathway with local life science businesses and training the local/regional talent pool.

CHALLENGE TWO
Real Estate Production

Variabilities in the real estate market of the three municipalities have not yielded the creation of move in ready space to accommodate new or growing life science businesses.

SHORT TERM

Undertake detailed soft site analysis to evaluate likely development sites or office to lab conversions, including an evaluation of properties within Opportunity Zones.

MID TERM

Assess financial feasibility of market driven lab or building retrofit for life science uses on possible development sites through a Pro Forma or residual land value analysis. Evaluate state or federal gap funding sources that could support real estate development.

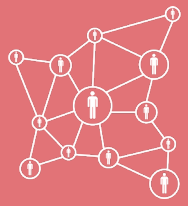
LONG TERM

Explore the creation of a funding source dedicated to the support of gap financing or capital equipment upgrades for life science oriented uses.

CHALLENGE THREE
Regional Collaboration

Red Line Life Science Corridor Communities lack the resources to effectively market themselves and coordinate collective assets that might lead to more corridor business retention / expansion outside of the core Cambridge and Boston areas.

SHORT TERM



Work with local businesses and institutions to host open houses for state and industry representatives, real estate developers, and venture capital firms.

MID TERM

Increase the presence and impact of the Red Line Corridor via upgrades to the website, marketing visibility, and program staffing.

LONG TERM

As part of the Regional Economic Development Compact, designate an ombudsman or designated service provider to track and cultivate a pipeline of growth stage companies, inventory properties appropriate for life science use, work with businesses / developers on zoning and permitting issues, and accessing state incentives.