TALENT

A. Big Questions and Big Ideas

1. Population Changes and Key Drivers.

   a. **Population level - Specify the changes in total population in your community and state over the last five years and the major reasons for these changes. Please also identify the majority source of inbound migration.**

The City of Boston, the metropolitan region, and the Commonwealth of Massachusetts have experienced strong growth over the past five years. Boston's population growth has been particularly strong, growing 5.5% to 672,840. Boston's growth rate has been similar to San Francisco's over this time period and faster than cities such as New York, Los Angeles, Chicago, and Philadelphia.

Population Growth	2012	2016	% growth
City of Boston	637,516	672,840	5.5%
City of Revere	51,729	53,165	2.8%
Boston-Cambridge-Nashua, MA-NH Metropolitan NECTA	4.8 million	4.9 million	2.5%
Massachusetts	6.6 million	6.8 million	2.5%

Source: U.S. Census Bureau, 2012 and 2016 1-year American Community Surveys, BPDA Research Division Analysis

Migration is the major driver of population growth in Boston, with the city seeing a net annual gain of approximately 6,000 migrants.[1] Job-seekers are the majority source of inbound migration to Boston. Total jobs located in Boston have grown even faster than the population, with opportunities growing 13.3% over five years, from 700,750 in 2012 to 794,038 in 2016.[2] Boston's world-renowned colleges and universities are also a significant attraction for migrants, as 38% of Boston's new arrivals are enrolled in a college or university. Over 70% of new arrivals to Boston are between the ages of 18 to 34, highlighting Boston's reputation as a youthful, vibrant city.

Boston attracts diverse and talented people from all over the world for employment and educational opportunities. On average each year from 2007 to 2015, 12,000 people moved to Boston from outside the United States, representing 18% of new arrivals. The top ten countries of origin for international in-migrants to Boston between 2007 and 2015 are China, Dominican

[1] U.S. Census Bureau, 2007 to 2015 1-year ACS, PUMS, BPDA Research Division Analysis
[2] Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), Employment and Wage (ES-202), BPDA Research Analysis

Republic, India, Japan, Haiti, Brazil, Colombia, Korea, Vietnam, and El Salvador. Data on previous residence indicate that most new residents to Revere are moving from elsewhere in Suffolk County (Boston, Chelsea, or Winthrop) or from within the Commonwealth of Massachusetts.[3]

b. Education level - Specify the changes in education level in your community over the last five years and the major reasons for these changes. (Please address high school graduates, technical/vocational degree graduates, four-year graduates, and masters or higher graduates.)

The high education level of residents of the city and region has continued to rise over the past five years. In 2012, 44% of Boston residents aged 25 and older had a Bachelor's degree or higher - this share rose to 48% by 2016. The increasing demand of employers for highly skilled workers is driving this trend. The demand for highly educated workers is supported by the Boston region's colleges and universities that grant approximately 80,000 degrees each year. The share of adults in Boston without a high school diploma has also been declining. This partially reflects the significant improvement in the four-year high school graduation rate in the Boston Public Schools (BPS), up 18 percentage points from 2006 to 2016. A growing share (up to 67% in 2016) of adults in Boston who have less than a high school education are immigrants who may not have had access to educational opportunities in their countries of origin.

Educational Attainment	**Boston**		**5-County Region**		**Massachusetts**	
Population 25 years and over	**2012**	**2016**	**2012**	**2016**	**2012**	**2016**
Less than high school, no diploma	15%	14%	10%	9%	10%	10%
High school graduate (includes GED)	23%	21%	24%	23%	26%	25%
Some college, no degree	14%	13%	16%	15%	17%	16%
Associate's degree	5%	5%	7%	7%	8%	8%
Bachelor's degree	24%	27%	24%	25%	22%	24%
Graduate or professional degree	20%	21%	20%	21%	17%	19%

Source: U.S. Census Bureau, 2012 to 2016 1-year American Community Surveys, BPDA Research Division. The Five-County Region is comprised of Essex, Middlesex, Norfolk, Plymouth, and Suffolk counties in Massachusetts.

Revere residents demonstrate steady but stable improvement on most measures of educational attainment at and beyond high school.

Educational Attainment	**Revere**	
Population 25 years and over	**2012**	**2016**
Less than high school, no diploma	21%	17%
High school graduate (includes GED)	40%	39%

[3] U.S. Census Bureau, 2012-2016 5-year American Community Survey, City of Revere Analysis

Some college or Associate's degree	23%	24%
Bachelor's degree	12%	13%
Graduate or professional degree	4%	6%

Source: U.S. Census Bureau, 2008-2012 and 2012-2016 5-year American Community Surveys, City of Revere Analysis

c. **Tech job levels - Specify the changes in the number of tech jobs in your community over the last five years and the major reasons for these changes (including the major draw for tech companies in your community).**

Tech jobs have grown by 17 percent in Boston, six percent in the region, and four percent in Massachusetts from 2012 to 2016.[4] According to the Massachusetts Technology Leadership Council, major drivers of tech job growth in Massachusetts are the area's academic and research institutions, supportive state and local government, and a leading investment community.[5] Tech employment is also bolstered by the high levels of educational attainment in the Boston area.

Mathematical and computer occupations have grown by 9.3 percent in Boston. Job growth has been particularly strong in emerging fields such as applications software developers who have seen 40 percent growth over this time period. Employment for life scientists grew by 61 percent in Boston over five years. Fiscal year 2017 marked the 23rd consecutive year that Boston received the most National Institutes of Health funding of any city.[6] Hospitals, universities, and private companies create a thriving environment for life science research.

	Boston			**Region (NECTA)[7]**			**Massachusetts**		
	2012	2016	% Change	2012	2016	% Change	2012	2016	% Change
Total Payroll Jobs	541,100	591,090	9.2%	2,483,030	2,677,320	7.8%	3,202,080	3,459,910	8.1%
Total Tech Jobs	44,278	51,771	16.9%	246,980	261,744	6.0%	271,301	282,573	4.2%
Tech Managers	4,050	5,030	24.2%	23,150	26,168	13.0%	24,830	26,250	5.7%
Mathematical and Computer Occupations	25,370	27,720	9.3%	129,290	133,660	3.4%	138,710	142,740	2.9%
Computer Systems Analysts	4,050	3,440	-15.1%	14,680	12,650	-13.8%	16,060	14,130	-12.0%
Information Security	630	640	1.6%	2,370	3,160	33.3%	2,600	3,340	28.5%

[4] Note: Tech workers are defined as Computer and Mathematical Occupations, Engineers, Drafters, Engineering Technicians, and Mapping Technicians, Life Scientists, Physical Scientists, Life, Physical, and Social Science Technicians, Computer and Information Systems Managers, Architectural and Engineering Managers, and Natural Sciences Managers

[5] *The Connected Commonwealth: How the Massachusetts Tech Ecosystem is Creating New Growth Opportunities. MassTLC State of the Technology Economy Report, 2016*. Burlington, MA: Mass Technology Leadership Council, 2016. http://www.masstlc.org/2016-state-of-technology-report/ Page 11

[6] National Institutes of Health "NIH Awards by Location and Organization FY2017," BPDA Research Division Analysis

[7] The region is the Boston-Cambridge-Quincy NECTA for 2012 and Boston-Cambridge-Nashua NECTA for 2016. The slight difference in geography should not affect the tech job trends.

Analysts									
Computer Programmers	1,200	1,150	-4.2%	7,540	6,810	-9.7%	8,040	6,880	-14.4%
Software Developers, Applications	4,460	6,250	40.1%	26,710	30,760	15.2%	26,720	31,150	16.6%
Software Developers, Systems Software	3,180	2,860	-10.1%	27,890	26,880	-3.6%	29,220	27,630	-5.4%
Web Developers	1,250	1,110	-11.2%	4,320	3,570	-17.4%	4,640	4,030	-13.1%
Database Administrators	1,100	810	-26.4%	3,810	2,520	-33.9%	4,420	2,940	-33.5%
Network and Computer Systems Administrators	2,280	2,580	13.2%	8,640	9,050	4.7%	9,940	10,260	3.2%
Computer Network Architects	810	1,060	30.9%	4,380	4,010	-8.4%	4,800	4,350	-9.4%
Computer User Support Specialists	2,960	2,900	-2.0%	14,980	17,030	13.7%	17,500	19,220	9.8%
Computer Network Support Specialists	680	480	-29.4%	4,650	2,300	-50.5%	5,040	2,620	-48.0%
Other Computer Occupations	810	1,330	64.2%	4,470	7,110	59.1%	4,390	7,790	77.4%
Mathematical Science Occupations	1,960	3,110	58.7%	4,850	7,810	61.0%	5,340	8,400	57.3%
Engineering Occupations	4,659	6,738	44.6%	59,100	65,373	10.6%	66,680	71,160	6.7%
Engineers	3,213	4,845	50.8%	43,384	48,709	12.3%	47,730	52,520	10.0%
Drafters, Engineering Technicians, and Mapping Technicians	1,446	1,892	30.8%	15,716	16,664	6.0%	18,950	18,640	-1.6%
Life and Physical Science Occupations	8,729	10,670	22.2%	32,070	32,414	1.1%	37,261	37,773	1.4%
Life Scientists	3,557	5,725	61.0%	15,570	17,516	12.5%	17,840	20,528	15.1%
Physical Scientists	1,120	788	-29.7%	7,440	5,589	-24.9%	8,710	6,410	-26.4%
Life and Physical Science Technicians	4,052	4,157	2.6%	9,060	9,309	2.7%	10,711	10,835	1.2%
Creative Economy Tech Occupations*	1,470	1,613	9.8%	3,370	4,129	22.5%	3,820	4,650	21.7%

Source: Bureau of Labor Statistics, Occupational Employment Statistics for Boston, Boston-Cambridge-Quincy, Boston-Cambridge-Nashua, and Massachusetts from May 2012 and May 2016, https://www.bls.gov/oes/tables.htm, BPDA Research Division Analysis.

** Creative Economy Tech Occupations include Audio and Video Equipment Technicians, Broadcast Technicians, Sound Engineering Technicians, and Film and Video Editors.*

The development of tech jobs presents a significant growth opportunity for Revere's economy and workforce, which has relatively recently lost two major local economic and employment anchors in the closing of Wonderland Greyhound Dog Race Track and the Suffolk Downs Thoroughbred Race Track. The significant growth in corporate and startup tech jobs in Boston,

Cambridge, and Somerville creates spillover opportunities for both entrepreneurial and transformative business development in a location like Revere. In addition to the availability of developable land, Revere presents significant geographical and affordability advantages for not only tech employers seeking growth or expansion opportunities, but also for tech workers seeking a more affordable cost of living while maintaining excellent access to Boston, Logan Airport, and the MBTA.

d. Diversity - Specify the changes in composition in your community as a whole and within the tech industry in (i) race and ethnicity, (ii) gender, and (iii) foreign-born individuals

Boston and the region have been becoming more diverse for decades. The past five years have continued this trend. In Boston the non-Hispanic White population dipped below 50 percent in 2000 and now stands at 45 percent. Blacks/African-Americans make up 23 percent of the city population. Asian and Hispanic populations have grown strongly in recent years to 10 percent and 19 percent of the Boston population. Boston continues to have slightly more females than males. The foreign-born population has been growing since 1970 and now makes up 29 percent of the city, 20 percent of the region and 17 percent of the state.

	Boston		**Five-County Region**		**Massachusetts**	
	2012	**2016**	**2012**	**2016**	**2012**	**2016**
Total Population	637,516	672,840	4,218,863	4,363,768	6,646,144	6,811,779
Race/Ethnicity						
White	46.0%	45.4%	72.1%	69.0%	75.3%	72.4%
Black or African American	23.3%	22.6%	7.7%	8.0%	6.4%	6.7%
Asian	9.1%	9.7%	7.3%	8.3%	5.7%	6.5%
Hispanic or Latino	18.6%	19.1%	10.3%	11.6%	10.1%	11.4%
Other	3.1%	3.2%	2.5%	3.0%	2.5%	3.0%
Gender						
Male	48.1%	48.0%	48.4%	48.5%	48.4%	48.5%
Female	51.9%	52.0%	51.6%	51.5%	51.6%	51.5%
Foreign Born						
Total Foreign Born	26.2%	28.9%	17.9%	20.2%	15.0%	16.5%

Source: U.S. Census Bureau, 2012 & 2016 1-year American Community Surveys, BPDA Research Division Analysis

Residents who identify as Black or African American and those who identify as Hispanic or Latino comprise the fastest growing segments of Revere's population. Revere's sizeable Hispanic or Latino population is gaining increased demographic strength, from an estimated 26.7% of the population in 2012 to 28.4% in 2016.[8] Revere has a significant foreign-born population of 36.3%, a higher proportion than in either Boston or Massachusetts as a whole. Five-year trend data indicates that this segment of Revere's population is growing and will likely continue to do so in coming years. Revere has seen growth in its North African and particularly Moroccan communities. Revere's population remains roughly gender-balanced, without discernible trends over the past five years of available data.

[8] U.S. Census Bureau, 2012 and 2016 American Community Surveys, City of Revere Analysis

Workers with tech occupations who work in the area are more likely to be non-Hispanic Whites than the residents of the area. However, the share of tech workers employed in Suffolk County who are non-Hispanic Whites has declined from 69 percent in 2012 to 67 percent in 2016. The share of tech workers who are Asian/Pacific Islander or other race has been increasing, showing gains ever since 2012. The share of tech workers who are foreign born has also been increasing, reaching 32 percent of tech workers employed in Suffolk County. Although females make up more than half of the population of the region, tech workers employed in the region remain majority male.

	Place of Work					
	Suffolk County		**7-county region**		**Massachusetts**	
	2012	**2016**	**2012**	**2016**	**2012**	**2016**
Total Tech Workers	49,251	67,835	231,589	285,751	248,026	307,368
Race/Ethnicity						
White	69.3%	66.8%	73.8%	72.0%	74.6%	72.9%
Black/African American	3.9%	3.8%	2.8%	2.3%	2.7%	2.3%
Hispanic/Latino	6.5%	4.0%	4.1%	4.7%	4.2%	4.6%
Asian/Pacific Islander	18.7%	21.5%	17.7%	19.0%	16.8%	18.2%
Other	1.6%	3.8%	1.6%	2.0%	1.7%	2.0%
Gender						
Male	65.9%	71.0%	73.7%	74.0%	73.6%	74.3%
Female	34.1%	29.0%	26.3%	26.0%	26.4%	27.9%
Foreign Born						
Foreign Born	29.2%	31.7%	26.8%	29.0%	26.1%	19.7%

Source: U.S. Census Bureau, 2012 & 2016 1-year American Community Surveys, BPDA Research Division Analysis.
Note: Suffolk County and a 7-county region (Suffolk, Norfolk, Middlesex, Essex, Plymouth, Bristol, and Worcester) were used here due to data limitations.
Note: Tech workers are defined as Computer and Mathematical Occupations, Engineers, Drafters, Engineering Technicians, and Mapping Technicians, Life Scientists, Physical Scientists, Life, Physical, and Social Science Technicians, Computer and Information Systems Managers, Architectural and Engineering Managers, and Natural Sciences Managers

e. Changes – Describe what your community is already doing to positively impact the above changes and what big ideas you propose to accelerate the positive changes and/or reverse the negative changes.

In many ways, Boston and the region have been moving in positive directions. The population is growing due to the attractiveness of the region's educational and job opportunities. These opportunities bring in people from all over the country and the world, increasing the diversity of the population. Educational attainment levels are increasing, preparing residents for increasingly high-skilled jobs, including the rapidly growing tech sector.

The most concerning negative changes highlighted in the above sections were the stagnant or decreasing participation of women and Black/African-Americans and Hispanics in tech sector jobs. In order to reverse these negative changes, Boston must bolster region's tech talent pipeline by promoting inclusionary practices through networking and hiring, diversity organizations and K-12 educational opportunities. In order to accelerate positive change there are initiatives

underway to increase diversity among students and tech workforce including TechHire Boston and Hack.Diversity. Other local groups, including Diversity IT Network, Black Tech Meetup Group, Latino STEM Alliance, Girls Who Code, and She Geeks Out focus on creating social networks and bootcamps for advancing women and people of color in the tech workforce.

Revere has only begun to scratch the surface of its potential to train, cultivate, and host tech talent and tech jobs. At the secondary school level, Revere has established a strong pipeline of graduates who have pursued STEM concentrations in higher education. The school system is a consistent and strong referral partner for tech job training programs like the enormously successful Year Up, which aims in part to bridge the gap of urban youth employed in upwardly mobile technology and business sector careers.

2. **Tech Talent Growth. Dive deep beyond the number of tech jobs discussed above to show us what your community is doing to address the fundamental building blocks that lead to tech jobs.**

   a. **Current efforts - Describe what your community is currently doing to support tech talent growth.**

Boston's goals for student preparation are highlighted in the city's recently adopted **College, Career and Life Readiness** framework,[9] which is informed by current education literature and insight from industry into the skills that companies prioritize in hiring. The framework provides the basis for designing and implementing learning experiences in both school and community settings. Many of the skills and competencies highlighted in the College, Career and Life Readiness definition are in greatest demand in technological fields. To prepare young people for productive futures in STEM and in areas of work that have yet to be imagined, Boston is implementing a wide variety of programs and learning activities - in and outside of school and from early learning through post-secondary education and workforce training - aimed at promoting readiness skills that anticipate the future.

Boston supports its tech talent pipeline through partnerships across government, industry, academia, and workforce training organizations. Leading this work is **TechHire Boston**, established in 2016 as a strategic partnership led by **SkillWorks**, a nationally recognized workforce funder collaborative. SkillWorks is itself a public-private partnership between The Boston Foundation, the City of Boston, and the Boston Private Industry Council, the city's local Workforce Investment Board. A cross-section of Greater Boston leaders from government, real estate, insurance, healthcare, financial services, and information and communication technology sectors represent the region's hiring needs for IT/Tech workers and growing demand for qualified workers. TechHire Boston's mission is to shape, support, and implement a regional workforce strategy for IT/Tech that meets employer demand by training and educating talent from all pipelines and by brokering opportunities for employers to find talent from those pipelines.

---

9 https://www.bostonpublicschools.org/cms/lib/MA01906464/Centricity/Domain/2420/BPS%20CCLR%20definition_Page_1.png

SkillWorks' recent investment reflects its commitment to developing tech talent growth. SkillWorks has committed more than $800,000 in new IT/Tech workforce investments in the Boston area across several initiatives:

1. Expand tech employer engagement and internships through **TechHire.**
2. Create a career advancement pathway for cyber security through **Cyber Warrior Academy**, a newly created program to address the growing demand for qualified Information Security talent while creating long-term career advancement opportunities for people in help desk and technical support roles.
3. Support **Bridges to College and Careers**, a program of Jewish Vocational Services, to expand its STEM-focused pathways for unemployed and underemployed adults in the Greater Boston area.
4. Support employment placement and alumni support for **Year Up**, a nonprofit that offers low-income urban youths six months of intensive training and a six-month corporate internship in various fields, including IT.

The **Mass Technology Leadership Council (MassTLC)**, the largest and most powerful technology association in the region, helps tech businesses grow by promoting recruitment initiatives and networking.

The Tech Connection is a recruitment platform that supports the professional development of diverse untapped technical talent. The Tech Connection delivers the best talent to high performing and innovative teams by offering individualized career planning and job placement service to job seekers.

TechGen is an online platform that connects New England's best university students with its top healthcare and technology companies. TechGen, a public-private partnership between the New England Venture Capital Association and MassTech Collaborative, launched in 2015.

Cybersecurity (UMass) is one of the fastest-growing and most critical industries in a technology driven economy, and world. The University of Massachusetts recognizes the need to build a workforce with the skills needed to support the world's foremost cyber security companies. To address this sector, and ensure Massachusetts' preeminence in the field, UMass formed the **Cybersecurity Education and Training Consortium**, which will connect education leaders in Massachusetts to their private-sector counterparts, ensuring that academic programming aligns with employer needs. Additionally, UMass campuses have taken on additional roles. In Amherst, UMass established a cross-disciplinary faculty cadre to drive cybersecurity education and research. In Lowell, known for hardware development and robotics, faculty are dedicated to securing technology that is developed on campus. The campus has partnered with Hanscom Air Force Base to educate military cybersecurity personnel and developed a training program based on the U.S. Department of Commerce's National Institute of Standards and Technology.

The **MassTech Intern Partnership Program (MTIP Program)** provides stipends to small Massachusetts digital technology companies to directly support internships for Massachusetts

college and graduate students and recent graduates. Companies can be reimbursed for up to 50% of the intern's gross salary for up to two interns and a total of $3,200/year per individual intern. In order to participate, companies must 1) be headquartered in Massachusetts; 2) have 100 or fewer employees; and 3) want to hire a talented Massachusetts college intern for the summer. This summer the program will focus on increasing internships at digital health, cybersecurity, and IoT/robotics companies through targeted outreach and marketing. MassTech awarded 104 internships for Summer 2017 and plans to subsidize 150 internships in Summer 2018 and an additional 150 internships in Summer 2019.

The Commonwealth of Massachusetts is committed to building integrated STEM pathways from secondary school to college, including career guidance and exploration, workplace experience, and applied learning across STEM subjects to ensure that more high school graduates are ready to pursue STEM majors and technical careers in STEM fields. Among the Commonwealth's initiatives:

STEM Early College & Innovation Pathways provide students with career paths aligned to local labor market needs, including a sequence of articulated courses, post-secondary partnerships, college and career advising, work-based learning, and industry credential opportunities. It is supported by a Council of Chief State School Officers Career Readiness Initiative New Skills For Youth grant award from JP Morgan Chase.
Vocational Program Expansion – Massachusetts partners with high schools to expand student access to vocational programs to meet the hiring demands of local employers, and align with regional labor market data.
STEM Starter Academy provides high school students a summer bridge program at higher education partners that focuses on improving foundational math and science skills required for STEM careers.
College and Career Readiness and Advising –The Six-Year Career Plans & Signal Success programs provide professional development for high school advisors to expand students' college and career readiness.
Student STEM Work Experiences – Because the Commonwealth recognizes the importance of work experience, MA STEM@Work and the Massachusetts Life Sciences High School Apprenticeship Challenge are expanding the number of participating employers and students in career exposure and internship opportunities. The Life Sciences program has been especially successful, placing more than 3,150 students, 84% from STEM majors, at more than 650 life sciences companies. 22% have been hired post internship.
Technology and Equipment Investment – Providing tools to enhance educational opportunities will help schools to better educate students and prepare them for career opportunities. In order to provide these tools, Massachusetts has created the Skills Capital Grants Program, and the Mass Life Sciences STEM Equipment and Supplies Grant Program, which provide technology and equipment to expand accesses to programs and meet employer standards.
Teacher Experience – The Massachusetts Development Financial Agency's AMP-It-Up Manufacturing Teacher Externships support exposure to industry best-practices to support teacher growth and curriculum evolution.

b. Future proposals - Describe the big ideas your community proposes in addition to the current efforts mentioned above to enhance your community's development of tech talent (both millennial and mature/senior tech talent).

After consultation with Boston University, Berklee College of Music, MIT and Worcester Polytechnic Institute (WPI), the City of Boston would like to share the following future plans that our college and university partners propose to both (1) augment their current offerings for higher education and (2) supplement Amazon's employees' skill sets.

Boston University (BU):
Boston University proposes five different programmatic offerings to bolster the tech talent pipeline of millennial and mature students.

1. **Amazon Study Abroad:** BU proposes creating a "study abroad" opportunity for current juniors that combines on-campus courses with an unpaid, semester-long internship.
2. **Amazon Fellows:** In this program, Amazon researchers, engineers, executives, etc., would work on a regularly scheduled basis with members of BU faculty whose work corresponds to the Amazon Fellow's own areas of subject matter expertise and work responsibility. BU already operates this kind of program with corporate partners such as Red Hat, Inc., a leading provider of open source solutions, and would be pleased to create a similar program for Amazon.
3. **Amazon Master Classes:** In this program, BU envisions Amazon staff, researchers and engineers leading master classes for a small, hand selected group of graduate and undergraduate students as a way to (1) share knowledge and (2) get to know and evaluate potential talent.
4. **Amazon Spark!**: Working through an already established and successful program known as BU Spark! at BU's Rafik B. Hariri Institute for Computing and Computational Science & Engineering, Amazon could provide student teams with on-campus opportunities to apply their computer science and engineering skills to company projects. Students would be able to build their technology and innovation skills while simultaneously Amazon could evaluate students' abilities with an eye toward future employment opportunities.
5. **Amazon Executive Education:** BU proposes to offer infrastructure for Amazon to provide its employees with continuing education programs of all levels through face-to-face, online, and blended delivery systems**.** Boston University's Metropolitan College is a leader in providing employee and continuing education through traditional and nontraditional platforms.

Berklee College of Music
The next wave of technology will be about voice-activated interfaces, emotive artificial intelligence, big data analysis, and immersive reality experiences that elicit empathy and alter the perception of distance and proximity. Developing alternative creative problem solving frameworks for talented technologists, outside of the top down / control-oriented ones that are taught at more traditional environments, will be key for success.

1. **Amazon's New Media Lab:** Berklee will explore the creation of a multidisciplinary lab on Amazon's campus that brings together the best of Boston's educational institutions to advance new media content development and interaction, as well as new platform creations. By harnessing the abundant creative, engineering and business talent in the area, an "Amazon New Media Lab" spearheaded by Berklee would create an unparalleled R&D lab on Amazon's Boston campus with student and faculty fellows from across Boston's academic ecosystem**.**

2. **Open Music:** As Amazon continues to rapidly expand its development of voice-activated intelligent assistants and interfaces, original content production in music, video and film, and application of new technologies like AR/VR and AI, Berklee is uniquely positioned to be a great partner in curriculum development and talent sourcing. In the past year alone Berklee has dramatically advanced its curriculum in spacial audio recording, ambisonic sound mixing, sound design for immersive environments and AI-activated purposes and has lead an industry-wide initiative called "Open Music" which utilizes blockchain technology for creative rights identification and rights clearance. The college has also launched a dual degree with Harvard and is working on creating a joint degree program with MIT in the near future.

MIT

MIT has tremendous strength in online learning, with offerings that promise to be of value to Amazon in developing, recruiting and retaining talent. In 2012, MIT and Harvard teamed up to launch edX — an ambitious partnership to deliver online education to learners anywhere in the world. The venture now has 52 partner universities, offers more than 1,300 courses, and has provided millions of people worldwide with access to new educational opportunities. The edX platform provides education at scale.

The MicroMasters Program in Supply Chain now offered from MITx on the edX platform is an advanced, professional, graduate-level foundation in Supply Chain Management. Students gain expertise in the growing field of Supply Chain Management through an innovative online program consisting of five courses and a final capstone exam. The MicroMasters Credential showcases recipients' understanding of supply chain analytics, design, technology, dynamics and end-to-end supply chain management. MITx and edX have additional MicroMasters programs in development on different professional, graduate-level topics and would value collaborating with Amazon in that development. In addition, edX has a growing business-to-business effort that could be of value to Amazon.

MIT has also excelled at offering tailored educational programs to fit the needs of specific companies, and can explore opportunities to curate coursework for those either wishing to seek employment at Amazon, and/or for those already employed. MIT Leaders for Global Operations program (LGO) partners with the MIT School of Engineering and the MIT Sloan School of Management to deliver a unique Engineering-MBA dual degree program. The two-year curriculum places students in research internships at partner companies and students develop leadership skills to manage operations units in the pharmaceutical, manufacturing, energy, high-tech, and global supply chain industries. During the program, students combine advanced

engineering and MIT Sloan MBA knowledge, which makes LGO graduates among the most sought after on the job market. LGO alumni lead a variety of product development, global operations, and manufacturing development initiatives at leading companies and entrepreneurial ventures throughout the world.

Cultivating and providing opportunities for the entrepreneurial spirit of MIT students and faculty is an Institute priority, and translating the work they are doing in their labs and classrooms for use in the world is critical. On February 1, 2018 MIT launched a major new initiative on human and machine intelligence – the MIT Intelligence Quest, or MIT IQ. This Institute-wide initiative seeks to vitalize collaborations across MIT and beyond, discover the foundations of human intelligence, and drive development of technological tools. Programs like MIT Sandbox Innovation Program and Deshpande Center for Technological Innovation provide funding and mentorship to support innovative ideas. The MIT Innovation Initiative collaborates with all five schools at MIT to strengthen the vibrant culture and programming of innovation and principled entrepreneurship. And for the broader innovation community of Boston, last year MIT started The Engine — an accelerator program dedicated to cultivating truly novel ideas and innovations that will power the economy of the future.

WPI

With its recently launched presence in Boston's Seaport, WPI is connecting its innovation strategy to the heart of Boston's innovation district. This space will focus on technical talent development, providing a tech-rich collaboration space for students, faculty, and partners to address important problems while developing a pipeline of qualified engineers and scientists to support the workforce development needs of industry. WPI will host seminars, graduate courses (for credit and non-credit), sprints, and hack-a-thons in this easily accessible space.

WPI is also interested in co-supporting a New Media Lab wherein multiple universities would work together to support cross-disciplinary research. As mentioned by Berklee College of Music, this lab would bring together different partners to promote cutting edge research, design and experimentation in forms of new media: visual, audio, theatrical, marketing, etc.

WPI is also heavily invested in a competency-based online curriculum. The institute is pioneering a competency-based education (CBE) graduate program in robotics engineering (with a concentration in autonomous vehicles). WPI is actively putting programs online, and innovating with other delivery modalities including technical short courses, badges and stackable credentials in addition to traditional degree programs.

WPI's Corporate and Professional Education practice has been serving the workforce development needs of industry for over 30 years. All programs delivered to industry (onsite, online, blended) are of the same quality of current campus offerings, and deliver the same credential. WPI prides itself on its ability to customize programs (content and format) to the unique needs of its partners.

WPI is active in building relationships between academic innovators and the venture community. The institute connects with the Massachusetts public and quasi agencies to link WPI's

capabilities to the statewide efforts to increase economic and workforce development and improve competitiveness. WPI was recently awarded two major capital grants to establish research centers that will support industry partners in both research and workforce development (Cyber-Physical Systems and Integrated Photonics). These activities are part of WPI's focus on building joint research collaborations to drive innovation; WPI is interested in similar collaborations with Amazon.

WPI is renowned for its project-based curriculum that is grounded in "theory and practice." The Institute has a well developed process for supplying talent to industry that can take many forms: sponsored projects, internships, co-ops, as well as full-time employment. WPI has a strong relationship with Amazon Robotics, a top recruiter of WPI's students. Over many decades, WPI has built a strong infrastructure to support the talent development needs, at all levels, of corporate partners. WPI would like to work in collaboration with Amazon to ensure that their needs are reflected in WPI's current educational programming. The institute's research faculty are accessible and interested in collaborating on research topics that are of importance to Amazon, with favorable IP terms and policy that support advancing the mutual goals of the relationship.

UMass Boston

Since 2007, UMass Boston, one of the most diverse research universities in the country, has been working with other civic leaders, including the Chamber of Commerce, to promote the benefits of economic and social diversity and to create a business ecosystem in Boston that is diverse and representative of all members of the City. Through an effort called the Commonwealth Compact, which the university is currently engaged in revitalizing with its corporate partners, young professional talent has been identified and connected to c-suite opportunities in private industry. When working with Amazon, UMass Boston would like to continue these efforts.

Announced by Governor Charlie Baker at the first-ever Mass Cybersecurity Forum[10] in September 2017, the Mass Cyber Center supports growth and innovation within the Commonwealth's cybersecurity community. Massachusetts is home to 125 cybersecurity firms, with 37 of the 500 largest and most innovative firms.[11] Currently, MassTech is finalizing the staffing of the CyberCenter in consultation with leaders across academia, government and the industry. MassTech is also issuing the 2018 Cyber Talent Challenge Solicitation to provide grant funding for cybersecurity workforce advancement in Massachusetts. Community College Grants (up to $50,000) are designed to expand corporate partnerships and/or new initiatives within an existing community college setting. Training Grants (up to $50,000) are awarded to retrain existing skilled workers into high-value cyber professions. Experiential Learning Grants (up to $50,000) will go to a new initiative/program at college or nonprofit organization to train workers using real-life or simulated experiential learning models. Veteran Support Grants (up to $50,000) will fund new programs at a nonprofit or educational institution helping to employ veterans in cybersecurity. Challenge or Hackathon Grants (up to $10,000) will go to a nonprofit or educational institution working to connect students and industry via a hackathon or grand

[10] Mass Cyber Security Forum, http://masstech.org/massachusetts-cybersecurity-forum
[11] http://masstech.org/why-massachusetts/ensuring-global-leadership-cybersecurity

challenge. Proposal solicitation and announcement timelines are being determined with a goal of grant money awarded for use at start of fiscal year 2019.

Apprenticeship Tax Credit and Design Funding
In order to increase the number of apprentices and trained employees in information technology, manufacturing, and health care occupations, Massachusetts has proposed both new funding that will help training providers design certified apprenticeship programs, and a tax credit that will incentivize companies to hire these apprentices. This will open the door to training for individuals who need to earn while they learn, and will increase the number of highly-skilled IT, healthcare, and manufacturing workers in the Commonwealth.

Revere Talent Pipeline Initiatives
A priority for Revere is building a new high school with 21st century amenities and an emphasis on preparing students for an increasingly knowledge-based economy. Various sites are under consideration, but there is enormous potential for a school to be co-located with and/or planned in tandem with newly-constructed innovation labs, biotech facilities, a civic center, etc. Additionally, the Revere sees a transformative redevelopment of the 50 acre NECCO site, which has newly approved zoning supporting uses including but not limited to advanced product manufacturing, research and development, biomedical facilities, technology warehousing and distribution activities, and robotics. This site, located along American Legion Highway with access to Boston and Logan Airport, was purchased by VMD Companies and Atlantic Management in 2017 and is being envisioned as a high tech and manufacturing hub. The impact of this site would be amplified by infrastructure investments boosting connectivity to and around the site – i.e. pedestrian footbridge, MBTA expansion, rapid transit and commuter rail stations.

c. Diversity and inclusion - Describe what your community is currently doing to support underrepresented minorities in tech and what your community proposes to do in the future to enhance these efforts.

Boston is dedicated to enhancing the opportunities for underrepresented minorities in tech. As reported in response to Talent question 1-d, less than seven percent of workers in tech occupations in Massachusetts are Black/African-American or Hispanic. Additionally, less than 28 percent of the tech workers in Massachusetts are women. The following section profiles just some of Boston's efforts to support underrepresented minorities in tech.

Hack.Diversity, an initiative co-founded by the New England Venture Capital Association and Jeff Bussgang of Flybridge Capital, convenes the region's high growth tech companies and local workforce and education training organizations, including two and four year colleges, Year Up, and coding bootcamps. Hack.Diversity seeks solutions to the lack of diversity and inclusion in the tech economy and the limited access to opportunity for diverse talent. Hack.Diversity recruits, vets and places Black and Latino computer science and engineering students into the city's fastest-growing companies. Both employer and employee are provided with unique training coaching and support.[12] Host companies include: AthenaHealth, Beth Israel Deaconess

[12] https://newenglandvc.org/portfolio/#hackdiversity

Medical Center, Carbonite, DataXu, DraftKings, HubSpot, Rapid7, Liberty Mutual, Vertex, Wayfair and Wordstream. Moving forward, the NEVCA is launching Hack500, a campaign to raise $500,000 by 2020 so that Hack.Diversity can become sustainable and scalable program that assists with placement of high-skilled Black and Latino tech talent in Boston's innovation economy.[13]

Resilient Coders is a non-profit that offers a coding bootcamp for young people of color who do not have college degrees. The program teaches participants to be javascript developers, so that they may have access to high-growth career building software. Resilient Coders then connects program participants with full-time engineering apprenticeships at partner companies.

The South End Technology Center[14] and Timothy Smith Network[15] help Black students learn computer programming, digital fabrication and robotics.

Boston's tech talent pipeline is augmented by professional networking organizations that are dedicated to increasing and supporting a diverse workforce. The **Diversity IT Network**, a social enterprise and leadership development program, advances the careers of multicultural technology professionals. The Diversity IT Network was created to foster a safe environment wherein IT professionals of all backgrounds can discuss barriers to career advancement within the IT industry and how to overcome them. Additionally, Boston's **Black Tech Meetup Group** serves as a support system and connector for Black tech workers.

The **Latino STEM Alliance (LSA)** partners with schools, private industry, community groups, and academia to bring STEM to underserved youth who would otherwise not have such an opportunity. Specifically, the alliance partners with inner city schools, parents and community organizations to augment much needed after-school day care activities with carefully programmed STEM enrichment opportunities.

Harvard participates in several programs that expose local high school and middle school girls to science and engineering education, including computer science. The **Tech Savvy** and **SET in the City** programs bring girls on to Boston-area university campuses to expose them to female engineers and scientists and to participate in hands-on activities. Harvard's chapter of **Girls Who Code** provides free Saturday programming open to all students in grades 6-12 at which students from area schools can learn to code, build an app, create a game, visit tech companies, and become a leader.

She Geeks Out provides women in STEM with the opportunity to network with each other as well as with companies who wish to hire them. She Geeks Out additionally assists companies in their diversity and inclusion efforts by providing them with the knowledge, skills, and tools to create an inclusive environment. **Boston University Artemis** Artemis is a five-week summer program for rising 9th grade girls focused on computer science. **Alexa Café at Simmons College** acknowledges the pervasive STEM gender gap, and seeks to remedy it with a chic,

[13] **https://hackdiversity.com/hack500/**
[14] http://www.tech-center-enlightentcity.tv/
[15] https://www.timothysmithnetwork.org/

collaborative learning environment focused on girls. The Café emphasizes leadership, entrepreneurship, brand identity, and philanthropy, with STEM subjects creatively woven into the curriculum. Alexa Café encompasses coding camps, game design courses, filmmaking classes, web design courses, and photography camps.

The City of Revere supports diversity and inclusion in tech talent growth through:

K-12 students and families: Revere Public Schools' ethnically, linguistically, and socioeconomically diverse student body, which hails from over 40 different countries, represents one of the City's strongest tech talent pipelines. Curricular and extracurricular offerings that support students' engagement with STEM subjects and career pathway include Advanced Placement courses, dual enrollment opportunities at local community colleges and universities, and internships coordinated with regional workforce boards and employers.

Higher education: Partnering with higher education institutions and training providers with similar missions and student profiles is essential. Strengthening existing partnerships and supporting the development of job training and specialized educational opportunity programs like Upward Bound and TRiO student success programs, which typically serve low income and first generation students underrepresented in higher education, will be critical to ensuring students continue to have needed supports beyond high school. These partnerships support the matriculation and persistence of students in academic, research-oriented, and vocational postsecondary programs in STEM and related careers.

Best practice partnerships: Revere can continue to refer students to and help cultivate job training programs like the well-regarded Year Up, which serves young adults seeking to enter business and information technology career. The City and school district may also consider creating, over time, a more robust school-to-career infrastructure resembling the Boston Private Industry Council, which has demonstrated enormous success in cross-sector partnership, youth development, and job readiness among Boston's high school students.

d. Specialized tech talent availability and growth - Please provide specialized tech talent availability for (i) machine learning specialists, (ii) UX/UI designers, and (iii) hardware engineers, as well as year-to-year trends for all three of these specialties. Please also describe the companies in your community currently employing that talent.

Specialized skills such as these are not well captured in either occupational or field of study data. Data on job postings requiring these skills give an indication of both demand for and possible supply of specialized tech talent. Postings for machine learning skills increased by 47 percent from the first half of 2016 to the second half of 2017. While UX/UI Design remains the most commonly sought of the three skills areas, job postings declined from 3,508 in the first half of 2016 to 2,931 in the second half of 2017. There has been a small but steady demand for hardware engineering skills, with an average of 154 job postings across the six month periods for which data was available.

Postings for Jobs located in the Boston MSA requiring Specialized Tech Skills

	Jan. - June 2016	July - Dec. 2016	Jan. - June 2017	July - Dec. 2017
Machine Learning	1,468	1,508	1,880	2,154
UX/UI	3,508	3,327	3,142	2,931
Hardware Engineering	151	119	233	114

Source: Burning Glass Labor Insight, BPDA Research Division Analysis

(i) Please also describe the companies in your community currently employing that talent and where their future growth will be.

Amazon posted the most job openings for specialized tech talent, particularly machine learning specialists. Other companies hiring large numbers of specialized tech talent include Aetna Inc. (healthcare insurance) BAE Systems (defense, security, and aerospace), Accenture (business management consulting), Deloitte, (accounting and professional services), and Liberty Mutual (insurance).

After Amazon, top companies advertising for machine learning specialists in the second half of 2017 were Amazon-owned Lab126, Aetna Inc., Lincoln Laboratory, (U.S. Department of Defense national security research and development center), Liberty Mutual, and General Electric.

Top companies posting job openings requiring UI/UX skills were Boston University, Mathworks (mathematical computing software), Deloitte, Aetna Inc., and Accenture.

The most job postings requiring hardware engineering skills were posted by BAE Systems, Cavium (semiconductors), Teradyne (automatic test equipment), and Arris Group Inc. (telecommunications equipment manufacturing).

The following table provides recent growth trends in job postings for specialized tech skills for major employers.

	Machine Learning Postings		UI/UX Design Postings		Hardware Engineering		Total Specialized Tech Postings	
	Jan. - June 2016	July - Dec. 2017	Jan. - June 2016	July - Dec. 2017	Jan. - June 2016	July - Dec. 2017	Jan. - June 2016	July - Dec. 2017
Amazon.com	36	146	8	10	4	3	48	159
Aetna Incorporated	8	38	0	28	0	0	8	66
BAE Systems	26	28	9	16	7	14	42	58
Accenture	16	30	10	24	0	0	26	54
Deloitte	13	23	58	31	0	0	71	54
Liberty Mutual	10	34	11	12	0	0	21	46
Boston University	0	0	15	45	0	0	15	45
Lab126	3	44	0	0	0	0	3	44

Mathworks	18	7	39	34	3	1	60	42
Massachusetts General Hospital	19	35	34	13	0	0	53	48
General Electric Company	0	30	9	8	0	0	9	38
Massachusetts Institute of Technology	4	23	9	14	0	0	13	37
Lincoln Laboratory	23	35	0	0	3	1	26	36
Raytheon	18	17	43	19	0	0	61	36
MITRE Corporation	14	23	18	10	1	2	33	35
Partners Healthcare (MGH)	2	20	0	12	0	0	2	32
State Street Bank	8	10	14	16	0	0	22	26
Staples	8	24	0	0	0	0	8	24
Booz Allen Hamilton Inc.	3	24	0	0	0	0	3	24
Charles River Analytics Inc	0	14	0	7	0	0	0	21
Mitsubishi	35	20	0	0	0	0	35	20
Schneider Electric	0	9	6	10	1	1	7	20
Microsoft Corporation	10	18	0	0	0	0	10	18
Google Inc.	1	18	0	0	0	0	1	18
Anthem Blue Cross	2	7	4	8	0	0	6	15
Nuance Communications	0	14	0	0	0	0	0	14
Johnson & Johnson	2	14	0	0	0	0	2	14
Draftkings	0	0	0	14	0	0	0	14
Fidelity Brokerage Services	5	13	0	0	0	0	5	13
Pfizer	15	12	0	0	0	0	15	12
Novartis	22	12	0	0	0	0	22	12
Takeda Pharmaceuticals North America, Inc.	0	12	0	0	0	0	0	12
Cogito Incorporated	0	12	0	0	0	0	0	12
Ebsco Industries	0	12	0	0	0	0	0	12
Pearson	0	0	8	12	0	0	8	12
Cengage Learning	0	0	10	12	0	0	10	12

UnitedHealth Group	0	0	23	12	0	0	23	12
Draper Laboratory	9	23	0	0	2	2	11	25
Athenahealth, Inc	0	0	20	11	0	0	20	11
Mason Company Incorporated	0	0	0	11	0	0	0	11
New England Herc	0	0	0	11	0	0	0	11
IBM	16	10	0	0	0	0	16	10
Fresenius	0	0	7	10	0	0	7	10
Akamai Technologies Incorporated	0	0	6	8	2	2	8	10
McKinsey & Company	0	9	0	0	0	0	0	9
Cbre	0	9	0	0	0	0	0	9
Massmutual Financial Group	0	9	0	0	0	0	0	9
Novita Technologies	0	9	0	0	0	0	0	9
Vindy	0	9	0	0	0	0	0	9
Incendia Partners Incorporated	0	9	0	0	0	0	0	9
Northeastern University	0	0	8	9	0	0	8	9
Hired	0	0	0	9	0	0	0	9
Dell	0	0	0	9	0	0	0	9
Carbon Black, Inc	0	0	0	9	0	0	0	9
Softworld Incorporated	0	0	7	9	0	0	7	9
Isobar	0	0	0	9	0	0	0	9
Red Hat	0	0	9	9	0	0	9	9
Capital Markets Placement	0	0	0	9	0	0	0	9
Horizontal Integration	0	0	0	9	0	0	0	9
The Autumn Group	0	0	0	9	0	0	0	9
General Dynamics	0	0	7	8	0	1	7	9
Cavium	0	0	0	0	4	9	4	9
Broadridge Financial Solutions, Inc	0	8	0	0	0	0	0	8
Indigo	0	8	0	0	0	0	0	8
Massachusetts General Hospital Mgh	0	8	0	0	0	0	0	8

Mathematica Policy Research	0	8	0	0	0	0	0	8
Bose	0	0	10	8	0	0	10	8
Curriculum Associates Incorporated	0	0	8	8	0	0	8	8
Boston Scientific Corporation	0	0	11	7	0	1	11	8
Tripadvisor	6	7	0	0	0	0	6	7
Harvard University	7	7	0	0	0	0	7	7
Oracle	5	7	0	0	0	0	5	7
Beth Israel Deaconess Medical Center	7	7	0	0	0	0	7	7
Dana Farber Cancer Institute	6	7	0	0	0	0	6	7
DataRobot	0	7	0	0	0	0	0	7
Citizens Financial Group	0	0	9	7	0	0	9	7
Clear Point Consultants Incorporated	0	0	12	7	0	0	12	7
Philips Electronics North America Corp	0	0	33	7	0	0	33	7
Okaya Infocom	0	0	0	7	0	0	0	7
Kronos Systems India Pvt Ltd	0	0	0	7	0	0	0	7
Hubspot Company	0	0	0	7	0	0	0	7
Teradyne	0	0	0	0	2	4	2	4
Arris Group Incorporated	0	0	0	0	0	4	0	4
Dcs Corporation	0	0	0	0	0	3	0	3
Peopletec	0	0	0	0	0	3	0	3
Qualcomm	0	0	0	0	0	2	0	2
Vecna Technologies Incorporated	0	0	0	0	0	2	0	2
Dew Softech Inc	0	0	0	0	0	2	0	2
Arris International Plc	0	0	0	0	0	2	0	2
Defense Information Systems Agency	0	0	0	0	0	2	0	2
Solidus Technical Solutions	0	0	0	0	0	2	0	2

Mercury Systems Incorporated	0	0	0	0	0	1	0	1
Casa Systems	0	0	0	0	3	1	3	1
Doble Engineering	0	0	0	0	0	1	0	1
Johnson Controls Incorporated	0	0	0	0	0	1	0	1
L3 Technologies	0	0	0	0	0	1	0	1
Autoliv Incorporated	0	0	0	0	3	1	3	1
United Technologies Corporation	0	0	0	0	2	1	2	1

Source: Burning Glass Labor Insight, BPDA Research Division Analysis

3. Venture Capital.

a. Current efforts - What is your community currently doing to support venture capital investment? Please include the presences of venture capital firms in your community, 5-year trends in venture capital investment, and size of start-up community in your community.

XConomy lists over 130 Venture Capital firms with headquarters or offices in New England.[16] The overwhelming majority of these are located in Boston or Cambridge. Greater Boston is home to the headquarters of 24 VC firms with at least 100 investments. Together these 24 firms have totaled 6,077 investments and 1,331 exits.[17] Among the largest VCs headquartered in the city of Boston are Battery Ventures, Polaris Partners, Sigma Partners, Summit Partners, Flybridge Capital Partners, Bain Capital Ventures and Spark Capital. Cambridge is home to General Catalyst, Atlas Venture, Founder Collective and Flagship Pioneering. Massachusetts investors were represented in four to five percent of seed and early stage deals in the last quarter of 2017, and nine percent of later stage rounds.[18]

Boston Area VC Firms with at least 25 Investments	**Location**	**Investments**	**Exits**
Battery Ventures	Boston	583	122
General Catalyst	Cambridge	552	94
Atlas Venture	Cambridge	474	114
Polaris Partners	Boston	473	92
North Bridge Venture Partners & Growth Equity	Waltham	403	88
Sigma Partners	Boston	337	64
Founder Collective	Cambridge	317	68
Summit Partners	Boston	312	177
Flybridge Capital Partners	Boston	291	47

[16] XConomy, https://www.xconomy.com/boston/resources/venture-capital-firms; accessed February 8, 2018.
[17] Crunchbase; accessed February 8, 2018.
[18] PWC and CB Insights, MoneyTree Report Q4 2017.

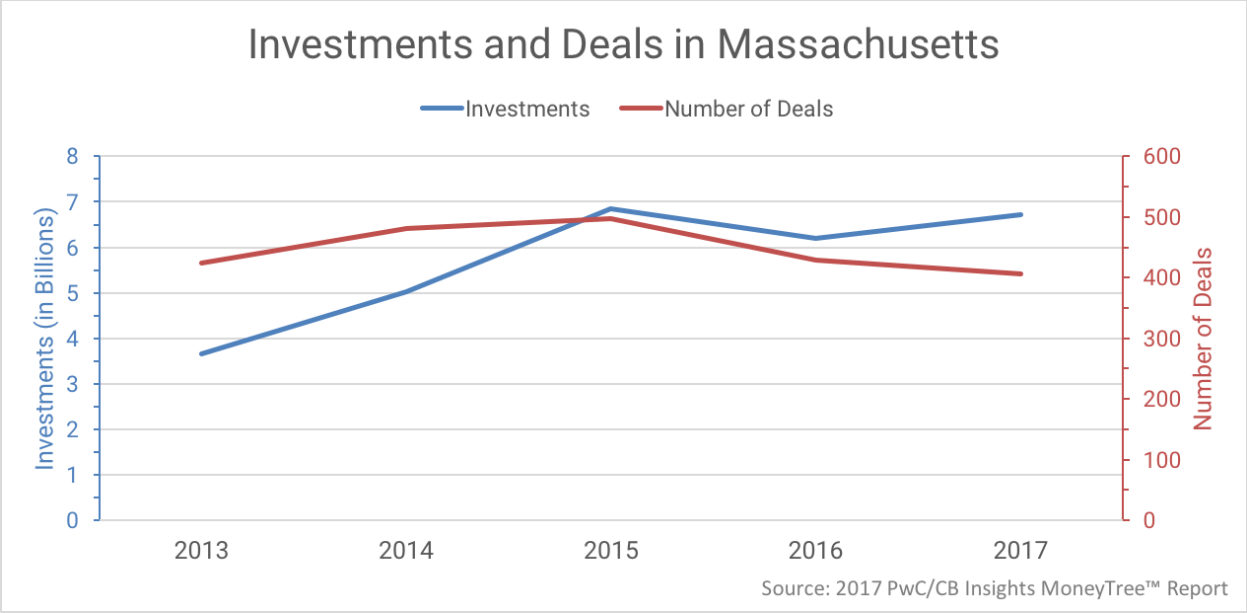
Bain Capital Ventures	Boston	289	55
Spark Capital	Boston	279	46
Flagship Pioneering	Cambridge	193	46
MPM Capital	Cambridge	186	55
SV Health Investors	Boston	185	31
Converge Venture Partners	Cambridge	149	22
Prism Venture Management	Needham	142	37
Kodiak Venture Partners	Wellesley	133	32
F-Prime Capital Partners	Cambridge	131	23
MassChallenge	Boston	122	7
SR One	Cambridge	117	24
NextView Ventures	Boston	106	14
Accomplice	Cambridge	101	8
Commonwealth Capital Ventures	Boston	101	32
Oxford Bioscience Partners	Boston	101	33
.406 Ventures	Boston	99	9
RockPort Capital	Boston	98	16
Longworth Venture Partners	Waltham	95	29
Boston Millennia Partners	Boston	85	27
HealthCare Ventures	Cambridge	85	26
Clarus Ventures	Cambridge	83	21
ABS Ventures	Waltham	81	25
Ascent Venture Partners	Boston	81	23
Third Rock Ventures	Boston	78	19
OpenView	Boston	75	16
GrandBanks Capital	Needham	66	14
PJC	Boston	65	9
Egan-Managed Capital	Boston	51	12
North Hill Ventures	Boston	45	13
MassVentures	Boston	43	13
Romulus Capital	Cambridge	42	3
Masthead Venture Partners	Cambridge	41	7
Excel Venture Management	Boston	37	8
Kepha Partners	Waltham	37	5
Stage 1 Ventures	Waltham	37	4
Volition Capital	Boston	34	7
@Ventures	Waltham	25	11

Major VC Firms with Office in Boston area, but HQ elsewhere		**Investments**	**Exits**	**Local Office**
Bessemer Venture Partners	Menlo Park	763	158	Cambridge
Greylock Partners	Menlo Park	625	169	Wellesley

Venrock	Palo Alto	544	142	Boston
GV	Mountain View	538	90	Cambridge
Matrix Partners	San Francisco	486	99	Cambridge
CRV	Palo Alto	431	108	Cambridge
Highland Capital Partners	Palo Alto	399	87	Cambridge
Advanced Technology Ventures	Menlo Park	233	56	Boston
Globespan Capital Partners	Palo Alto	173	48	Boston
NAV.VC	Reston	87	18	Cambridge

Source: Xconomy list of New England VC firms (https://www.xconomy.com/boston/resources/venture-capital-firms) and Boston Business Journal Top 25 list linked to data from CrunchBase. Data accessed February 8th, 2018.

Massachusetts companies closed between 406 and 497 deals each year between 2013 and 2017, accounting for between eight and nine percent of national deals each year. VC investment dollars have increased substantially over the last five years; investments have nearly doubled from $3.6 billion to $6.7 billion in 2017, just off the 2015 peak value of $6.8 billion. The internet sector accounted for the most deals (763 deals, $6.8 billion) over the five year time period, while healthcare led the way in money (600 deals, $14.1 billion).



Boston is home to an estimated 2,900-3,900 tech startups.[19] Boston's startup ecosystem is particularly strong in the sectors of biotech, pharma, life sciences, robotics, computer and internet services, fintech and education tech. Furthermore, Greater Boston is among the top metro areas nationwide for clean energy startups.[20]

[19] https://startupgenome.com/thank-you-enjoy-reading/

[20] https://www.bizjournals.com/boston/news/2017/05/16/bostons-clean-tech-cluster-is-third-strongest-in.html

A thriving network of venture capital firms bolsters innovation in Boston. The **New England Venture Capital Association (NEVCA)**, a trade association serving New England's VC Community, brings together over 70 members to create strategic partnerships, programming, and policies that support venture capital investment. The NEVA supports Boston's VC community to grow by convening entrepreneurs, policy advocates, community stakeholders, academics and venture capitalists to create robust dialogue. The organization champions legislation to enhance VC investments in areas such as immigration reform, intellectual property, non competes, and net neutrality. The NEVCA also facilitates "VC Briefings", discussions between investors, operators, and academics, on topics that are at the cutting-edge of the venture landscape. The NEVCA operates two distinct events to increase opportunities for new venture capital investments: Unpitch and Syndicate Sessions. Unpitch brings together angel investors, VCs and nascent entrepreneurs over lunch to facilitate connections and help entrepreneurs obtain feedback on their ideas. Syndicate Sessions assist early-career investors as they build their knowledge base and professional networks. Participants in Syndicate Sessions can partake in networking opportunities and panel discussions about the venture capital industry. The NEVCA convenes all of Boston's innovation and startup stakeholders at a signature yearly event, the NEVYs. The NEVYs is a celebration of Boston's venture ecosystem, and unifies the Tech and Life Science communities.

The Commonwealth of Massachusetts supports the venture capital community through **MassVentures**, a quasi-public corporation which funds early-stage, high-growth startups in Massachusetts. MassVentures provides Series A investments to first-time CEOs and/or founders with startups located in Massachusetts. MassVentures seeks to promote industry segments that are not adequately served by the venture community.

In light of gender equity problems holding back the VC industry, our community explicitly supports female venture capitalists and female business founders. **XFactor Ventures** is a Boston-based firm that makes pre-seed and seed stage investments in companies that have at least one female founder. XFactor Ventures also offers startups introductions and guidance when seeking future rounds of funding. **Female Founder Office Hours** brings together female partners from venture firms in Boston to provide advice to female entrepreneurs. Furthermore, in 2017, the City of Boston's Women Entrepreneurs Boston (WE BOS) Program launched a partnership with **i-Fund Women** to support women entrepreneurs by providing the resources and networks they need to launch and grow their businesses. i-Fund Women is a crowdfunding platform for women-led startups and small businesses. Campaigns that are fully funded by January 30, 2018 will be eligible to participate in the first-ever iFundWomen Pitch Competition in March. **B7** is a monthly dinner organized by female venture capitalists. The New England Venture Capital Association (NEVCA) facilitates **Unconscious Bias** trainings for venture capital firms and local companies to learn the manifestations of unconscious bias is and how the community can work to address it. The NEVCA will run four of these trainings in 2018. Participants in the Unconscious Bias trainings include: Flybridge Capital Partners, HubSpot and _Underscore.vc.

b. **Future proposals - Describe the big ideas your community proposes in addition to the current efforts mentioned above to enhance your community's development of venture capital investment.**

Future of Venture Capital

The Massachusetts Digital Health Initiative, or Mass Digital Health, is a comprehensive public-private partnership working to establish Massachusetts as a leading ecosystem for digital health innovation, driving economic impact and improving healthcare costs and quality. Identified as a strategic priority for growth in Massachusetts, the Commonwealth of Massachusetts, City of Boston, and the Massachusetts Competitive Partnership (MACP) formed this public-private partnership to invest in the cluster growth. The digital health market is emerging rapidly, and has the potential to improve the state's economic bottom line by creating jobs, attracting investment, and developing solutions that improve healthcare delivery and ultimately help contain healthcare costs.

MassTech partnered with MACP and the City of Boston to support a "hub" for the industry where a digital health-specific startup program, learning sessions, and networking events can be held, with the aim of building a strong industry network for startups and strengthening the marketplace. With investment and strategic support from both MassTech and industry, Pulse@MassChallenge opened in May 2016 as a Mass Digital Health program.

PULSE @ MassChallenge- Helping entrepreneurs solve healthcare's greatest challenges

Developed as a public-private partnership between the City of Boston, Commonwealth of Massachusetts, and the Mass Competitive Partnership as part of the Mass Digital Health Initiative, PULSE @MassChallenge brings a startup-friendly approach to accelerating the impact of digital health solutions. Through rigorous matchmaking, every PULSE startup connects with a Champion (leading hospital, institution, corporation, payor, and more) to advance healthcare and improve patient wellbeing. The 2018 cohort includes a range of solutions from a scheduling intelligence tool that leverages AI to predict which patients will show up and when to schedule them for appointments to the development of a rapid medical assessment device, MouthLab, which measures respiratory-rate and pattern, pulse-rate, ECG, SpO2, temperature, BP and spirometric lung functions in 30 seconds.

These investments are having a real impact on the growth of companies in Boston. Launched by venture capital firm Third Rock Ventures, the growing company Decibel Therapeutics develops medicines to treat hearing loss. Decibel became the first biotech startup to open in the Fenway neighborhood of Boston.

c. Start-ups - Describe what your community is doing to encourage start-ups.

Boston is the premier city in which to launch a startup. In 2016 and 2017, the "1776 Innovation that Matters Report", powered by the US Chamber of Commerce Foundation, recognized Boston

as the #1 US City for fostering entrepreneurial growth and innovation.[21] Boston is globally known both for its B2B companies such as TripAdvisor and HubSpot, and for having the second highest share of immigrant founders in the United States.[22] Additionally, according to Bloomberg's State of Innovation Index in 2015 and 2016, Massachusetts was the #1 most innovative state.[23]

The Boston area hosts coworking spaces, accelerators and incubators that meet the industry-specific needs of entrepreneurs.

Globally renowned **MassChallenge**, a non-profit, non-equity accelerator, resides in Boston's Innovation District, along with **Techstars** and the new Techstars Autonomous Technology Accelerator with the U.S. Air Force. Startups in the fields of digital health and life sciences receive support through the **PULSE@MassChallenge Initiative,** a component of Mass Digital Health, and multiple wet-lab coworking spaces such as **LabCentral** and **MassInnovation Labs.**

The **BUILD Space at Autodesk**, is a coworking space for architecture, engineering, and construction professionals to experiment in a collaborative environment. **Branchfoods** serves as a hub of food and agricultural innovation.

Partnering with the City of Boston, **MassRobotics** opened a 15,000 sq. ft. robotics-focused accelerator in the Ray Flynn Industrial Park in February 2017. Since then, it has grown to house more than 30 companies and organizations, including startups, mature robotics companies and university teams, with more than 70 people working in the space. With the City of Boston's support, and a recently announced $2.5 million MassWorks grant, MassRobotics will build-out up to 35,000 sq. ft. of additional space to include: private offices; open shared lab, prototyping and test space; a machine shop with 3D printers, laser cutters, and other tools to help make parts; electronics lab; and dedicated labs for advanced manufacturing robots and university-supported research.

The City of Boston created **District Hall** and the **Roxbury Innovation Center**, two centers of innovation that are open to the public and serve as convening spots for nascent entrepreneurs. In 2015, Mayor Martin J Walsh created the position of **Startup Manager** to serve as ombudsman to the startup community and create programs that provide resources to startups. In 2017, the City of Boston, partnered with WeWork to launch a **Startup Job Fair** to connect young professionals and graduating college seniors with local startups that wanted to hire entry-level talent. Furthermore, Mayor Walsh, in partnership with the Venture Cafe Foundation, Gust, and IBM, launched **StartHub**, an online platform that connects and informs entrepreneurs. Boston hosts multiple innovation weeks and festivals, which bring together domestic and international entrepreneurs: Forbes 30 Under 30, HUBweek, WeBos (Women Entrepreneurs Boston), Inbound, FinTech Week, Boston Startup Week and Connected Health.

---

[21] https://www.uschamberfoundation.org/sites/default/files/media-uploads/ITM%202017.pdf
[22] https://startupgenome.com/thank-you-enjoy-reading/
[23] https://www.bloomberg.com/news/articles/2016-12-22/here-are-the-most-innovative-states-in-america-in-2016

To encourage entrepreneurship, and facilitate small business growth, Massachusetts has invested nearly $3 million in 53 grants to innovation spaces across the Commonwealth. Massachusetts has 229 spaces for innovation, including artist spaces (94), collaborative kitchens (15), co-working spaces (51), innovation centers (35) and maker spaces (34). The Commonwealth supports these by awarding over $1.2 million in **Collaborative Workspace Grants** each year. Greentown Labs in Somerville, one of the largest innovation centers, recently expanded to a 100,000 square feet facility that will support 100 cleantech startups, 10,000 square feet of prototyping lab space and more than 400 employees. The Commonwealth provides funding for the **Massachusetts Technology Transfer Center,** which facilitates the transfer of technology from research institutions to industries (including startups), and the **Massachusetts Life Sciences Center**, an investment agency that supports life sciences innovation, education, research & development, and commercialization. Additionally, the **Massachusetts Clean Energy Counci**l, an economic development agency, works with startups in the clean energy sector. The **Massachusetts Global Entrepreneur in Residence (GEIR)** program is a pilot initiative to help qualified international students to stay in the Commonwealth after graduation to start or grow a high potential business. By partnering with the University of Massachusetts and sponsoring these entrepreneurs under its nonprofit research institution exemption from the H-1B cap, the GEIR program helps international student entrepreneurs stay in the United States and continue to build their startup companies. As a result, 19 current GEIR companies now employ 69 people, and have raised more than $73 million, while 17 former GEIR companies employ 479 people, and have raised nearly $240 million.[24]

The Boston region's colleges and universities provide a talent pipeline of budding entrepreneurs, as well as over 20 university accelerators and incubators,[25] such as **Harvard i-Lab, Boston University's BUild Lab, and Northeastern's University Venture Accelerator.** Finally, Boston's venture capital community supports student entrepreneurs through initiatives such as **Rough Draft Ventures (a program of General Catalyst)** and **Dorm Room Fund (a program of First Round Capital)**.

As a potential home to emerging startups, Revere intends to leverage its geography and diversity as key assets. The community is firmly behind the development of a 21st century economy, and city leadership in the public and private sectors have demonstrated that through approval of new zoning (see NECCO), support of small business development, and exploration/piloting of flexible workspaces and adaptive reuse in creative locations (e.g. the Broadway Post Office, plans for the Caddy Farms, and Wonderland redevelopment). The ongoing interest in mixed use new development offers the potential to create more office space, especially in high-traffic business districts that can support and encourage significant foot traffic and interaction with the wider community (Beachmont, Shirley Avenue, Revere Street, and Broadway).

4. Educational Partnerships.

[24] http://innovation.masstech.org/projects-and-initiatives/global-entrepreneur-residence-pilot-program
[25] https://business.masstlc.org/ap/CloudFile/Download/Zrn9O88L

a. **Current efforts - Describe what your community is currently doing to support partnerships between employers and educational institutions (especially as they relate to STEM).**

Partnerships to Build STEM Career Pathways

Partnerships between employers and educational institutions develop career pathways and build workforce development. The Boston Private Industry Council (PIC) leads several workforce development efforts in partnership with local post-secondary institutions and employers. Increasingly, high schools are developing STEM career internships and pathways in collaboration with higher education institutions, employers and partners like the PIC. For example, **C-Town Tech**[26] is an early college information technology pathway program at Charlestown high school that partners with Jobs for the Future[27], Bunker Hill Community College, the Boston Public Schools, the Mayor's Office, the PIC and SAP Corporation. C-Town Tech creates a pathway for students into IT fields that accelerates the acquisition of post-secondary credentials. **Tech Apprentice** prepares students in work readiness skills. Tech Apprentice is a partnership of UMass Boston's Broadening Advanced Technological Education Connections (BATEC), PIC, and BPS Digital Learning Team and Office of Instructional and Information Technology (OIIT). The program offers a seven-week internship at local companies for technology-skilled high school juniors and seniors from Boston and the Metro Boston area. Tech Apprentice provides high school students who are considering IT majors in college with relevant work experience.

Partnerships to Improve STEM Instruction

To better integrate Computer Science, technology and project-based STEM learning across subjects, the City of Boston and BPS are expanding **Teacher Externship Programs**. Teacher Externship Programs are professional development experiences wherein educators improve their delivery of STEAM lessons by learning from field experts in technology companies. This past summer BPS initiated a Design Pathway Externship in partnership with Autodesk and local colleges and technology education programs. BPS is currently developing externships for educators focused on robotics, cyber security and financial technologies.

Partnerships to Promote STEM Learning

Schools, businesses, and nonprofit and governmental partners are working together to build systems that promote STEM learning and, broadly, promote College, Career and Life Readiness. Launched by Boston After School & Beyond and the United Way of Massachusetts Bay and Merrimack Valley (UWMB) in 2015, **BoSTEM**[28] is a city-wide initiative that aims to ensure that every middle-school student in BPS has access to high-quality science, technology, engineering, and mathematics (STEM) learning opportunities. BoSTEM brings together a coalition of high performing nonprofits and 60+ corporate partners who are committed to closing the achievement and opportunity gaps for students who are traditionally underrepresented in STEM learning. The coalition seeks to inspire and prepare Boston's youth for 21st century careers. BoSTEM currently serves 2,000 students across several neighborhoods and school communities. The

[26] Bunker Hill Community College, C-Town Tech, http://www.bhcc.edu/ctowntech/
[27] Jobs For the Future, https://new.jff.org/
[28] BoSTEM, http://bostonstemnetwork.org/

program provides students with coding, digital fabrication, and robotics instruction among other STEM-related lessons. BoSTEM brings STEM professionals into Boston school buildings and after school settings, so that students can learn directly from field experts. Through BoSTEM, students are able to learn in industry settings, like the Vertex STEM Learning Lab[29], where they can both acquire relevant skills and imagine themselves as future life science professionals.

Madison Park Technical Vocational High School provides rigorous academic and technical educational programs that develop workforce ready students and post-secondary education candidates. As Boston's only career vocational technical high school, Madison Park offers a comprehensive academic program with training in eighteen technical vocational areas. Currently Madison Park provides clinical, co-operative and internship opportunities to ensure that students have industry-specific skills to compete in today's economy. Madison Park and its college and industry partners are working to modernize and expand STEM pathways for students in two of the school's academies - (1) the Communications and Technology Academy and (2) the Civic Infrastructure Academy. The Communications and Technology Academy offers courses in Marketing, Design and Visual Communications, Graphic Communications, Radio and Television Broadcasting, Information Support Services & Networking (ISSN), and Web Development and Programming. While many of the Civic Infrastructure courses reflect traditional trades, these careers are becoming increasingly technology and analytics driven, requiring students to develop stronger STEM backgrounds.

Boston Arts Academy offers students a sequence of study in Design and Visual Communications in partnership with Massachusetts College of Art & Design and a variety of industry partners who bring real-world experiences in in-demand industries. Training focuses on 3D modeling, identity/brand design, motion graphics and 2D animation, web design and the basics of HTML, and CSS web development. Students have the opportunity to earn a certification in Adobe software products. At the school's onsite Science, Technology, Engineering, Art and Mathematics (STEAM) lab, students explore the connections between the arts, science, math, 3D design software, electronics, digital media, and fabrication.

The City of Revere has worked to form some small partnerships at the university level. Through a partnership with Northeastern University, students have access to summer internships where they work in a lab setting. Likewise, there have been opportunities for teachers to expand their background in certain STEM areas by conducting research work in a lab setting and then consider classroom applications. Additionally, at Revere High School, we have begun to work with our community to identify internship opportunities during the school day for juniors and seniors.

b. **Future Proposals - Describe the big ideas your community proposes in addition to current efforts mentioned above to enhance your community's development of educational partnerships. Examples might include: a post-secondary institution**

[29] Vertex STEM Learning Lab, https://www.vrtx.com/story/stem-learning-lab

partnering with the Project to establish a school or campus to support the education of tech talent; or the establishment of a K-12 magnet school on the HQ2 campus focused on STEM education.

City as a Classroom: Anywhere, Anytime Learning

Learning is not confined to school buildings or the school day. "Anywhere, anytime learning" is a participatory learning model wherein students interact with each other and garner real world experiences. BPS intends to expand the current program offerings and build formal relationships with community organizations to effectively make the city a classroom and acknowledge student accomplishments wherever they choose to learn. There are several active programs that currently support "Anywhere, anytime learning":

- The 5th Quarter Summer Learning System[30] partners schools and nonprofits across 133 sites to take learning outside of the classroom and provide 11,000 students with expanded learning opportunities in environmental learning spaces, museums and cultural spaces, on college campuses and in a variety of sports-based learning programs. On a pilot basis, students are able to earn skills-based badges. Participating organizations rigorously track student academic and social-emotional learning outcomes.
- Community-Based Credit Bearing Courses offer students the opportunity to earn school credit for learning beyond the classroom through offerings like the Boston Institute of Contemporary Art's ICA Teens[31] program.
- The "More Than a Mile"[32] app encourages and rewards students for engaging in learning experiences beyond their schools and neighborhoods. Not only is the app meant to further activate the "city as a classroom" paradigm, but it is also meant to spark a new kind of exposure to career opportunities and social and professional networks.

Going forward, BPS hopes to (1) expand coordinated "coursework" across community-based organizations - public, nonprofit and private, (2) further develop a citywide badging system that awards micro-credentials for community-based student learning, (3) grow opportunities to earn school credit in community programs, and (4) use technology to connect to the growing number of online learning platforms.

Amazon HQ2 Partnership

BPS imagines Amazon staff and experts both co-designing and leading STEM-related courses for K-12 students (and adult learners) and also helping BPS develop online and device-based applications that provide digital learning experiences and map learning opportunities. Additionally, Amazon HQ2 could serve as a host site for summer and afterschool learning programs.

---

[30] Boston After School and Beyond, https://bostonbeyond.org/summer-learning/

[31] "ICA Teens,The ICA's award-winning teen arts program serves thousands of young people every year, creating informed future artists, leaders, citizens, and audiences" https://www.icaboston.org/ica-teens

[32] Daily Free Press, " More Than a Mile app encourages learning outside the classroom", https://dailyfreepress.com/blog/2017/11/02/more-than-a-mile-app-encourages-learning-outside-the-classroom/

BPS will develop school-to-career pathways that will help students further refine their skill sets and readiness to succeed in STEM careers. Key pathway features are likely to include:

1. **High-tech courses** that prepare students for entry into high demand industries.
2. **Dual enrollment** opportunities that enable BPS students to simultaneously take courses at local colleges for either high school credit, college credit or industry-based credentials. Currently, the Education Cabinet is partnering with with colleges, industries and the school district to design one or more courses for each pathway.
3. **Work-based learning** opportunities that pair on-site learning with academic course work. Specifically, this entails students working on actual or simulated real-life projects, while industry professionals also reinforce concepts by providing courses or seminars.
4. **City-wide technology practice hubs**, e.g. advanced manufacturing learning, incubator, and Maker spaces that could be school-based, based in Amazon's headquarters, or function as mobile units.
5. **Pathway maps** that clearly delineate the options for the three post-graduate paths: (a) immediate entry into specific careers in industry, (b) 2-year colleges that offer explicitly aligned pathways, and (c) 4-year colleges that offer explicitly aligned pathways for more advanced career entry.

BPS will work with partnering colleges and industries to identify pathway requirements for student qualifications, so that students are "guaranteed" to be recognized as qualified if they complete the Pathway and succeed at a predetermined level. Employers are critical partners in the development of school-to-career pathways. We will need organizations like Amazon to collaborate with the City, K-12 schools and colleges and universities to:

- Co-create curriculum and programs;
- Provide teacher professional development/externship opportunities, and certifications;
- Provide feedback on teaching, learning experiences, and pedagogy;
- Provide guidance on credentialing and badging for industry recognition;
- Provide work-based learning opportunities, including student internships and summer jobs; and
- Ensure adequate access to current technologies

New School Models: Building Boston's first grade 9 -14 (or 16) School

Stakeholders in Boston are discussing the idea of developing a school that integrates high school and post-secondary education. Therefore, this school will guarantee students who enter in 9th grade post-secondary admission as well as industry certifications, associates and bachelors degrees in relevant fields. If co-designed by BPS, a higher education partner, and a tech industry partner (like Amazon), the school could feature discipline specific pathways (high school- AND college-level course and credential sequences) that are aligned with STEM industry career ladders (e.g., web development, logistics, hardware/software design, product design and

management, financial services, data engineering, architecture and analytics, and cyber-security).

Such a school would be a first of its kind in Boston and, within a few years of establishment, could serve as a regional education and industry innovation hub. Furthermore, the school has the potential to be a host site for educator, field expert and industry events, and trainings. These events would provide students with exposure to a broad range of professionals, mentors, and instructors. Moreover, the school could also be a host site for skill-building bootcamps, and continuing education opportunities to ensure that Boston's tech workforce stays on pace with the demand for relevant STEM skills.

The proposed school could be located on the Amazon HQ2 campus. The development of a new high school on the Amazon HQ2 Site could provide Amazon with an engine for generating new talent that is specifically trained to meet Amazon's local and national labor force needs. Furthermore, because the proposed school will be located on the Amazon campus, it has the potential to be a laboratory space for educational and industry innovation.

New School Models: A Post-Secondary Credential Accelerator

Increasingly there is a need for faster, cheaper ways to award young adults with postsecondary credentials. We define post-secondary credentials as programs that both shorten the time to credential attainment for students (i.e. 12- to 18-months) and that reduce the debt burden for students. Post-secondary credentials are particularly critical for Opportunity Youth[33] and older students for whom traditional two- and four-year post-secondary programs might not be viable. Specifically, post-secondary credential programs can increase economic mobility for non-traditional students.

While Boston has not yet developed credential accelerator prototypes, BPS has followed the emergence of similar models like Microsoft Professional Degree Program (MPD)[34] and Skillful[35] , a program that fosters skills-oriented education, training, and hiring. BPS imagines working with Amazon and any number of college and university partners to create credential accelerator models that on-ramp directly to Amazon jobs and STEM-related jobs across the region.

c. **Roadblocks - Describe the greatest barriers your community has faced in the deployment of STEM programs or roadblocks to getting them off the ground. Describe how the Project could join your community in resolving these issues.**

Critical roadblocks for the deployment of STEM programs include the following:

[33] Opportunity Youth are young adults aged 16 to 24 who are not currently employed or enrolled in school.
[34] Venture Beat, "Microsoft launches data science degree to plug the skills gap, more courses could follow" https://venturebeat.com/2016/07/14/microsoft-launches-data-science-degree-to-plug-the-skills-gap-more-courses-could-follow/
[35] Markle, "Skillful", https://www.markle.org/rework-america/skillful

- **Defining core science and STEM instruction across the K-12 pipeline and equipping schools with standards-aligned, industry-relevant STEM curricula.** Substantial capacity is required to move whole systems, particularly BPS, to the Next Generation Science Standards[36]. It has been difficult to garner the necessary resources. Secondly, there is currently a disproportionate emphasis on English Language Arts and math (apart from science, technology and engineering) in the state standardized testing regimen which causes tension with the STEM learning agenda. This deeply influences where districts focus their effort in terms of curriculum development and scaffolding. Boston is currently working to ensure that we both prepare students to succeed in the subjects in which they are tested and to expand the curriculum to ensure greater readiness for the next stages of life.
- **Providing young people with STEM equipment - hardware and software - in schools and community-based programs.** In recent years, district, charter and Catholic schools have improved internet connectivity and modernized computer technology. They have also provided students and teachers with new desktop, laptop and tablet computers. While some schools offer maker spaces and robotics equipment, all schools need upgrades to bring STEM learning to life and move programs toward consistent blended and project-based learning. Supplemental programs like BoSTEM and organizations like the South End Technology Center, the Timothy Smith Network and the Boston Children's Museum have partially addressed the lack of STEM equipment.
- **Funding.** Many STEM projects require materials or equipment that have an initial expense to start up and then an annual expense to replenish. Additionally, there is the cost of providing professional development and training to build the skill set of our teachers to implement new approaches to their practice.
- **Expanding access to the city's technology industry resources, especially for young people and families of color.** Anecdotally, many of the city's young people and their families, particularly those in communities of color, are less aware of the rapid growth of Boston's innovation sectors. These youth are not developing the kinds of social and professional connections that accrue from internships, summer jobs, and more basic career exposure activities.
- **Developing replicable school-to-career pathways for 21st Century careers.** Boston has not yet created an updated school-to-career pathway system to provide students relevant academic and skills training, industry and post-secondary certification and direct entry to local/regional STEM jobs.

Amazon can play a role in helping Boston and its institutional partners address each of the challenges highlighted above. Amazon can 1) be a key partner with schools and nonprofit organizations that are already designing and democratizing STEM curricula; 2) offer needed private funding and in-kind contributions to make sure that students and workers who are currently learning new skills have access to modern technology; 3) open its doors to all of Boston's communities, providing opportunities for career exposure and real-world learning; and 4) co-design STEM career pathways with K-12 and higher education partners.

[36] https://www.nextgenscience.org/search-standards

5. **Describe any places where you feel that the raw data does not tell the full story for your community. Tell us the full story. For example, if your software developer location quotient is low enough to suggest that a tech employer might struggle to recruit but it is rapidly increasing and employers are having great success recruiting to your community right now, tell us that. Perhaps your housing supply is low but your community has implemented innovative programs to address this in the future.**

While it is clear that healthcare is Boston's largest industry; growth, location quotients, or hospital rankings do not tell the whole story as the healthcare industry is intertwined with area universities, researchers, and tech firms. Unlike in other cities, many of Boston's hospitals are research and teaching hospitals connected with universities. These inter-industry connections and research clusters create a competitive advantage for the healthcare industry through the agglomeration of existing talent, the pipeline of future talent from the area universities, and research centers receiving significant public and private funding. A prime example of this, is Boston's universities, hospitals, and nonprofits have been the largest recipients of National Institutes of Health (NIH) funding for 23 years in a row. The NIH awarded 3,710 grants to Boston's universities, hospitals, companies, and nonprofits in FY17 totaling $1.97 billion in awards.

B. Education

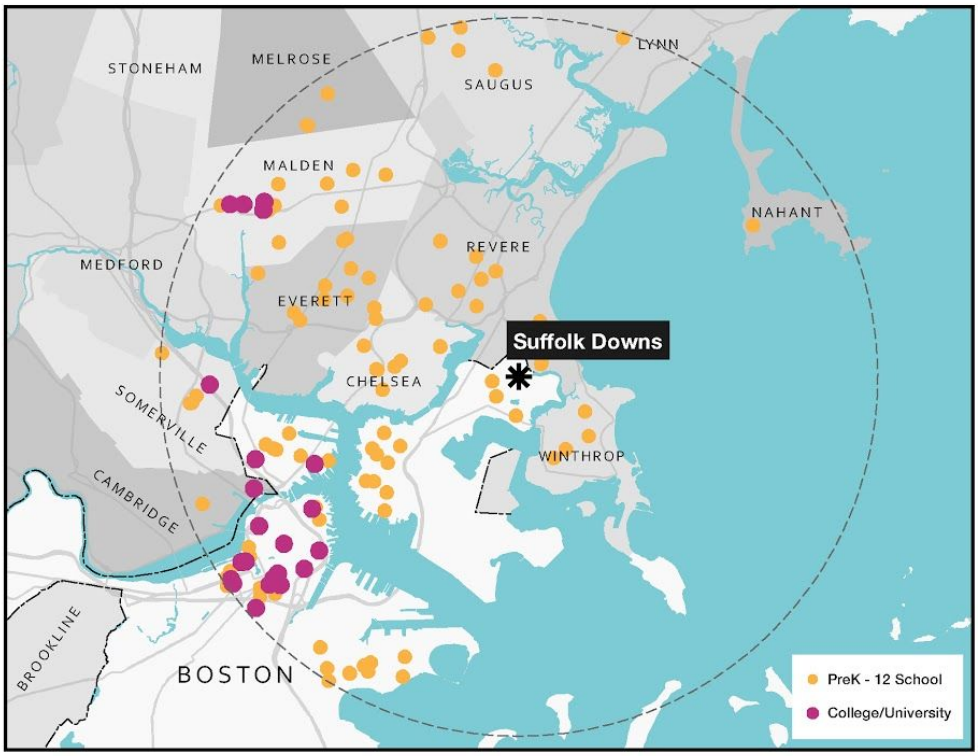
1. **Describe the educational system (from pre-K to 12 and graduate level) in high-level terms. Focus on their integration and cooperation as well as responsiveness to employer needs. If those areas are lacking, describe how your community proposes to address those deficiencies. Provide a map of each school within a 5-mile radius of each proposed real estate site.**

Each municipality in Greater Boston has its own public district, supplemented by private and charter schools. Education Week has ranked Massachusetts schools #1 in the nation every year since the index began in 2008.[37] Additionally, fourteen schools in the Boston area made Newsweek's top 500 list of best public high schools in the country.[38] Given the many quality educational opportunities in the region, 85 percent of children aged five to seventeen attend public school.[39]

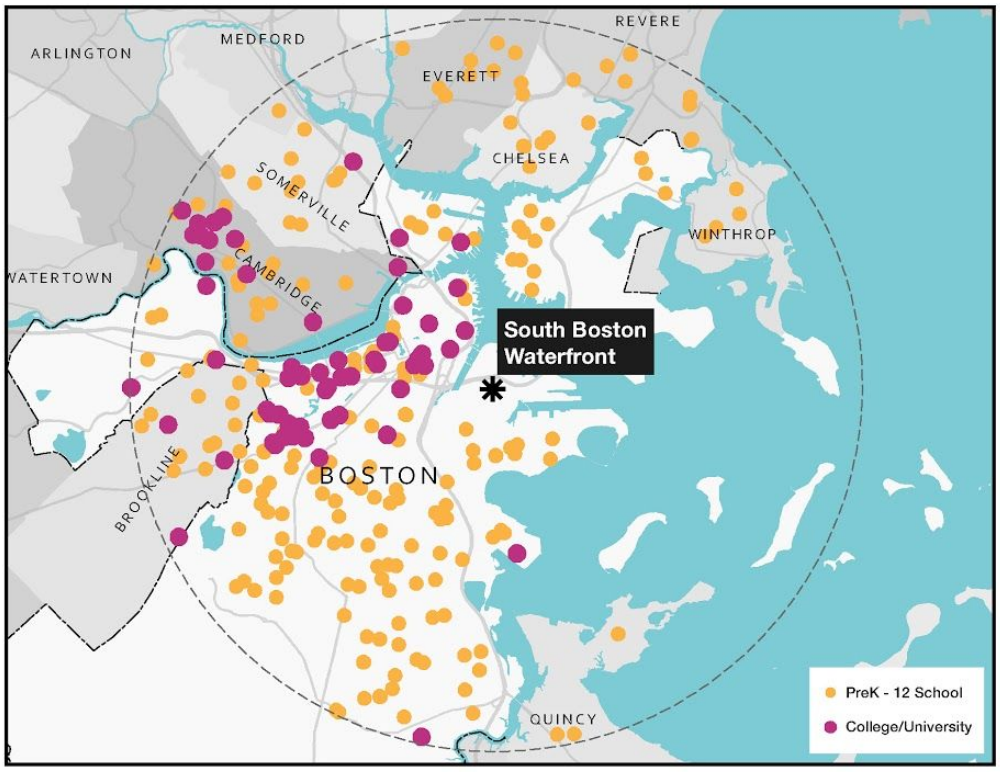
Schools in parts of Boston, Cambridge, Somerville, Everett, Malden, Melrose, Saugus, Lynn, Nahant, Revere, Winthrop, and Chelsea are within a five mile radius of Suffolk Downs, as

[37] https://www.edweek.org/ew/collections/quality-counts-2018-state-grades/report-card-map-rankings.html
[38] "America's Top High Schools 2016," Newsweek.com, http://www.newsweek.com/high-schools/americas-top-high-schools-2016
[39] U.S. Census Bureau, 2016 American Community Survey, BPDA Research Division Analysis

shown in the map below.



A five-mile radius of the South Boston Waterfront captures some of the grade schools in Boston, Brookline, Cambridge, Somerville, Everett, Chelsea, Revere, and Winthrop, as shown in the map below. These maps also show the colleges and universities within a five-mile radius of the sites (shown in purple).



Boston is home to 126 Boston Public Schools, 28 public charter schools, and 53 private schools including 19 Catholic schools. The most extensive network of schools in Greater Boston is the Boston Public Schools. Founded in 1647, BPS is the oldest school district in the country and the 73rd largest in America. Currently 56,520 students from K2 to grade 12 students are enrolled in BPS out of roughly 75,000 students across the city. BPS employs 10,255 staff, including approximately 6,900 teachers, 1,500 aides, and 850 administrators. Today, BPS is one of the most diverse school districts in the nation; the district is 42% Hispanic, 35% Black, 14% White, and 9% Asian. Nearly one in every two students speaks a language other than English at home, and BPS students come from 138 different countries. One in five BPS students has a disability, and 70% are economically disadvantaged.

BPS is the home of many firsts in the nation: the first public school (Boston Latin School, 1635), first public elementary school (Mather Elementary School, 1639), first public school system (1647), and first public high school (English High School, 1821). BPS is currently regarded as one of the highest-performing urban school districts in America. On the "Nation's Report Card," produced by the National Assessment of Educational Progress[40], Boston's student performance is on par with the national average for all public schools, including suburban schools, in grade 4 reading and in grade 8 mathematics. The percentage of students who pass all grade-10

[40] BPS, "Nation's Report Card: National Assessment of Educational Progress and Trial Urban District Assessment (TUDA) Reports", https://www.bostonpublicschools.org/Page/714

Massachusetts Comprehensive Assessment System (MCAS)[41] tests rose from 57% in 2008, to 75% in 2015. Since 2007, the BPS four-year graduation rate has steadily increased, reaching its highest rate ever in 2016 (72%). Furthermore, 70% of BPS graduates go on to college.

Since 2010, Boston's district, charter and Catholic schools have collaborated to solve pernicious educational and operational challenges through a partnership called the Boston Compact.[42] Believing that multi-sector engagement is a powerful way to close opportunity and achievement gaps, the Compact provides teachers with opportunities to strengthen classroom practice by collaborating with colleagues from other sectors. It organizes school communities to solve challenges that cut across school types - like high-quality support for English Language Learners, Special Needs Learners and Black and Latino boys. Lastly, the Compact convenes systems leaders to develop policy recommendations and make operational improvements in areas like transportation and school assignment.

The Revere Public Schools is an award winning, mid-sized urban district just north of Boston. Revere Public Schools serve over 7,500 students and families in grades Pre-K through 12 with no-cost full day Kindergarten for all residents. In 2016 the district received the Gold Award from Schools of Opportunity and in 2014 received the Best Urban Schools award from the National Center for Urban School Transformation. With students who hail from over 40 different countries, Revere's diversity is one of its greatest strengths. The district contains 11 schools on eight campuses including six elementary school (Pre-k through grade five), three middle schools (grades six through eight) and two high schools (grades nine through post graduate).

Revere High School is a high-performing urban public high school in a socioeconomically and ethnically diverse community. Revere High School students are well-prepared for the rigors of higher education and a competitive workforce. Revere High School has also served as a venue and facilitator for social integration and workforce development across the spectrum: it houses the Revere Community School, which provides parent leadership development, immigrant integration support, English and Arabic language courses, and connections to vocational program enrollment for nontraditional students.

Revere Public Schools also partners with North Shore Community College, Bunker Hill Community College, and Salem State University where our students are currently engaged in 94 dual enrollment courses, earning college credits while still in high school. The Internship Program has placed over 100 students in various companies in Revere and surrounding communities. The goal is to expand this program so that every student has an internship component as part of the High School experience. Revere Public Schools are working with the Metro North Regional Employment Board to increase internship opportunities particularly in the areas of IT and related fields as the Board's research shows three of the top seven occupations in the Metro North workforce development area projected to have the largest job growth between 2014 and 2024 are computer/IT related occupations.

[41] Massachusetts Comprehensive Assessment System (MCAS) is a statewide, standards-based exam administered to all public school students in grades 3 through 10, excluding 9th grade

[42] The Boston Compact, http://www.bostoncompact.org/

The Greater Boston region is home to over 75 institutions of higher learning, 31 of which are located in the city of Boston. As of academic year 2016–17, there were more than 138,000 students enrolled in undergraduate and graduate programs within Boston. Boston's world class educational institutions attract the best talent from around the world; there were over 48,000 international students in the Boston region in 2015.

2. Describe early childhood education programs in your community, especially those focusing on STEM initiatives. Be specific in your description, including name and distance to proposed real estate sites.

The Boston Public Schools serves 9,500 students in early education programs through 150 school-based and community-based classrooms, pre-K classrooms[43], 150 Kindergarten classrooms, 140 first grade classrooms, and 50 second grade classrooms. Boston's Pre-Kindergarten to Grade 2 curriculum and the work of the district's Department of Early Education is nationally regarded. A recent WBUR article[44] highlights the district's movement toward more play-based lessons in early grades, practices well-suited for STEM learning. The following table describes BPS early education curricula[45]:

Grade	Curriculum
Pre-K (K0/K1)	Focus on K0/K1 is BPS curriculum for four-year-old students. The curriculum, while designed for four-year-old students, contains developmentally appropriate adaptations to serve all our three- and four-year-old students. As this is most likely their first foray into school, our units of study are designed as a bridge between home and school. Curricula focus on social and emotional development; literacy and development, math practice, science, and arts.
Kindergarten (K2)	Kindergarten students learn through our Focus on K2 curriculum. In the BPS, we use the term K2 instead of kindergarten, referring to our five-year-old students. A core component of the Focus on K2 curriculum is Our Boston, where children are invited to engage in designing and building, as a classroom, constructions to make Boston a fairer and more interesting place for children. The K2 STEM investigations program is comprised of weeklong investigations. The template (or structure) for each investigation is based on empirical evidence regarding the best practice for drawing children into science content. The investigations are based on the 4

[43] Funded through the Federal Pre-K Expansion Grant, https://sites.google.com/bostonpublicschools.org/earlychildhood/boston-peg
[44] WBUR, "Boston Schools Shift To More Play-Based, Kid-Led Curriculum In Early Grades" http://www.wbur.org/edify/2018/02/16/early-education-reforms
[45] BPS, "Department of Early Childhood", https://sites.google.com/bostonpublicschools.org/earlychildhood/home?authuser=0

	content-based units that will be studied during the school year: our community, animals and habitats, construction, and our earth.
Grade 1	Boston Public School's Focus on First curriculum is an integrated, content-based approach to literacy. To reflect today's world and children's 21st century experiences, the overarching theme of the curriculum is globalization. Over the course of the year, from many angles, children and educators study today's global and changing world, learning essential first grade literacy skills along the way. Children dig deeply into content knowledge and express their developing understandings through diverse means. They integrate, deepen, and expand their understandings of what it means to be a global citizen and a citizen of Boston.
Grade 2	In the second grade Focus on Second (Fo2) curriculum, students are guided by their teachers to deeply analyze meaningful topics. Fo2 structures opportunities for children and adults to work together to analyze texts, ideas, images, structures, works of art, and words. Students investigate Science and Engineering topics, consider stories of history and community, and experiment with new and familiar materials to communicate powerful ideas through multidimensional projects. Units of study include: how we learn in our school communities, the forces of wind and water, who are we, and the power of pollinators.

Data, research, and articles about focus on early learning for Pre-K-Grade 2 can be found on BPS Department of Early Childhood Research and Policymaker's website[46].

Over several years, BPS has collaborated with several community-based pre-K program providers to improve program quality and early learning outcomes across provider types. This collaborative work was first launched under the Boston K1DS initiative[47], has been expanded under the current federal Pre-K Expansion Grant[48] (PEG) partnership with Massachusetts Office of Early Education and Care and will continued to be scaled under Boston's Universal Pre-K system[49]. Community partners participating in these initiatives have adopted the P-2 FOCUS Early STEM curriculum and helped to scale its use across several Boston Neighborhoods. The *P-2 FOCUS* Early STEM curriculum to engages students, pre-K through grade two, in eight scientific practices highlighted in the Next Generation Science Standards:

- Ask questions & define problems.
- Plan and carry out investigations
- Obtaining, evaluating, and communicating information.
- Construct explanations and design solutions

[46] BPS Department of Early Childhood, "Research and Policymakers page", https://sites.google.com/bostonpublicschools.org/earlychildhood/research-policymakers
[47] BPS, "Boston's Preschool Expansion Grant", https://sites.google.com/bostonpublicschools.org/earlychildhood/boston-peg?authuser=0
[48]BPS, "Boston's Preschool Expansion Grant", https://sites.google.com/bostonpublicschools.org/earlychildhood/boston-peg?authuser=0
[49] BPS, "Building a Foundation for Success: Boston's Progress Toward Universal High-Quality Pre-K", https://www.tbf.org/-/media/tbf/files/forum-materials/tbf-upk-presentation-11_15_17.pdf

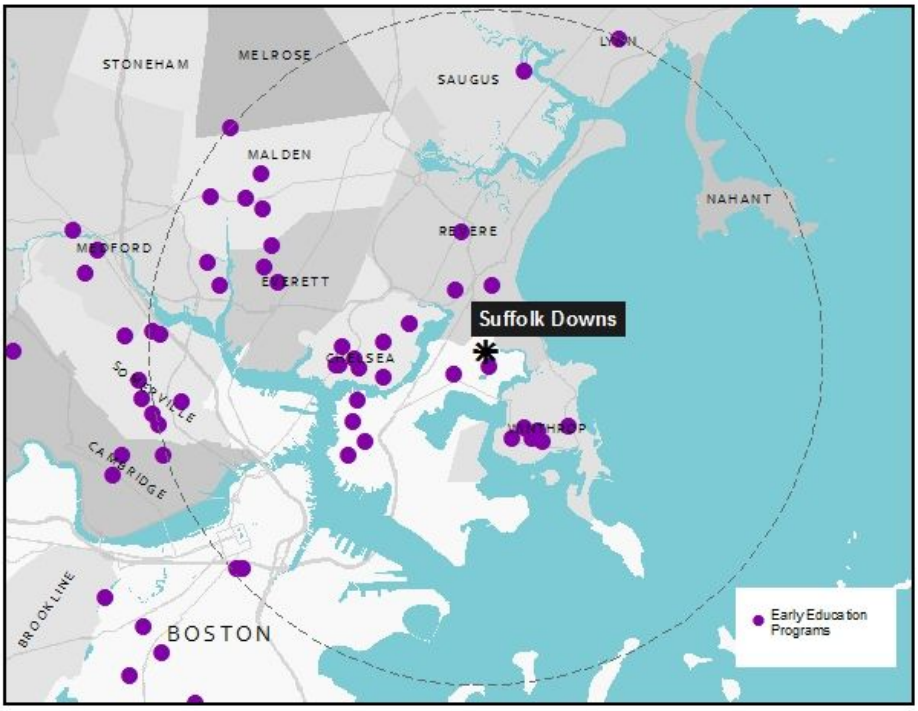
- Develop and use models
- Use mathematics and computational thinking.
- Engage in argument from evidence
- Analyze and interpret data

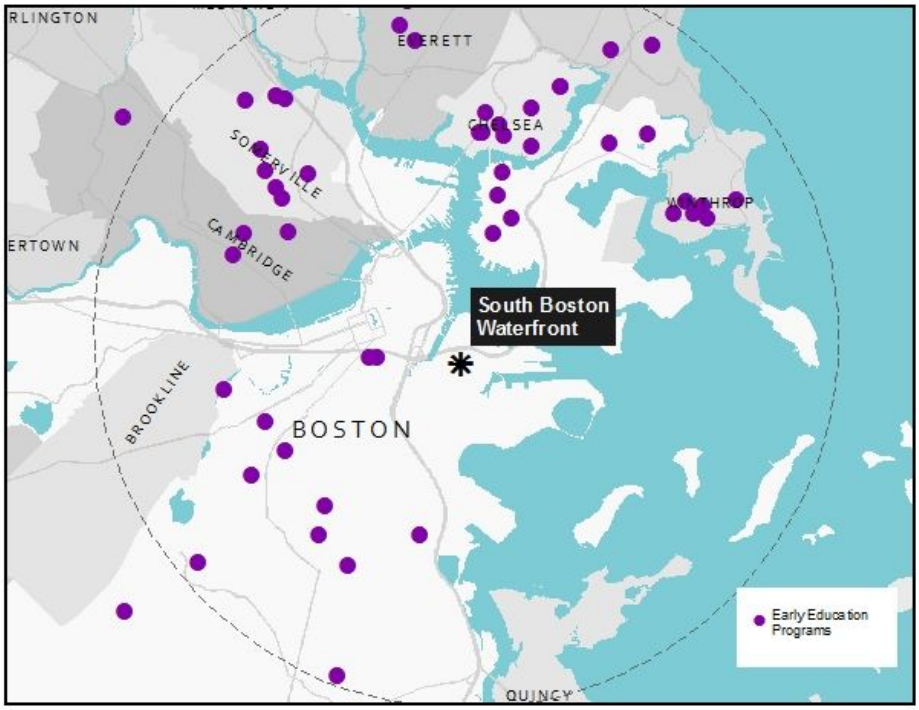
STEM education is part of the Revere district curriculum in all Early Childhood classrooms. In addition to instruction on the state standards for this grade level, partnerships with Science from Scientists, STEMScopes, and Project Lead the Way enhance opportunities for elementary and preschool aged students. The Early Childhood program ranges from half day to full day and from 2 days to 5 days per week based on parent preferences.

Boston community-based organizations that implemented P-2 FOCUS through the K1DS and PEG initiatives:

- Boys and Girls Clubs of Dorchester
- East Boston YMCA
- Roxbury YMCA
- ABCD Walnut Grove Head Start
- Ellis Memorial Early Education Center
- Nazareth Child Care Center - Catholic Charities
- Nurtury - Tremont
- Nurtury - Learning Lab
- Nurtury - Ruggles/Gilday Center
- Paige Academy
- Wesley Child Care Center
- Yawkey Konbit-Kreyol Center - Catholic Charities

The maps below show the locations of select early education sites within five miles of the proposed sites.





3. Primary, Secondary Education - Describe childhood education programs in your community focused on STEM initiatives.

K-12 Schools

Boston Public Schools currently offers computer science courses across the district, from Computer Science Principles to Programming, to AP Computer Science. Additionally, 70% of BPS students participated in the annual Hour of Code last year to ensure a basic level of coding exposure and to encourage more students to pursue Computer Science. While BPS schools are leading the way on expanding STEM learning, several Boston charter and Catholic schools are also developing grade-level and summer STEM programming opportunities.

Boston's Grade 3 to high school curricula are based on the nationally-lauded Massachusetts State Curriculum Frameworks. The 2017 curriculum frameworks for English Language Arts and Literacy and for Mathematics are now available in their final form[50], having been adopted less than a year ago. As Massachusetts incorporates additional resources in the 2017-2018 academic year, BPS will evolve curricula based on the new elements of the curriculum framework. In January 2018 the new Massachusetts History and Social Studies frameworks were released for public comment. The district is also working to incorporate the new Digital Literacy Standards released in June 2016.

In addition to the Boston Public Schools, charter schools in Boston are increasingly incorporating computer science curricula in the classroom. Offerings range from multi-week courses (Conservatory Lab Charter) to semester-long electives (Boston Collegiate Charter, Match Charter and Boston Prep Charter) to required grade level and grade span classes (Edward Brooke Charter). Subject matter areas include computer science, programing and coding, engineering, robotics and internet safety. Students are using tools like Scratch Jr., Scratch, Arduino and Lego Robotics Kits in many of their courses.

Local charter schools are also partnering with organizations specializing in STEM learning to develop in-school and out-of-school time learning opportunities. For example, Excel Academy Charter is teaming with Project Lead the Way to develop its high school Computer Science and Biomedical Science programs. Project Lead the Way is a national organization that helps schools develop and activate applied, project-based STEM learning approaches. Boston Collegiate Charter School is partnering with I2 Learning to offer middle grade students a free, two-week summer engineering camp. I2 Learning aims to help schools and districts turn classrooms into STEM learning labs. I2 also partners with several Boston Public Schools.

Curricular and instructional programs are complemented by out of school learning experiences such as competitive robotics teams and other peer-to-peer learning activities. For example, Boston Collegiate Charter School offers a semester-long, online senior computer science course. Furthermore, Excel Charter High School partners with Project Lead the Way to enroll all students in one of two instructional tracks, Computer Science and Biomedical Science.

[50] Massachusetts Department of Elementary and Secondary Education, "Massachusetts Curriculum Frameworks" http://www.doe.mass.edu/frameworks/

Industry partners
BPS industry partners work to ensure Boston students have curriculum-aligned and supplemental work-based learning experiences, for example, State Street offers internships for Boston students and Vertex provides lab-based course work. Partners also provide opportunities for professional collaboration, like teacher externship and customized professional development. Comcast has a strong relationship with Madison Park. Comcast presents to the Electrical and ISSN students each year, and eligible students apply for 4-6 Co-op positions offered each year. Students have the option to apply for full time employment with Comcast after graduation if they had a successful Co-op and meet Comcast requirements for employment. In the last 10 years, approximately 20 Madison Park students were employed by Comcast after graduation with at least 12 still employed full time.

a. If secondary school:

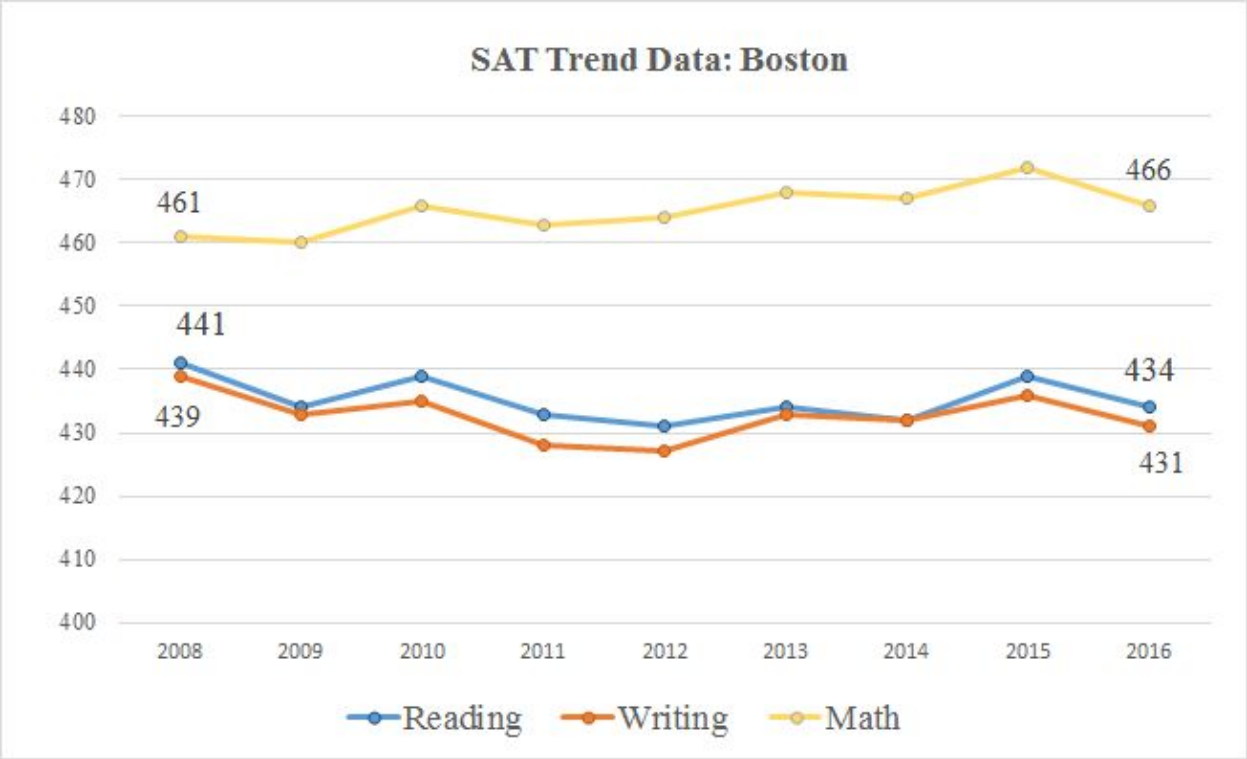
(i) Average ACT and SAT scores (provide average math, science, verbal, and total, as possible) for each of the past ten years

Massachusetts graduating seniors were the second-best performing students in the nation on the ACT, earning an average composite score of 25.4 out of a possible 36, an increase over last year's score of 24.8. Of the 29% of public and private high school graduates who chose to take the test, which consists of Math, English, Reading and Science subsections, 56% met all four ACT college readiness benchmarks, an increase from last year's rate of 53% and well above the national average of 27%. The percentage of students who met all four college readiness benchmarks increased from 2016 to 2017 for all major racial and ethnic groups: from 60 to 64 percent for Asian students, 55 to 59 percent for white students, 31 to 37 percent for Hispanic/Latino students, and 21 to 25 percent for black/African American students.[51]

The most recent SAT data for Boston students is for the 2016-2017 school year, and reflects the new scoring system recently implemented by the College Board. The average (mean) score for the 4,269 BPS students taking the SAT between fall 2016 and spring 2017 is 494 in Reading and 511 in Math. In comparison to the SAT College and Career Readiness Benchmarks, Boston exceeds the Evidence-Based Reading and Writing benchmark of 480, but falls short of the benchmark of 530 for math. Massachusetts outperformed the national SAT average for both the Evidence-Based Reading and Writing section (533) and the Math section (527).

Ten-year trend data using the older scoring system suggests a small increase in Math performance on the SAT over time, and flat performance in Reading and Writing. Score ranges for all students were between 432-441 for Reading, for 427-439 for Writing, and 460-472 for Math. Because of the change in scoring, trend data below includes only the years from 2007-2016, when the the SAT test and reporting were approximately equivalent.

[51] Massachusetts Department of Elementary and Secondary Education. http://www.doe.mass.edu/news/news.aspx?id=24545



Most schools and districts leave students and families to decide on their own whether or not they will participate in the college entrance exam program. Although this practice results in higher average scores for those districts, it often results in only the highest achieving students positioning themselves for college acceptance. The Revere Publics Schools requires all students to take both the PSAT and the SAT during school. As such, Revere Public Schools fund the full cost of both assessments to ensure that all students are well positioned for college acceptance.

Revere SAT Scores	Math	Reading	Writing	TOTAL
2017*	499	494	--	993
2016	460	429	425	1314
2015	456	427	423	1306
2014	448	424	419	1291
2013	466	438	438	1342
2012	458	441	431	1330
2011	473	450	440	1363
2010	480	459	450	1389

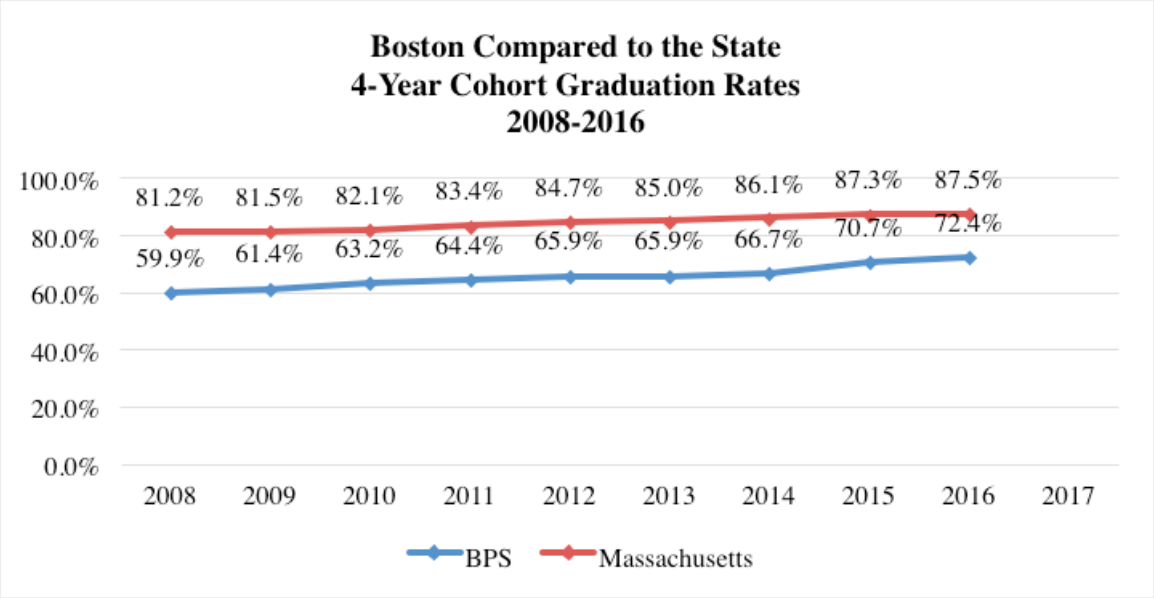
2009	464	453	438	1355
2008	468	455	448	1371

Source: Revere Public Schools.

** 2017 scores reflect the new scoring system implemented by the College Board*

(ii) Graduation rates for the past ten years

Graduation rates in the Boston Schools increased steadily from 2008 to 2016, moving from 59.9% graduation in 2008 to 72.4% in 2016. Over that eight year period from 2008-2016, Boston narrowed the gap between the district and the state from 21.3 percentage points (59.9 in Boston compared to 81.2 in Massachusetts) to 15.1 percentage points (72.4 in Boston compared to 87.5 in Massachusetts). For the 2016-2017 school year, the four-year graduation rate reached a historic high of 72.7 percent, a 0.3 percentage-point increase over the previous year.



BPS also significantly increased the graduation rate of students who earned a diploma within five years. Altogether, 78.4 percent of all students who entered high school as freshmen in 2012 graduated within five years of entering high school, up from 76 percent the year before. This means that an additional 251 students, after receiving an extra year of high school, received diplomas in 2017.

In addition to improving the graduation rate, BPS has made considerable gains in reducing its annual dropout rate, which fell districtwide by nearly one percentage point from 2016 to 2017. The dropout rate also declined for all major racial subgroups: from 4.9 percent to 4.1 percent for Black students; from 3.8 percent to 2.5 percent for White students; from 1.2 percent to 0.7 percent for Asian students; and from 5.0 percent to 4.2 percent for Latino students. Overall, BPS

has cut the dropout rate in half over the past ten years, lowering it from 7.9 percent in 2007 to 3.6 percent in 2017.

Four BPS high schools have not only achieved one-year gains from 2015-16 to 2016-17 that exceed the district average, but they also show greater long-term gains since the 2006-07 school year than the district as a whole. (1) East Boston High School continued to make impressive gains with a seven percentage-point increase in its four-year graduation rate, from 67.7 percent in 2016 to 74.7 percent in 2017. The school's rate has risen by 27.1 percentage points over the past decade, climbing from 47.6 percent in 2007. (2) Snowden International School demonstrated a 9.3 percentage point increase, rising from 70.7 percent in 2016 to 80.0 percent in 2017. The school's rate has risen by 20 points over the past decade, increasing from 60.4 percent in 2006-07. (3) TechBoston Academy saw a 4.5 percentage point gain, rising from 84.3 percent in 2016 to 88.8 percent in 2017. The school's rate has risen by nearly 26 points over the past decade, climbing from 63.1 in 2007. (4) Jeremiah E. Burke High School continued to improve its graduation rate, which increased from 74.0 percent in 2016 to 76.9 percent in 2017. The school's rate has increased up by nearly 45 percentage points over the past ten years, soaring from 32.3 percent in 2007.

Revere Public Schools Graduation Rates

Revere public schools have also shown increases in graduation rates, improving 12.3 percentage points since 2008, as shown in the figure below.

Cohort 4-yr Graduation Rates	Cohort 2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
All Students	**79.8**	**78.7**	**82.9**	**77.8**	**76.7**	**76.8**	**70.6**	**69.0**	**64.8**	**67.5**
Male	74.4	72.9	79.3	74.5	69.7	73.6	64.0	62.5	59.3	62.2
Female	85.5	84.1	86.5	80.9	84.7	80.4	77.5	76.4	72.0	73.2
ELL	52.2	57.5	61.7	63.8	60.7	60.3	68.9	45.5	45.3	48.1
Students w/disabilities	73.1	57.5	67.5	62.3	58.0	63.2	47.9	28.6	41.4	48.3
Low income	78.2	77.9	82.8	76.4	75.3	75.1	67.8	65.7	62.2	63.6
High needs	76.8	75.9	81.3	75.7	74.3	74.1				
Afr. Amer./Black	80.8	63.6	68.2	69.6	66.7	64.7	83.3	91.7	50.0	71.4
Asian	90.5	85.7	88.9	76.0	87.9	93.1	64.7	73.7	64.3	80.0
Hispanic/Latino	75.1	76.8	77.7	76.0	71.1	69.2	67.8	64.2	60.3	62.4
White	85.3	83.0	90.2	81.7	81.0	82.0	73.8	70.5	70.7	69.5
Multi-race, Non-Hisp./Lat.	78.6	70.0	83.3	66.7	76.0	75.0	50.0	33.3	52.9	38.5

Source: Massachusetts Department of Elementary and Secondary Education. City of Revere Analysis

(iii) Percentage of graduates by gender and race/ethnicity matriculating to (please include for all programs and specifically for STEM programs):

(1) Four-year colleges or universities

(2) Two-year community colleges

(3) Vocational and technical school and programs

College Enrollment of Boston Public Schools Graduates

The most recent college attendance data available for Boston students is for the high school class of 2014-15 and are presented in the table below. Of the 3,228 students graduating from Boston high schools in 2015, 70% attended two- or four- year colleges compared to 76% for the entire state. Of all college attendees, a nearly even distribution went to public two-year (30.5%), public four-year (33.8%) and private four-year (35.3%) institutions. Almost 38% of college attendees in the class of 2014-15 attended Massachusetts colleges and universities.

Notably, 85% of 2015 graduates are "high needs students," meaning that they've been designated as either low income (prior to School Year 2015), economically disadvantaged (starting in School Year 2015), ELL, former ELL, or a student with disabilities. Sixty-seven percent of high needs graduates in Boston attended post-secondary institutions. Among students of color, 67% of African-American students, 63% of Latino students and 87% of Asian students in the Class of 2014-15 attended a post-secondary institution.

BPS Class of 2014-2015	# High School Graduates	# Attending College	% Attending College	% Private 2 Year	% Private 4 Year	% Public 2 Year	% Public 4 Year	% MA Com. College	% MA State Univ.	% Univ. of Mass.
All Students	3,228	2,259	70.0%	0.4%	35.3%	30.5%	33.8%	29.6%	8.2%	22.6%
Female	1,633	1,207	73.9%	0.5%	36.7%	27.7%	35.1%	27.1%	8.9%	22.6%
Male	1,595	1,052	66.0%	0.3%	33.7%	33.8%	32.2%	32.5%	7.4%	22.6%
High Needs	2,747	1,845	67.2%	0.5%	32.5%	35.1%	31.9%	34.1%	8.2%	21.6%
ELL	750	448	59.7%	0.7%	26.1%	47.1%	26.1%	46.0%	6.9%	18.1%
Economically Disadvantaged	1,495	1,015	67.9%	0.6%	30.5%	36.3%	32.6%	35.6%	9.0%	21.8%
Students w/disabilities	531	273	51.4%	2.2%	24.9%	55.7%	17.2%	54.9%	5.5%	10.3%
Afr. Amer./Black	1,302	875	67.2%	0.3%	29.6%	39.1%	31.0%	37.6%	9.7%	19.4%
Asian	410	360	87.8%	0.0%	45.3%	15.6%	39.2%	15.0%	2.2%	35.0%
Hispanic/Latino	977	615	62.9%	0.8%	32.4%	37.4%	29.4%	36.4%	7.8%	19.2%
Multi-race, Non-Hisp./Lat.	56	38	67.9%	2.6%	44.7%	23.7%	28.9%	23.7%	0.0%	28.9%
White	466	362	77.7%	0.0%	43.1%	14.1%	42.8%	14.1%	12.2%	22.9%

Source: Massachusetts Department of Elementary and Secondary Education, " Graduates Attending Institutions of Higher Education"

The National Student Clearinghouse (NSC) now tracks the field of study and level of credential earned by college graduates from institutions of higher education. Unfortunately, the institutions do not report students' field of study until they complete their degree, so students' majors while they are enrolled and before they complete cannot be analyzed. There were 995 BPS Class of 2011 graduates who obtained a bachelor's degree by the summer of 2017. Of them, 946 or 95% had a field of study reported to the NSC.

STEM Fields of Study of Boston Public Schools Graduates

Of the 946 BPS Class of 2011 graduates who have earned a Bachelor's degree as their first degree, 21% or 196 earned it in a STEM field. The breakdown of the 196 degrees by broad field of study area are:

- Science and mathematics majors: 98 degrees
- Engineering: 57 degrees
- Computer and information sciences: 41 degrees
- Another 76 degrees were earned in health profession fields.[52]

Career Vocational and Technical Education in Boston Public Schools

Boston's only full career vocational and technical education (CVTE) school, Madison Park, currently houses 19 CVTE programs. Madison Park's student enrollment is primarily African-American and Hispanic, 94.2% of the student body, compared to the district combined total of 73.4% and the state combined total of 29.0%.

Madison Park subgroup data by CVTE program and by student program completion/success rates are incomplete. The school is actively working on its internal data system (Skills Library) to track students by pathway, demographic category, certification success and program completion. In the newest CVTE program--Computer Programming & Web Development--100% of students are on-track to full program completion. Four local colleges offer aligned pathways for Madison Park's STEM-related CVTE programs: Northeastern University, Wentworth College, Benjamin Franklin Institute of Technology (BFIT), and Roxbury Community College (RCC).

College Enrollment of Revere Public Schools Graduates are in the table below.

	2015				2014				2013			
	Attending Higher Ed	Private 4 year	Public 4 year	Comm. College	**Attending Higher Ed**	Private 4 year	Public 4 year	Comm. College	**Attending Higher Ed**	Private 4 year	Public 4 year	Comm. College
All Students	**66.1**	33.2	36.1	30.3	**75.8**	31.5	32.3	31.9	**65**	29.9	33.2	34.9
Female	**73.4**	37	31.2	31.9	**78**	31.7	33.8	33.1	**70.9**	30.6	31.3	35.1
Male	**58.6**	28.3	42.5	28.3	**73.2**	31.2	30.3	30.3	**58.8**	29	35.5	34.6
High Needs	**63.8**	31.5	35	33	**73.6**	30	34	34	**61.1**	25.4	32.1	39.9
ELL	**46.8**	13.6	18.2	68.2	**59.1**	15.4	73.1	73.1	**50**	18.2	18.2	63.6
Economically Disadvantaged	**66.7**	30	37.8	32.2	**73.8**	30	34	34	**60.8**	25.3	33.3	38.7
Students w/disabilities	**35**	28.6	28.6	42.9	**53.6**	20	66.7	66.7	**45**	11.1	5.6	83.3
Afr. Amer./Black	**68.8**	27.3	36.4	36.4	**87.5**	35.7	42.9	42.9	**68.8**	18.2	18.2	63.6
Asian	**87**	15	60	20	**89.5**	35.3	17.6	17.6	**75.9**	40.9	36.4	18.2

[52] PIC analysis of NSC data for the BPS Class of 2011

Hispanic/ Latino	**60.6**	31	32	37	**67.4**	30.9	43.3	43.3	**57**	16	23.5	55.6
Multi-race, Non-Hisp./Lat.									**68.4**	7.7	69.2	23.1
White	**68.6**	38.1	37.1	24.8	**80.4**	33	22.6	21.7	**69.1**	42	36.6	21.4

Source: Massachusetts DESE, City of Revere Analysis

b. **Briefly describe capital improvement plan, timetable and plan of finance for school system and other significant program providers. Include capital investment in public schools over the last ten years. Also, include information on charter and magnet schools.**

Boston Public Schools Capital Plan, BuildBPS

In March 2017, Mayor Walsh launched BuildBPS[53], Boston Public School's 10 Year Facilities and Educational Masterplan for $1 billion investment in school construction and renovation. The master plan establishes principles and priorities so this historic investment will have the greatest impact on student success.

New major investments are already under way with a new 21st century school opening next fall, [54] and two additional new buildings currently in the design phase. These buildings accompany unprecedented investment in renovation, capital repairs, and technology projects.

In line with Mayor Walsh's vision for leveraging data analyses, Boston built a facilities condition dashboard to integrate building reports, digital assets, and data visualizations. The BuildBPS Dashboard[55] provides the community with a complete overview of the district's facilities. Analysis tools and data visualizations offer insights into the conditions of school buildings and educational environments. The BuildBPS Dashboard is built to allow for continuous updating.

This $1 billion investment over the next 10 years more than doubles capital investments made over the past 10 years (approximately $440 million) in school buildings. As part of this work, Boston built a stronger relationship with the Massachusetts School Building Authority (MSBA) which allows for Boston to fully leverage its capital dollars with state funding. Beyond Boston proper, the MSBA also invests in hundreds of schools in the Greater Boston area. Across the state, over $13 billion has been invested in school infrastructure.

Revere Public Schools Capital Plan

The Revere Public Schools district recently completed a new school building plan that created five new schools on four campuses. These include three elementary schools and two middle schools which replace three antiquated structures. The city is currently entering the planning

[53] https://www.bostonpublicschools.org/buildbps
[54] http://www.bpe.org/dearborn-stem-academy/about/new-stem-building/
[55] http://buildbps.org/home

phase for a new comprehensive high school. In addition, capital investments have included the replacement of windows in three other schools, two new roof projects, the replacement of two boiler systems, the installation of air conditioning one school, and new door projects on three facilities.

c. **Describe how education programs are funded at the municipal, county and state levels in your community as well as how and where community and private funding can be allocated.**

State Funding for Education in Massachusetts

Chapter 70 education aid is the Commonwealth's primary means for distributing public education funding to local school districts. In addition to providing aid to support school operations, it also establishes minimum spending requirements for each school district. Once the total foundation budget is established, the state calculates each district's ability to contribute local revenue toward school operation. The required local contribution is a measure of how much local tax revenue a city can reasonably raise and dedicate to the operation of its schools. The Commonwealth provides reimbursement for costs like Special Education, Homeless Student Transportation, and General Government Aid. The Commonwealth also provides some reimbursement to support charter school costs.

Municipal Funding for Education: Boston

The City of Boston funds more than 90% of the Boston Public Schools (BPS) Budget via annual Boston General Fund appropriations. The balance is funded by State and Federal sources. On a yearly basis, the City of Boston spends 40% of its operating budget on education, with the other 60% funding services like Public Safety, Public works and Fixed costs. This commitment to Education far exceeds minimum spending requirements by the State, and in the last six years the City has increased funding for BPS by $170M. The City spends over $1.2 Billion per year on BPS and Charter Schools that provides 66,000 children high-quality education. BPS was funded at $1.091 Billion in FY2018 and Charters received $175 Million in tuition from the City. In addition, Mayor Walsh has committed to a ten-Year $1 Billion capital budget for new school builds, renovations and repairs.

Both the State and City use a formula in which as students move between different public schools the funding they receive follows them. For BPS, this is accomplished through Weighted Student Funding (WSF) and for Charters it is through tuition payments from the City, that the state partially offsets. The weighted student funding model creates a baseline per-student funding amount and then adjusts the amount depending on individual student need. For example, students whose family income is at or below the poverty level will receive additional funding. Other need-based weights include students with disabilities, English Language Learners (ELL), and vocational education students. Under WSF, BPS' highest-need students receive more resources. FY18 is the seventh year using the WSF formula, and BPS continues to refine this need-based method of funding.

Municipal Funding for Education: *Revere*

Revere's schools are funded through five primary sources each year. In FY18, total expenditures were just under $113 million. The primary funding sources are:

1) Local contributions as mandated by the Massachusetts Department of Elementary and Secondary Education and chargebacks of $31.5 million.

2) Chapter 70 educational funding from the State of **$**60.8 million**.**

3) State and Federal Grants of $8.1 million.

4) Private grants of $1.4 million.

5) Carry forward and revolving income bearing district accounts of $10.5 million.

Community and Private Funding for Education: **Boston**

In addition to foundation and private funding going to individual schools, substantial private philanthropic funds flow to BPS' Boston Education Development Fund. Over the past four years the Boston Education Development Fund (BEDF) directed over $25 million in philanthropic funding to the Boston Public Schools. Top donors to BPS through BEDF include Edvestors ($4,8 million), the Barr Foundation ($3.1 million), the GE Foundation ($2.3 million) and Boston Children's Hospital ($860,000). In recent years, more than $1.8 million was specifically dedicated to STEM-related programs and activities including STEM education, robotics clubs, improving IT infrastructure, Science Fairs and after school programming. Additional funds are donated to schools as discretionary funds, and then often used for STEM related purposes.

d. **State assessment results by performance level (basic, proficient and advanced), including (i) two-year trend data for each subject and grade tested and (ii) a comparison between annual objectives and actual performance for each student group.**

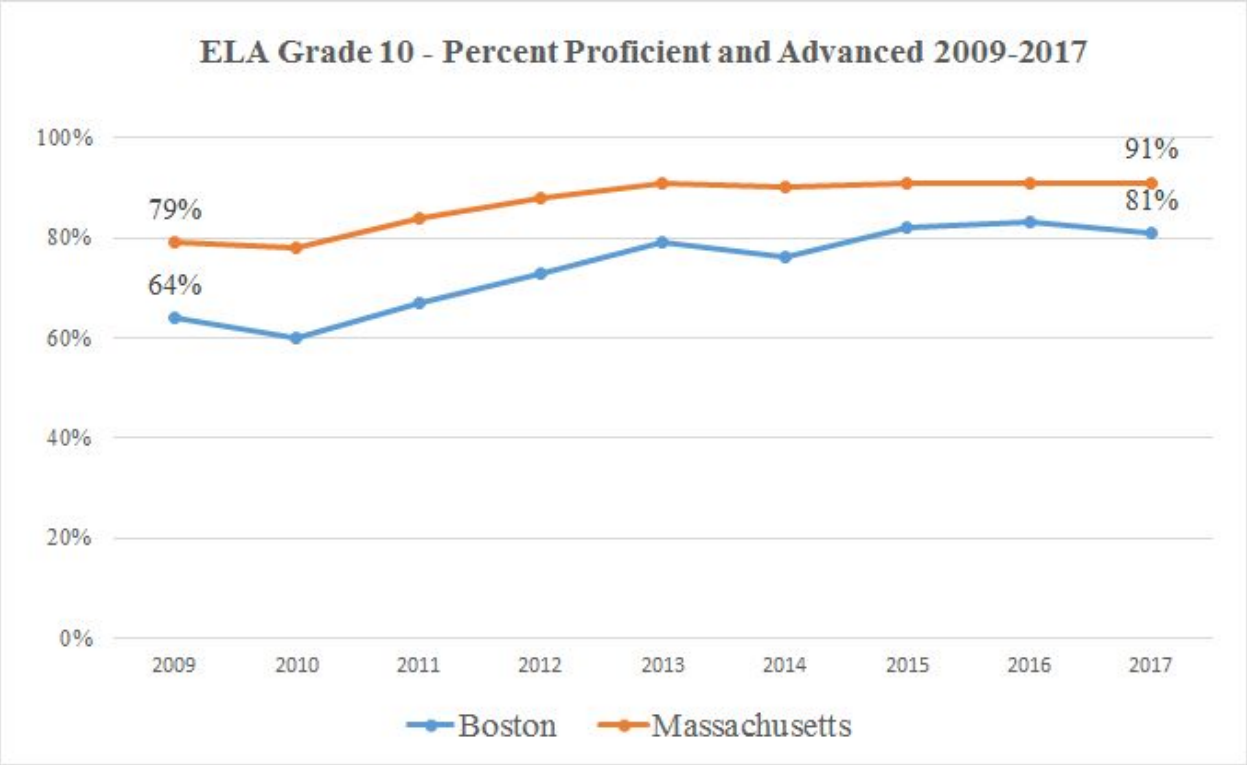
Massachusetts administers the **Massachusetts Comprehensive Assessment System (MCAS)** test in English Language Arts & Math Grades three through eight and Grade 10. Proficiency on the MCAS exam is defined by "Meeting Expectations" or "Exceeding Expectations". The two lowest performance categories are "Partially Meeting Expectations" and "Not Meeting Expectations". The state has switched assessments several times over the past few years for Grades three through eight ELA and Math as it moved toward the Partnership for Assessment of Readiness for College and Careers (PARCC) testing, so an over time comparison is not possible for these grade levels.

Boston State Assessment Results

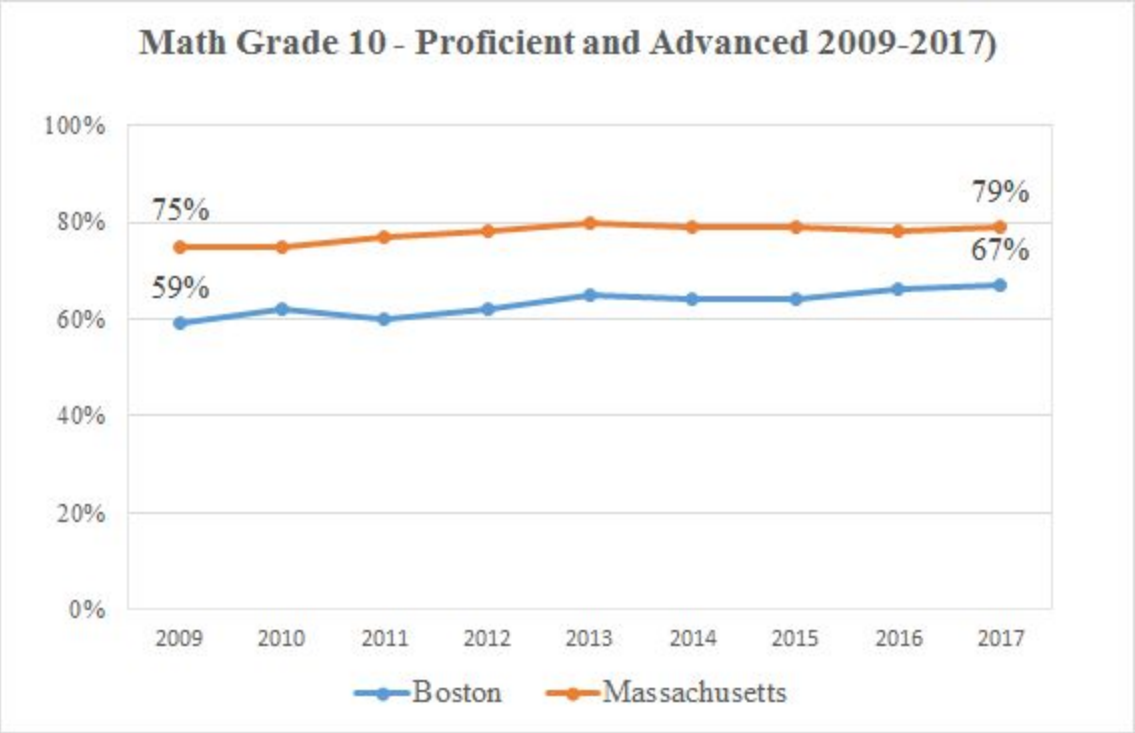
In 2017, 31 percent of Boston students in grades three to eight demonstrated proficiency on the state English Language Arts MCAS test. In comparison, 49 percent of students statewide demonstrated proficiency. On the 2017 math MCAS test, 31 percent of Boston students in grades three to eight demonstrated proficiency, compared to 48 percent of students statewide.

However, grade ten MCAS data show that Boston has increased performance and narrowed the proficiency gaps between the district and the state over time. Boston Public Schools narrowed the proficiency gap for Grade 10 students in ELA from a gap in 2009 of 15 percentage points

(64% proficient in Boston compared to 79% proficient in Massachusetts) to a gap in 2017 of 10 percentage points (81% proficient in Boston compared to 91% proficient in Massachusetts).



Boston Public Schools narrowed the proficiency gap for Grade ten students in Math from a gap in 2009 of 16 percentage points (59% proficient in Boston compared to 75% proficient in Massachusetts) to a gap in 2017 of 12 percentage points (67% proficient in Boston compared to 79% proficient in Massachusetts).



Revere State Assessment Results

In 2014, 62 percent of Revere students in grades three to eight demonstrated proficiency on the English Language Arts MCAS test. On the 2014 math MCAS test, 51 percent of Revere students in grades three to eight demonstrated proficiency.

On the Grade 10 2016 English Language Arts MCAS test, 85 percent of Revere students demonstrated proficiency, down from 90 percent in 2015. On the 2016 math MCAS test, 68 percent of Revere students demonstrated proficiency, up from 67 percent in 2015.

e. **Primary and secondary school rankings at the state/national level as well as a "scatter map".**

Massachusetts Public Schools are classified by an Accountability and Assistance five-level scale based upon a cumulative progress and performance index (PPI) that measures the school's success at narrowing proficiency gaps, growth in assessment scores, and graduation and dropout rates over the most recent four year period. Within this system Level one are the highest performing schools, and Level five are the lowest performing.

Boston Public Schools

In 2016, 21 percent of BPS schools earned the highest ranking (level one), up from 14 percent in 2012. Level two schools make up 23 percent of schools, and 44 percent of schools are level three, down from 51 percent in 2012. Level four schools are nine percent of all schools, down

from 13 percent in 2012. Only two percent of BPS schools received the lowest ranking (level five).[56]

Revere Public Schools

In 2016, half of Revere Public Schools were level 1 and half were level 2.

f. **Special needs and alternative education programs (including programs currently in place, student/teacher ratios in those programs, and success measures for those programs).**

Boston

The share of Boston students with disabilities (special education students) is slightly higher than the state, 19.7% compared to 17.6%. Boston has a range of special education programs to meet student needs. Students with disabilities in Boston Public Schools range from ages 3-21. BPS is committed to educating every student in the least restrictive environment. Inclusive education is an opportunity for schools to meet the needs of all students through educating learners with disabilities alongside their non-disabled peers. Boston provides support to students with disabilities to help them succeed and access the curriculum. Substantially separate classrooms are utilized when the disability requires it. Overall student teacher ratios for BPS schools are 13.7 to 1[57]. Given the BPS inclusive education settings, special education student to teacher ratios can be hard to describe due to inclusion, variance depending on type of disability, and the way data is reported on teachers.

- 45% are educated in fully inclusive settings (spend 80% or more of the school day with their general education peers).
- 14% are educated in partially inclusive settings (spend 60% or less of the school day outside of the general education classroom).
- 33% are educated in substantially separate classrooms (spend 60% or more of the school day outside of the general education classroom).
- 8% are enrolled in special schools in public or private day or residential settings, including six BPS day schools. The Horace Mann School for the Deaf and Carter Development Center provide intensive educational services and personalized care for students with multiple severe disabilities. The four McKinley schools provide students with emotional and behavioral disabilities with therapeutic and educational supports.

Student support provided by BPS include Speech-Language Pathology, Occupational Therapy, Physical Therapy, Adapted Physical Education, Teachers of Visually Impaired, and Assistive Technology for the Deaf and Hard of Hearing. BPS transition services are available for all students ages 14-22. The goal of the transition embedded curriculum is to prepare students for post-secondary success. The transition curriculum is geared to address each student's individual

[56] MA Department of Elementary and Secondary Education, Accountability and Assessment Reports, 2017. http://profiles.doe.mass.edu/statereport/accountability.aspx

[57] MA Department of Elementary and Secondary Education, "Teacher Data 2016-2017" http://profiles.doe.mass.edu/profiles/teacher.aspx?orgcode=00350000&orgtypecode=5&

strengths, preferences, needs, vision and goals for the future. This may include: Vocational Training, Adult Services, Independent Living, or Community Experience.

Data for achievement rates for children with Individual Education Programs (IEPs) are available from Boston Public School District and the State. Graduation rates for student with IEPs in Boston are 55.6 percent, 16.2 percentage points below the state rate and 20.8 percent below the BPS general education graduation rate. The dropout rate for BPS students with IEPs is 2%, which is lower than the state IEP rate of 2.6% and the district general education dropout rate of 6.3%.[58]

Revere

Revere Public Schools have two primary "alternative" education programs for students who struggle at the high school level. The Coast Collaborative program is targeted for students (currently 18 with 2 teachers) with social and emotional needs that prohibit their participation in "regular" high school programming. In addition, Seacoast High school is targeted for students (currently 85 with 12 teachers) who are over-aged and under credited or who have behavior challenges that inhibit their participation in regular high school programming. Revere has a number of students (roughly 150) who are placed in private and public out of district programs due to extensive special needs. Revere Public Schools has 13 classrooms within the district at six different schools for substantially separate programming. These classrooms serve 127 students with 13 teachers. The remainder of our students participated in fully included environments in all schools across the district.

g. **Accelerated learning/honors and AP track programs.**

Boston

Advanced Work Class (AWC) is a full-time program in the Boston Public Schools that provides an accelerated academic curriculum for students in grades four through six. This program includes subjects studied in greater depth, more schoolwork and more home study than the traditional curriculum.

The Boston Public Schools (BPS) has three exam schools: Boston Latin Academy, Boston Latin School and the John D. O'Bryant School of Mathematics and Science. All three schools accept new students for grades six and nine. Admission is determined by equally weighting the Independent Schools Entrance Exam (ISEE) score and Grade Point Average (GPA).

The 2016-2017 school year was a record year. Boston students took a total of 5,697 AP tests in 41 subjects and 48.5% received a score of three or higher. The table below shows the total number of AP tests taken and scores in the 2016-2017 school year by subject.

2016-2017 AP Tests in Boston Public Schools

[58] Boston Public Schools Special Education and Student Services. https://www.bostonpublicschools.org/Page/6122 and MA Department of Elementary and Secondary Education, Boston - Special Education Data. http://profiles.doe.mass.edu/gis/sped_map.aspx?orgcode=00350000&

Subject	Tests Taken	% Score 3-5
All Subjects	5,697	48.5
Arts	92	66.3
Studio Art: Drawing	62	74.2
Music Theory	30	50.0
English Language Arts	1,098	37.4
English Lang/Comp	563	30.0
English Lit/Comp	535	45.2
Foreign Languages	442	75.6
Chinese Lang	61	93.4
French Lang	44	36.4
German Lang	1	
Italian Lang	24	100.0
Latin: Vergil	41	58.5
Spanish Lang	234	75.6
Spanish Lit	37	94.6
History and Social Science	1,854	58.1
Economics: Macro	144	71.5
Economics: Micro	178	78.7
Govt & Pol: Comp	71	52.1
Govt & Pol: U.S.	382	38.0
History: European	143	54.5
History: U.S.	436	53.0
History: World	359	88.6
Human Geography	70	18.6
Psychology	71	16.9
Math and Computer Science	1,066	42.4
Calculus AB	366	37.2
Calculus BC	132	62.9
Computer Sci A	128	75.8
Computer Sci Principles	107	56.1
Statistics	333	22.8
Science and Technology	1,106	36.3
Biology	294	40.8
Chemistry	214	29.4
Environmental Sci	291	37.5
Physics C: E&M	19	57.9
Physics C: Mech	94	75.5
Physics 1	175	13.1
Physics 2	19	26.3

Capstone	39	64.1
Capstone Seminar	22	90.9
Capstone Research	17	29.4

Source: 2016-17 Advanced Placement Performance Report All Students. Massachusetts Department of Elementary and Secondary Education.

Revere

Revere Public Schools offers accelerated learning programs in grades 6-12 at all secondary schools. These programs include courses in Mathematics, Science, Computer Science, Social Studies, English Language arts, Fine Arts. One area of focus for Revere schools over the last several years has been increasing rigor to ensure students are prepared for college and career. A large measure of that goal has been participation in and successful completion of Advanced Placement course work and AP exams. As the table below demonstrates, both metrics improved considerably. Progress comes from a focus on challenging coursework from kindergarten through grade 12 with open enrollment processes for advanced work. Below are the results overall and for STEM courses.

AP	**Math and CS**		**Sci and Tech**		**All**	
	participation	**pass rate**	**participation**	**pass rate**	**participation**	**pass rate**
2017	161	74.5	85	50.6	510	58.6
2016	176	77.8	94	51.1	494	61.7
2015	165	73.9	85	48.2	482	59.3
2014	134	68.7	83	31.2	419	53.2
2013	112	75.9	76	32.9	377	55.2
2012	64	89.1	85	23.5	325	59.4
2011	80	55	41	31.7	256	52
2010	70	58.6	56	32.1	250	51.2
2009	54	55.6	57	24.6	234	49.6
2008	24	66.7	20	20	135	48.9

h. **Foreign language schools in your community**

(i) Languages offered

Boston

The modern languages taught in Boston Public Schools are Spanish, Mandarin, French, Japanese, Arabic, Italian, and German. Classical languages taught are Latin and Greek. American Sign Language (ASL) is also offered.

Revere

Revere High School offers French, Italian, Mandarin, and Spanish.

(ii) Language immersion programs in regular K-12 schools (include languages offered and success measures).

Boston

BPS language immersion programs include dual language programs[59], and SLIFE (Students with Limited or Interrupted Formal Education), and SEI (Structured English Immersion). Dual language models range from 90% native language and 10% English to 50/50 depending on grade level. Usually, kindergarten through second grade programs operate as 90-10, 80-20, 70-30, 60-40, while grades 3-12 operate under a 50-50 model. Dual language programs are offered in Spanish and Haitian Creole. For students who need support learning English, BPS offers Sheltered English Immersion classrooms in Chinese, Cape Verdean Creole, Haitian Creole, Spanish, and Vietnamese. BPS also has a multilingual SEI classrooms for students who do not speak those particular native languages. The Newcomer Students with Limited or Interrupted Formal Education (SLIFE) program offers instruction in Spanish, Haitian Creole, Cape Verdean Creole. The goal of these programs is that students become bilingual.

Other language immersion schools in the area include:

Dr. Martin Luther King Jr. School (Cambridge) This school's dual language program offers their kindergarten students the chance to learn Chinese/Mandarin.
Amigos Two-Way Language Immersion Program (Cambridge) offers a two-way Spanish/English education to their preschool through eighth grade students.
The French-American International School Boston (Cambridge) provides a bilingual French-American education for all their students in preschool through 12th grade.
Kelly School, Mary C.Burke Elementary Complex (Chelsea) provides their first through fourth graders the opportunity to learn Spanish and English through their dual language program.
German International School Boston (Boston) is a bilingual independent school serving students from age 3 to Grade 12. Students who complete the program achieve native-level proficiency in German and English, an advanced math and science education, a Massachusetts High School Diploma, and a German International Abitur.

(iii) Cultural assimilation programs for immigrating students and their families (include success measures).

The **Office of English Language Learners** (OEL) Family Resource Specialist Team works with schools and community based organizations to provide literacy and ESOL trainings. These trainings support families in their transition to the United States. OEL Family Resource Specialists also offer direct workshops to immigrant families on immigrant rights, school choices, resources and technology. OEL brought together English Language Learner families from all around the city and worked with them to establish the first ever BPS District English Language Advisory Committee (DELAC). OEL hosts three conferences each year with the

[59] In this program model, half of students in the classroom are speakers of the program's partner language and the other half are English speakers, taught by team of highly qualified teachers. Instruction is provided in both languages with the goal that students will become bilingual or biliterate.

DELAC committee for the BPS English Language Learner (ELL) families. Hundreds of families and their children come to these conferences. The conferences provide ELL families with opportunities to learn more about various topics that impact their lives and the education of their children. Also, the conferences provide families with the opportunities to network and to meet with district officials.

4. STEM Education

a. Describe, to the extent not already discussed above, the STEM programs currently in place in your community.

Boston
Outside of school, Boston students access STEM learning and technology through a variety of programs. Nonprofit organization **Tech Goes Home** provides families with the tools they need to learn online and connect to community resources. A sampling of the community-based STEM programs is provided below.

The Harvard Digital Literacy Project provides students at seven partner schools with 10-weeks of computer science education during the school day. The curriculum offers an introduction to coding concepts using the image-based programming language Scratch, before moving on to more advanced coding practice in JavaScript. Harvard students develop course materials, which are carefully designed to be fun and interactive. In addition, the **Harvard Education Portal**, a Harvard-run, community-facing facility that provides academic support and lifelong learning to residents of the Allston neighborhood of Boston, operates a **Computer Animation Clu**b for students in grades 6-8 during the fall and spring semesters. Enrolled students create 2D graphics and animations while learning basic computer science and coding principles such as JavaScript.

Throughout the year, organizations like **Thompson Island Outward Bound** (accessible in minutes from East Boston), **Mass Audubon - Boston**, **Olmsted Center for Landscape Preservation** (National Park Service), and **Hale Reservation** provide STEM instruction through nature-based immersion. The **New England Aquarium** offers a variety of volunteer and paid opportunities for teens ages 13 through 19.

UMASS Boston Summer Transportation Institute Approximately twenty rising 9-12 graders will receive full scholarships to participate in the four-week, non-residential summer program.

Northeastern University Summer STEM Program NUSSP is a free academic program run by the Center for STEM Education, which takes an active role in shaping education in students entering grades 6, 7, and 8.

Empow Studios Tech & Design camps feature robotics, 2D & 3D video game design, virtual reality (VR) game design, animation, programming / coding, 3D modeling & printing, audio engineering, and music production. Minecraft camps feature modding, electrical engineering (via redstone circuits), architecture, game design, and world creation.

i2 Camp at Roxbury Latin Partnering with some of the world's leading STEM organizations, the camp broadens a child's exposure to STEM with a wide variety of new, innovative courses not seen in traditional middle school education.

U-Design at BU U-Design is a fun, exciting science and engineering program for kids. It is a hands-on laboratory and opportunity to learn about science and technology by engaging in the real work of scientists and engineers: design, exploration, experimentation, and invention.

Wheelock STEM in the City Students explore a variety of STEM-related careers and the educational pathways needed to attain those careers. They are introduced to college life and academics through campus tours featuring Wheelock's classrooms, residence halls, library, theater, dining hall, multicultural center, and other campus buildings.

Revere
At Revere High School, students have the opportunity to participate and compete in **FIRST Robotics** competitions. Additionally, students compete in the North Shore Science League competitions. At the middle-school and elementary levels, there are after school STEM clubs and enrichment offerings (i.e., Coding, Robotics, etc.).

b. **Describe whether your current STEM programs are selective (i.e., criteria to gain enrollment and they are not in regular K-12 schools), inclusive (anyone can enroll but separate from regular K-12 schools), or comprehensive (included in regular K-12 schools).**

Boston
There are few selective programs that require student performance thresholds or criteria-based applications. Some programs are school-connected, particularly through BoSTEM, and the schools that students attend dictate whether or not they have access to a specific program provider and/or industry partner.

The only truly selective programs are those offered through BPS high schools, most notably the John D. O'Bryant School of Mathematics and Science, the Edward M. Kennedy Academy for Health Careers (EMK) and Boston Green Academy, all of which specializes in STEM education. The O'Bryant is one of Boston Public Schools' three "Exam Schools." Admission to Exam Schools is equally dependent upon students' grade point averages and their performance on the Independent School Entrance Exam (ISEE). Both EMK and Boston Green Academy require applications.

Two other high schools that specialize in STEM programming, Tech Boston Academy and the aforementioned Madison Park Technical Vocational High School are "open enrollment" schools through the district's standard high school lottery system.

Revere

Revere school clubs and offerings are open to all students. At times, space may be limited.

c. **Describe the curriculum offered, how it is determined, how often it is reviewed and how long it takes to change the curriculum.**

Boston
The BoSTEM initiative adopted the Defined STEM[60] curriculum to complement school-based curricula and coordinate lesson and activity planning with after school and industry partners. Defined STEM provides real-world project-based lessons that bridge in- and after-school efforts for middle grades students in Boston.

Defined STEM is the first curriculum that BoSTEM has adopted initiative-wide. Program leadership will evaluate the curriculum on an ongoing basis, assessing its utility and strength over the next few programming years. No schedule has been established for comprehensive review as program organizers are just beginning to implement the curriculum.

Revere
Revere collaborates with four other neighboring communities to develop our curriculum using the MA Curriculum Frameworks. Teacher leaders from all five districts develop scope and sequence guides (i.e., Year Long Plans) and model units to inform instruction. Teachers develop 5DP interim assessments to inform instruction next steps at the classroom, school and district levels. For STEM core curriculum programs, we utilize resources from Pearson (i.e., envision 2.0), STEMScopes and Agile Mind. Teachers collaborate with instructional coaches to integrate open source materials (i.e., EngageNY, Illustrative Math, and Better Lessons) into their unit and lesson design.

d. **Other student achievement indicators for STEM programs/participants to which you would like to call our attention.**

Boston After School and Beyond (BASB) - in collaboration with the Boston Public Schools - is experimenting with awarding badges, or skill-based micro-credentials, to students in local STEM programs. BASB's badging initiative aims to validate growth and achievement in four essential competency areas: critical thinking, communication, perseverance, and teamwork. In the summer of 2017, 60 percent of 550 middle school participants earned at least one badge. A total of 1,709 badges were awarded in 2017, building a total of 5,265 badges awarded in Boston since 2015.

e. Plans for next five to ten years for STEM programs (to the extent not discussed in subsection A above).

Boston
Many of Boston's STEM program development plans for the next five to ten years are outlined throughout this document. This question, though, provides an opportunity to succinctly present Boston's vision:

[60] https://www.definedstem.com/

Expand early grades STEM curricula, through P-2 Focus, creating more opportunities to integrate STEM learning into play-based approaches for early grades.

Build a formal "City as a Classroom" system to ensure access to activities that promote STEM learning. Community-based learning, like BoSTEM, the 5th Quarter and More than a Mile, explicitly take learning outside of the classroom. Development must include school credit and badging reward schemes that recognize student accomplishments, program sequences that pace with school-based curricula and move from STEM exposure to skills mastery, and metrics to monitor the performance of this citywide learning network.

Develop dedicated STEM Pathways that directly pipeline K-12 students to related post-secondary opportunities and career onramps. Young students gain early skill building opportunities and exposure to STEM professionals and careers. Middle grade students test their knowledge in real-world settings through summer learning opportunities and STEM bootcamps, while learning related content through school instruction. High school students take advantage of work-based learning and dual enrollment opportunities leading to paid internships, accelerated post-secondary completion, or early hiring. One of the cornerstone institutions for STEM pathways might be the proposed 9-14 (16) high school.

Revere

Revere is one of 12 Catalyst districts for the Massachusetts Personalized Learning Edtech (MAPLE) Consortium, a division of LearnLaunch, which focuses on the use of educational technology to enhance the personalization of student learning. The district engages in quarterly meeting and learning institutes with other MAPLE districts to expand our work in those areas. Because of Revere's focus on computer science and computational thinking, it is also one of only 12 districts in the state to join the initial cohort of PACE (Programming the Acceleration of Computing and equity) Lab Districts. The "30% CS Competency" Goal states that Revere will "Graduate 30% of the district's high school students with computer science competency by 2023". The PACE Lab defines Computer Science Competency as receiving a "C" letter grade, or better in a course equivalent to the AP® Computer Science Principles (CSP) course, or receiving 3 or higher on the AP®CSP test. In the next five years, we will work at the elementary and middle school levels to ensure students are well positioned to accomplish the PACE Lab goal.

5. Colleges and Universities

Describe four-year colleges and universities in your community/region. Description for each college and university should include:

a. Name of college or university (and distance from Site)

Four-year Universities in 5-county region	Driving Distance to Suffolk Downs (miles)	Driving Distance to South Boston Waterfront (miles)

Suffolk University	4.1	1.7
Hult International Business School	4.6	3.4
MGH Institute of Health Professions	4.7	3
New England College of Business and Finance	4.9	0.7
Bay State College	5.6	2
Emerson College	5.6	1.4
New England College of Optometry	5.8	2.5
Massachusetts Institute of Technology	6.1	3.3
Fisher College	6.4	4.2
Berklee College of Music	6.6	3.3
Boston Architectural College	6.6	2.5
Boston University & Wheelock College (merging 6/1/2018)	6.6	5.7
Northeastern University & Professional Advancement Network	7.1	2.8
The New England Conservatory of Music	7.2	2.9
Lesley University	7.3	6.5
Emmanuel College	7.3	5.1
Massachusetts College of Art and Design	7.4	4.3
Wentworth Institute of Technology	7.4	3.1
Tufts University	7.6	7
Mass. College of Pharmacy & Health Sciences	7.6	3.5
University of Massachusetts-Boston	8.2	3.2
Cambridge College	8.8	5.8
Harvard University	9.3	5.9
Newbury College	9.5	7.9
Hellenic College-Holy Cross Greek Orthodox School of Theology	10	6.7
Salem State University	11.8	16.6
Boston College	13.4	10.6
Mount Ida College	13.8	12.4
Bentley University	14.5	11.6
University of Phoenix-Massachusetts	14.7	10.7
Quincy College	14.8	7.7
Lasell College	15.5	11.6
Boston Baptist College	16	11.7
Montserrat College of Art	16.3	23.7
Curry College	16.4	12.5
Brandeis University	18.2	14.6
Babson College	19	15.9
Regis College	19.4	15.2
Franklin W Olin College of Engineering	20.7	17
Wellesley College	21.3	18.9

Endicott College	21.8	26.7
Gordon College	22.1	27
Merrimack College	23.9	26.1
Eastern Nazarene College	27.4	7.2
Framingham State University	30.1	22.4
Northpoint Bible College	32	38.7
University of Massachusetts-Lowell	34.6	33.6
Bridgewater State University	38.5	34.6
Dean College	40.2	36.4
Worcester Polytechnic Institute (opening branch in South Boston Waterfront)	52.4	47.3

Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, Google Maps driving distance, BPDA Research Division Analysis

b. Any research specialties that are relevant to HQ2

Four-year Universities In 5-County Region	**Relevant Research Specialties**
Babson College	Entrepreneurial Research Conference; Finance; Economics
Bentley University	Center for Integration of Science and Industry (natural science, business, analytics, and policy); Harold S. Geneen Institute of Corporate Governance;
Berklee College of Music	Music Production, Technology and Innovation; Artificial Intelligence and Virtual and Augmented Realities (narrative development, sound design and spacial audio, composition for mixed realities)
Boston College	**Business** (Accounting, Applied Economics, Business Administration, Finance, Leadership & Administration, Organization Studies) **Math** (Applied Statistics & Psychometrics, Mathematics, Measurement, Evaluation Statistics & Assessment **Law**
Boston University & Wheelock College (merging 6/1/2018)	Engineering Biology; Neuroscience; Photonics; Data Science; Healthcare/Disease; Biomedical Engineering; Chemistry; Computer Science; Earth Sciences; Materials Science; Math/Statistics; Micro/molecular Biology & Genetics; Physics; Space Sciences ---- NIH funding $172,328,687
Brandeis University	National Center for Behavioral Genomics (molecular/structural biology, genetics, behavioral neuroscience, psychology, cognitive science); Materials Research Science & Engineering Center; The Hassenfeld Family Innovation Center (Research for entrepreneurship/innovation with Office of Technology Licensing); Rosenstiel Basic Medical Sciences Research Center (Biology, Biochemistry, Chemistry); Electron Microscopy ---- NIH funding $27,736,226
Bridgewater State University	Physics (astronomy, atomic-molecular-optical quantum physics); single molecule biophysics; physics education); Psychology
Emmanuel College	Emmanuel College offers robust academic programs in the STEAM as well as Business/Management fields, with faculty and students across the disciplines participating in a variety of research opportunities both on- and off-campus.

Emerson College	Game Design; Communication Science and Disorders; Science/Environment/ Health Collaboration, integrated marketing communication, social media analysis, data visualization, social computing, information and communication technology, conflict negotiation, speech forensics, visual storytelling, environmental economics, media research, accessibility research, advertising, public relations, business strategy, copywriting, strategic communications, user experience design, public diplomacy, digital publishing and multimedia journalism, The Emerson-Blanquerna Center for Global Communications facilitates research and teaching collaborations in international marketing, digital media, public relations, and public diplomacy
Framingham State University	MetroWest Economic Research Center; Center for Social Research
Franklin W Olin College of Engineering	Olin Robotics Lab
Gordon College	Chemistry, Physics, Microbiology
Harvard University	**Harvard Robotics** which brings together faculty from the Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard Law School, the Kennedy School of Government, Harvard Medical School, and the Harvard T.H. Chan School of Public Health, Harvard Business School, and the Graduate School of Design. Robotics researchers are actively pushing the frontiers of knowledge in controls, sensors, soft materials, computer vision, human-machine interfaces, bio-inspired robotics, medical robots for automated and minimally invasive surgical procedures, autonomous search and rescue robots, automated assembly at scales ranging from micrometer to meter, collections of over 1,000 coordinated robots, wearable robotics, and industrial robots for the automation of manufacturing or shipping. **Center for Integrated Quantum Materials** is a partnership between faculty at several Harvard schools and other colleges and universities located in the northeast. Participating Harvard schools include: the Harvard John A. Paulson School of Engineering and Applied Sciences and the Faculty of Arts and Sciences. Applied physicists and engineers at Harvard are advancing the state of the art in quantum physics, optics, and spintronics, as well as nanophotonics, nanofabrication, nanoelectronics, and quantum materials. They are developing the means for ultra-fast quantum computers, quantum approaches to big data will provide tools capable of processing massive amounts of information, smaller, more sensitive quantum sensors, more secure quantum communications networks, all elements that will ultimately enable a quantum cloud for faster, more secure and more intelligent sharing of information. The NSF-sponsored Center for Nanoscale Systems provides specialized tools, processes, instrumentation, and expertise to help design, simulate, characterize, and fabricate novel materials, nanostructures, devices, and systems and the Center for Integrated Quantum Materials studies new quantum materials with 'non-conventional' properties with the promise to transform signal processing and computation. **Privacy Tools Project** is an umbrella organization under which several Harvard institutes and centers have united to work on issues of data privacy and to build computational, statistical, legal, and policy tools. The Harvard schools involved are: Harvard Law School, the Kennedy School of Government, and the Harvard John A. Paulson School of Engineering and Applied Sciences. Boston has emerged as one of the global centers for cybersecurity research and commercial

	enterprises. Harvard's Privacy Tools Project is advancing new techniques of differential privacy to make it possible to share large databases of information for productive use without compromising individuals' privacy. **Harvard Data Science Initiative** is a new data science initiative that brings together resources and expertise from Harvard College, Harvard's 12 graduate and professional schools, and the Radcliffe Institute for Advanced Study. The incentive involves 55 faculty members and many more data science leaders. **Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS)** The school boasts $38.5 million in research funding and is home to the Institute for Applied Computational Science, the Center for Research on Computing and Society, and the Center for Integrated Quantum Materials, among others. A 500,000 square foot Science and Engineering Complex in Allston is currently under construction.Slated to open in the fall of 2020, it will be among the most cutting-edge teaching and research facilities in the country, featuring laboratories, classrooms, and related teaching and research space. The region's academic researchers are pioneering new materials and platforms for functional **3D printing**. At Harvard, this includes the bioprinting of vascularized human tissue, the printing of lithium-ion microbatteries, and of organs-on-a-chip with integrated sensing. Researchers are designing and fabricating functional, structural, and biological materials with controlled composition and architecture across multiple length scales. Harvard computer scientists, electrical engineers, and materials scientists are working on various aspects of the underlying technologies that will bring to fruition the promise of **smart connected products**, including networks, communications, smart wearable devices, and nanoscale devices that free up frequency spectrum, biometric sensors, computer-brain interfaces, distributed artificial intelligence, artificial intelligence and machine learning, among others. Harvard **EconCS Group** pursues theoretical and experimental research at the intersection of computer science and economics, drawing on methodologies from artificial intelligence, multi-agent systems, computer science theory, microeconomic theory, optimization, and distributed systems. Researchers are interested in electronic auctions, mechanisms and markets, peer production and social computing, and the constructive use of economic methodologies within computational systems. Focus areas include: applications to e-commerce and social computing, incentive-based environment design, dynamic mechanisms, the design of mechanism infrastructures and currencies for distributed and peer-to-peer systems, information aggregation, and cryptographically secure auctions. Faculty experts at Harvard Business School are leading research on e-commerce, the future of retail, and technology and operations management.
Lasell College	Rosemary B. Fuss Center For Research On Aging And Intergenerational Studies; Donahue Institute for Ethics Diversity and Inclusion (social justice)
Mass. College of Pharmacy & Health Sciences	Pharmaceutics

Massachusetts Institute of Technology	Aero/Astronautics; Astronomy; Biology/Bioengineering (Whitehead Institute for Biomedical Research); Business & Management; Cancer (Broad Institute, Koch Institute); Chemistry; Computer Science; Economics; Engineering: Biological, Chemical, Civil, Environmental, Electrical, Materials, Mechanical, Nuclear, Ocean; Earth Science; Energy; Mathematics; Medical Science; Nanoscience/technology; Neuroscience; Physics; Robotics/AI (Center for Brains, Minds, and Machines); Lincoln Laboratory (national security/defence); Transportation@MIT; Urban Studies and Planning; http://web.mit.edu/research/
Merrimack College	Psychology (learning, cognition, bias); Learning Memory and Sleep Lab; $126,556 NIH funding
MGH Institute of Health Professions	Neuroscience; Neurologic Disorders/Diseases; Speech-Language Pathology; Cancer Fatigue --- NIH funding $956,389
New England College of Optometry	Vision Science; Biomedical Science and Disease; Clinical Research; Optometric Education Research --- $836,958 NIH funding
Northeastern University & Professional Advancement Network	Computer Science (Artificial Intelligence/Robotics, Data Science, Games, Software Engineering); Health (Pharmaceutical biotechnology, Cancer Nanomedicine); Security (Explosives, Cybersecurity, Homeland Security); Sustainability (Marine Science, Renewable Energy) --- $33,142,938 NIH funding
Salem State University	Center for Economic Development and Sustainability; Center for Research and Creative Activities; Human Dimensions of Wildlife Research
Simmons College	The distinguished faculty at Simmons College remains on the cutting edge of technology, research, public policy, and pedagogy. Some relevant research and achievements of our faculty include: **Computer Science and Informatics** Primary research in computational models of speech, as well as investigations of pedagogical methods in STEM education. Scholarly communication via social media. **Library & Information Science** The evolution of information behavior research: The dynamics of intellectual structure. Metadata interoperability in libraries. **Chemistry & Physics** Professor and Department Chair of Chemistry and Physics, Jennifer Roecklein-Canfield, appointed by Massachusetts Governor Charlie Baker to the Massachusetts STEM Advisory Council in 2017.
Suffolk University	Energy (solar engineering, telecommunications, hydrogen fuel cells, thin films and ellipsometry, and atomic spectroscopy); legal technology & innovation
Tufts University	Biostatistics, Epidemiology, and Research Design Center (health science); Center for the Enhancement of Learning and Teaching; Jean Mayer USDA Human Nutrition Research Center on Aging (neuroscience, nutrition, genomics, immunology); Center for Science, Technology, Engineering, and Mathematics Diversity; Tissue Engineering Resource Center (cell biology); Tufts Institute of the Environment; Tufts Center for Regenerative and Developmental Biology (biotechnology); Institute for Global Leadership (international development, human rights) --- NIH funding: $82,791,801
University of Massachusetts-Boston	**Business** (Information Technology,Business Analytics, Accounting, Business Administration, Finance, International Management, Management) **Computers** (Computer Science)

University of Massachusetts-Lowell	Advanced Computation and Telecommunications (fluid dynamics); Advanced Composite Materials and Textile Research Lab; Advanced Electronic Technology Center (engineering); Astronomical Observatory; Baseball Research (sports engineering); Biomanufacturing Science & Technology Consortium (biopharmaceuticals); Biomedical Terahertz Technology Center (Cancer diagnosis); Center for Advanced Materials (engineering, science, technicians); Climate Change Initiative (environmental science, engineering); Combustion Lab (chemistry, physics, chemical/plastics/mechanical/civil/environmental engineering); Computer Machine/Human Intelligence Networking and Distributed Systems (Data engineering, information technology); Geotechnical Engineering (civil/environmental engineering); Health Assessment Lab (biomedical engineering, physiology, physical therapy); The Integrated Nuclear Security and Safeguards Laboratory; Nuclear Physics Research; Center for Photonics, Electromagnetics and Nanoelectronics; Printed Electronics Research Collaborative; Radiation Laboratory (nuclear physics); Robotics Lab; Submillimeter-Wave Technology Laboratory (radar technology); Susan Braunhut Research Lab (cancer, limb restoration, counter-terrorism); Center for Terrorism & Security Studies (science/security); Yongwoo Lee Research Group (chemistry) ---- $3,689,069 NIH funding
Wellesley College	Biological Sciences; $698,794 in NIH funding
Wentworth Institute of Technology	Biology, Biomedical Engineering, Chemistry, Physics
Worcester Polytechnic Institute	WPI has developed five cross-cutting research areas in • Health and Biotechnology • Robotics and the Internet of Things • Advanced Materials and Manufacturing • Cyber, Data, and Security • Learning Sciences WPI also has 18 research institutes and centers and a Research Solutions Institute to help faculty and collaborative teams identify and capture funding support for new research initiatives. **Engineering** (Aerospace, Biomedical, Chemical, Civil, Electrical & Computer Engineering, Environmental, Mechanical, Robotics, Fire Protection, Manufacturing, Materials Process & Science. Systems) **Computer Scienc**e (Bioinformatics & Computational Biology, Computer Science, Interactive Media & Game Development, Computer Science, Computer Security, Data Science, Information Technology, Learning Sciences & Technologies) **Business** (Business Administration, Management, Marketing & Innovation, Operations Analytics & Management, Power Systems Management, Supply Chain Management (MS), System Dynamics, System Dynamics & Innovation Management, Systems Modeling) **Math** (Applied Mathematics, Applied Statistics, Financial Mathematics, Industrial Mathematics)

Sources: colleges websites & survey of colleges, National Institutes of Health "NIH Awards by Location and Organization FY2017," BPDA Research Division Analysis

c. Number of students (by degree/program (and total of all students))

Four-year Universities in 5-County Region	2016 Total Students	2016 Undergrads	2016 Graduate Students
Boston University & Wheelock College (merging 6/1/2018)	33,748	18,670	15,078
Northeastern University & Professional Advancement Network	30,529	16,694	13,835
Harvard University	29,908	9,915	19,993
University of Massachusetts-Lowell	17,849	13,637	4,212
University of Massachusetts-Boston	16,847	12,847	4,000
Boston College	14,466	9,870	4,596
Tufts University	11,489	5,508	5,981
Massachusetts Institute of Technology	11,376	4,524	6,852
Bridgewater State University	10,998	9,562	1,436
Salem State University	9,001	7,346	1,655
Suffolk University	7,461	5,191	2,270
Mass. College of Pharmacy & Health Sciences	7,095	3,843	3,252
Worcester Polytechnic Institute	6,642	4,432	2,210
Berklee College of Music	6,405	5,972	433
Framingham State University	5,977	4,337	1,640
Brandeis University	5,729	3,608	2,121
Bentley University	5,506	4,222	1,284
Quincy College	5,009	5,009	0
Lesley University	4,865	1,968	2,897
Endicott College	4,835	3,181	1,654
Wentworth Institute of Technology	4,526	4,317	209
Emerson College	4,442	3,801	641
Merrimack College	4,014	3,433	581
Babson College	3,165	2,283	882
Curry College	2,926	2,688	238
Hult International Business School	2,843	481	2,362
Wellesley College	2,482	2,482	0
Cambridge College	2,430	850	1,580
Emmanuel College	2,190	2,012	178
Lasell College	2,064	1,788	276
Fisher College	2,030	1,996	34
Gordon College	2,004	1,657	347
Massachusetts College of Art and Design	1,982	1,842	140
Regis College	1,847	1,226	621
Mount Ida College	1,394	1,357	37
Dean College	1,339	1,339	0
MGH Institute of Health Professions	1,167	188	979
New England College of Business and Finance	1,131	910	221
Eastern Nazarene College	924	784	140

Bay State College	889	889	0
The New England Conservatory of Music	819	413	406
Newbury College	751	751	0
Boston Architectural College	737	365	372
New England College of Optometry	533	0	533
Franklin W Olin College of Engineering	378	378	0
Montserrat College of Art	377	377	0
Northpoint Bible College	345	327	18
Hellenic College-Holy Cross Greek Orthodox School of Theology	195	99	96
Boston Baptist College	77	77	0
University of Phoenix-Massachusetts	66	55	11

Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis

d. Percentage of international student enrollment

Four-year Universities in 5-County Region	**2016 Percentage of International Students (freshman only)**
Hult International Business School	86%
Boston Architectural College	41%
The New England Conservatory of Music	39%
Berklee College of Music	28%
Babson College	27%
Boston University & Wheelock College (merging 6/1/2018)	25%
Brandeis University	19%
Northeastern University & Professional Advancement Network	18%
Wellesley College	16%
Hellenic College-Holy Cross Greek Orthodox School of Theology	15%
Mass. College of Pharmacy & Health Sciences	15%
Suffolk University	15%
University of Massachusetts-Boston	15%
Bentley University	12%
Harvard University	12%
Tufts University	12%
Massachusetts Institute of Technology	11%
Worcester Polytechnic Institute	10%
Dean College	8%
Emerson College	8%
Fisher College	6%
Boston College	6%
Wentworth Institute of Technology	6%
Gordon College	6%
Franklin W Olin College of Engineering	5%
Massachusetts College of Art and Design	5%

Lasell College	5%
Mount Ida College	4%
Eastern Nazarene College	4%
Newbury College	4%
Merrimack College	2%
University of Massachusetts-Lowell	2%
Salem State University	2%
Northpoint Bible College	2%
Emmanuel College	2%
Lesley University	2%
Endicott College	1%
Curry College	1%
Quincy College	0%
Bridgewater State University	0%
MGH Institute of Health Professions	0%
New England College of Business and Finance	0%
Bay State College	0%
New England College of Optometry	0%
Cambridge College	0%
University of Phoenix-Massachusetts	0%
Boston Baptist College	0%
Montserrat College of Art	0%
Regis College	0%
Framingham State University	0%

Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis

e. Specify degree(s) granted in STEM-related fields

Four-year Universities Offering STEM Degrees in 5-County Region (sorted by total number of undergraduate and graduate STEM degrees granted in 2016)	Computer and information sciences degrees	Engineering Degrees	Mathematics and statistics Degrees	Biological & biomedical sciences, Psychology & Health Professions Degrees	Physical sciences degrees
Northeastern University & Professional Advancement Network	665	1,503	55	2,178	106
Boston University & Wheelock College (merging 6/1/2018)	455	722	218	2,628	148
Massachusetts Institute of Technology	504	1,354	187	177	210
Harvard University	199	221	269	1,375	222
Mass. College of Pharmacy & Health Sciences	0	0	0	2,123	0

University of Massachusetts-Lowell	351	711	49	754	101
Tufts University	125	342	35	1,160	56
Worcester Polytechnic Institute	214	1,026	81	75	31
University of Massachusetts-Boston	209	8	20	1,027	40
Boston College	58	0	56	786	86
Salem State University	18	0	18	537	28
Brandeis University	148	0	28	336	62
MGH Institute of Health Professions	0	0	0	485	0
Bridgewater State University	29	0	55	350	41
Regis College	0	0	0	445	0
Wentworth Institute of Technology	99	296	17	0	0
Lesley University	0	0	16	396	0
Curry College	9	0	0	371	0
Framingham State University	26	0	11	230	10
Suffolk University	27	21	3	210	11
Wellesley College	43	0	17	147	29
Cambridge College	0	0	0	232	0
Merrimack College	17	39	13	155	4
Endicott College	14	2	3	177	0
Emmanuel College	0	0	2	183	11
Bentley University	114	0	15	2	0
New England College of Optometry	0	0	0	128	0
Gordon College	9	0	10	74	12
Mount Ida College	0	0	0	78	0
Franklin W Olin College of Engineering	0	78	0	0	0
Emerson College	0	0	0	63	0
Eastern Nazarene College	0	4	1	40	1
Lasell College	0	0	2	38	0
Fisher College	8	0	0	31	0
Berklee College of Music	0	0	0	29	0
Bay State College	1	0	0	27	0
Newbury College	4	0	0	22	0
University of Phoenix-Massachusetts	13	0	0	0	0
New England College of Business and Finance	0	0	0	7	0
Dean College	0	0	0	5	0
Benjamin Franklin Institute of Technology	0	0	0	4	0

Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis

f. Number of students graduating each year and companies at which they are working

The table below gives the number of students graduating each year. See response to question 5h for companies at which they are working.

Four-year Universities in Greater Boston	Total Degrees 2016[61]	Undergraduate degrees 2016	Graduate degrees 2016
Boston University & Wheelock College (merging 6/1/2018)	10,172	4,398	5,774
Northeastern University & Professional Advancement Network	9,541	4,544	4,997
Harvard University	7,672	1,810	5,862
Boston College	4,073	2,321	1,752
University of Massachusetts-Boston	3,561	2,564	997
Massachusetts Institute of Technology	3,511	1,111	2,400
University of Massachusetts-Lowell	3,507	2,333	1,174
Tufts University	3,279	1,374	1,905
Bridgewater State University	2,467	2,004	463
Suffolk University	2,248	1,269	979
Salem State University	2,164	1,669	495
Mass. College of Pharmacy & Health Sciences	2,123	962	1,161
Brandeis University	1,838	915	923
Bentley University	1,685	1,059	626
Worcester Polytechnic Institute	1,647	908	739
Framingham State University	1,464	969	495
Lesley University	1,443	447	996
Hult International Business School	1,269	0	1,269
Berklee College of Music	1,233	1,015	218
Emerson College	1,232	938	294
Endicott College	1,108	646	462
Babson College	1,049	532	517
Merrimack College	910	654	256
Wentworth Institute of Technology	873	784	89
Cambridge College	792	192	600
Curry College	781	687	94
Wellesley College	581	581	0
Lasell College	574	409	165
Regis College	569	347	222
Emmanuel College	535	442	93
Gordon College	500	399	101
MGH Institute of Health Professions	485	206	279
Massachusetts College of Art and Design	398	350	48
Eastern Nazarene College	285	216	69
The New England Conservatory of Music	241	109	132

[61] Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis

New England College of Business and Finance	194	88	106
Mount Ida College	191	179	12
Fisher College	190	190	0
Boston Architectural College	159	55	104
Bay State College	137	137	0
Newbury College	136	136	0
New England College of Optometry	128	1	127
Dean College	109	109	0
Franklin W Olin College of Engineering	78	78	0
Montserrat College of Art	62	62	0
Hellenic College-Holy Cross Greek Orthodox School of Theology	48	20	28
University of Phoenix-Massachusetts	39	36	3
Northpoint Bible College	36	32	4
Boston Baptist College	19	19	0
Benjamin Franklin Institute of Technology	15	15	0

Source: The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis

g. Percentage of graduates matriculating to graduate or professional schools

Four-year Universities in 5-County Region	**Pursuing Continuing Education in year after graduation[62]**	**Top Alumni Graduate Schools**
Newbury College	43%	Auburn University, Austin Peay State University, Babson College Boston Architectural College, Boston University, Culinary Institute of America, Fairfield University, Frank Lloyd Wright School of Architecture, Georgetown University, Hilbert College Johns Hopkins University, Northeastern University
Eastern Nazarene College	39%	Northeastern University, Wentworth Institute of Technology Worcester Polytechnic Institute
Dean College	36%	Babson College, Columbia University, New York University
Mount Ida College	18%	Huron University USA in London, University of California--Berkeley
Gordon College	17%	Boston University, Columbia University, Duke University, Franklin W. Olin College of Engineering, Harvard University Johns Hopkins University, Princeton University, Stanford University, University of Pennsylvania, Yale University
Fisher College	17%	Boston College, Boston University, Brandeis University, Canisius College,, Columbia University, Concordia College, Emerson College, Emmanuel

[62] U.S. News and World Report College Rankings and Data, https://premium.usnews.com/best-colleges. % of class of 2016 alumni respondents pursuing continuing education in year after graduation. Omitted colleges did not report data.

		College, George Washington University, Georgetown University, Harvard University
Boston University & Wheelock College (merging 6/1/2018)	16%	Lasell College, Northeastern University, Suffolk University
Lasell College	14%	Boston University, Columbia University, George Washington University, New York University, University of Pennsylvania
Emmanuel College	13%	Boston College, Boston University, Bryant University, Dean College Fisher College, Johnson and Wales University, Northeastern University, Suffolk University
Wellesley College	10%	Boston College, Boston University, Johns Hopkins University, Northeastern University, Salem State College, Tufts University, University of Massachusetts--Amherst, University of Notre Dame, Wheaton College
Hult International Business School	9%	Benedictine University, Boston University, Dean College, Fitchburg State College, George Washington University, Johnson and Wales University, Lasell College, Massachusetts College of Art and Design, Mercy College, Mount Ida College, National University
Babson College	9%	Cambridge College, Lesley University, Springfield College
Wentworth Institute of Technology	4%	American International College, Cambridge College, Eastern Nazarene College, Emerson College, Harvard University Lesley University, University of New England, University of New Hampshire, University of Texas--Dallas, Vanderbilt University, Wheelock College, Widener University
Endicott College	4%	Lasell College, Northeastern University, St. John's University, Suffolk University
Bentley University	N/A	Babson College, Bentley University, Boston College, Boston University, Northeastern University, Villanova University
Boston College	N/A	Boston College, Boston University, Brandeis University, Columbia University, Duke University, Fordham University, George Washington University, Georgetown University, Harvard University, Loyola University Chicago
Brandeis University	N/A	American University, Boston University, Brandeis University, Brown University, Columbia University, Cornell University, Dartmouth College, Drexel University, Duke University, Georgetown University, Harvard University
Framingham State University	N/A	American International College, Assumption College, Fitchburg State College, Framingham State College, Lasell College, Lesley University, New England College, Northeastern University, Salem State College, Simmons College
Northeastern University & Professional Advancement Network	N/A	Boston College, Boston University, Brown University, Columbia University, Cornell University, Emory University, Georgetown University, Harvard University, Johns Hopkins University, Massachusetts Institute of Technology
University of Massachusetts-Lowell	N/A	Anna Maria College, Bay Path College, Boston College, Boston University, Brandeis University, Cambridge College, Capella University, Emerson College, Fitchburg State College, Georgia Institute of Technology
University of	N/A	Boston College, Boston University, Cambridge College, Simmons College,

Massachusetts-Boston		University of Massachusetts Boston
Tufts University	N/A	Boston University, Carnegie Mellon University, Columbia University, Georgetown University, Harvard University, Northeastern University, Tufts University, University of California--Berkeley, University of Chicago, University of Michigan--Ann Arbor
Massachusetts Institute of Technology	N/A	Boston University, Brown University, California Institute of Technology, Carnegie Mellon University, Columbia University, Cornell University, Duke University, Georgia Institute of Technology, Harvard University, Johns Hopkins University
Suffolk University	N/A	Boston College, Boston University, Brandeis University, Bridgewater College, Emerson College, New York University, Northeastern University, Simmons College, Suffolk University, University of Massachusetts--Boston
Worcester Polytechnic Institute	N/A	Boston College, Boston University, Brandeis University, Brown University, Columbia University,Cornell University Johns Hopkins University, Louisiana State University--Baton Rouge, Massachusetts Institute of Technology, Northeastern University, Tufts University, University of Connecticut, University of Illinois--Urbana-Champaign, University of Massachusetts--Amherst, University of Massachusetts--Lowell, Worcester Polytechnic Institute
Franklin W Olin College of Engineering	N/A	Carnegie Mellon University, Cornell University,Harvard University, Massachusetts Institute of Technology, Stanford University, University of California--Berkeley

Source: U.S. News and World Report College Rankings and Data, https://premium.usnews.com/best-colleges. % of class of 2016 alumni respondents pursuing continuing education in year after graduation. Omitted colleges did not report data.

h. Percentage of graduates employed within one year of graduation

Four-year Universities in Five-County Region	**Employed[63]**	**Top 10 Companies Reported by Alumni**
Babson College	89%	Oracle, TJX Companies, Santander Bank, Deloitte, Citigroup, The Hanover Insurance Group, Mullen, Wells Fargo, TechTarget, Target Corporation
Bentley University	87%	JP Morgan Chase, Deloitte Consulting, PriceWaterhouseCoopers, TJX Companies,, John Hancock, KPMG, EMC Corporation, Epsilon, United Technologies Corp, Grant Thornton
Lasell College	87%	New York Moves Magazine, Wyndham Vacation Ownership, ESPN, The Moose Cafe Inc., Inditex, Berwick Academy, NFL Players, Association, Best Buy, US Navy, Acton Cable Television
Franklin W Olin College of Engineering	83%	Blue Origin, Google, Apple, Rockwell Automation, Raytheon, Amazon, athenahealth, US Navy, Ivani, Microsoft,, Pivotal Labs

[63] U.S. News and World Report College Rankings and Data, https://premium.usnews.com/best-colleges. % of class of 2016 alumni respondents reporting being employed. Omitted colleges did not report data.

Emmanuel College	83%	AmeriCorps, Beth Israel Deaconess Medical Center, Boston Children's Hospital, Boston Public Schools, Brigham and Women's Hospital, Brown Brothers Harriman, Dana Farber Cancer Institute, Fidelity Investments, Granite Telecommunications, KPMG, Liberty Mutual Insurance, Massachusetts General Hospital, WGBH, Portsmouth Dentistry, Liberty Mutual Insurance, Carlton National Resources, BevSpot, Commonwealth Financial Group, House of Blues Entertainment, Ernst and Young, Boston Medical Center
Bridgewater State University	79%	Old Colony Elder Services, BodyScapes Fitness, New York Life Retirement Plan Services, (Medical Information Technology), Clarke, Cape Air/Nantucket Airlines, Buckeye International, Commonwealth of Massachusetts, G Force Shipping & Consulting
Wentworth Institute of Technology	77%	IBM, EMC, Kiewit, Gilbane Building Company, athenahealth, Skanska USA, Akamai Technologies, Boston Scientific, Gillette, Boston Red Sox, Converse, BAE Systems Inc, BOND, CyberArk, Dell EMC, Draper, Erland Construction, General Dynamics, General Motors General Electric, GZA Geo-Environment, J.C. Cannistraro, Raytheon, Shawmut Design & Construction, Turner Construction, WayFair
Wellesley College	73%	The Advisory Board Company, Peace Corps, Federal Reserve Bank, Digitas, Stanford University, Warner Brothers, U.S. House of Representatives, National Institute of Mental Health (NIMH), Oracle, General Electric, Harvard University
Worcester Polytechnic Institute	70%	General Dynamics Electric Boat, United Technologies Corporation (UTC), Pratt & Whitney, a United Technologies Company, Eversource Raytheon Company, Wayfair, Dell EMC, Aerospace Systems, a United Technologies Company, Google, National Grid, General Electric, Smith & Nephew, UMASS Medical School, Amazon
Boston University & Wheelock College (merging 6/1/2018)	68%	Teach for America, Turner Broadcasting System, John Hancock Financial Services, Bloomberg LP, Genzyme, General Electric, TJX, Deloitte, EMC Corporation, Marriott, Accenture, Amazon, Bank of America, Beth Israel Deaconess Hospital, Biogen, Bose, Brigham & Women's Hospital , Charles River Development, Children's Hospital of Boston, CitiGroup, City of Boston, City Year, Commonwealth of Massachusetts, Dell, Eaton Vance, EF Education , Enterprise Holdings, EY, Fidelity, Goldman Sachs, Google, Hilton , IBM, KPMG, Liberty Mutual, Mass General Hospital, Microsoft, MIT Lincoln Labs, Oracle, Peace Corps, Philips, PwC, Red Hat, State Street, Vertex
Boston Architectural College	61%	Neoscape, City of Boston, YouthBuild Boston, Perkins + Will, MASS Design Group, Wilson Architects, Hammer Architects, HDR, Inc., DRA Architects, Kleinfelder
Hult International Business School	54%	Fisher Investments, EMC, EF Education First, BCG, Goldman Sachs, Ernst and Young, PwC, Deloitte, KPMG, General Electric
Massachusetts Institute of Technology	52%	McKinsey & Company, MIT, Google, Amazon, Inc., Boston Consulting Group, Bain & Company, Apple, Microsoft, Oracle, Harvard
University of Massachusetts-Lowell	51%	IPA Photomics, UMass Lowell Center for High-rate Nanomanufacturing, Mayflower Communications Company, Benchmark Senior Living, UltraSource, Lantheus Medical Imaging, Mill City Insurance, Engineering

		Planning and Management, L-3 Communications: Security and Detection Systems, SP Sound and Production
Newbury College	48%	The Lenox Hotel, The Blue Glass Café, Au Bon Pain, Nordstrom, Massachusetts Institute of Technology, Seasons 52, Panera Bread, Boston Park Plaza, Newbury College, Aramark at Fenway, US Bank
Northeastern University & Professional Advancement Network	N/A	Liberty Mutual Insurance, IBM, EMC, Chimera Securities, United States Senate, Siemens AG, Johnson & Johnson, Credit Suisse, John Hancock, Trump Entertainment
Boston College	N/A	Accenture, Brigham and Women's Hospital, Citi, Deloitte Consulting, Deutsche Bank, Ernst and Young, KPMG, Massachusetts General Hospital, Oracle. PricewaterhouseCoopers, Teach for America
Tufts University	N/A	State Street, Teach for America, AthenaHealth, JP Morgan, Fulbright, Google, New York Times, Epic, Massachusetts General Hospital, Microsoft
Salem State University	N/A	Wellington Marketing, Greater Lynn Senior Services Inc., TD Bank, American Diabetes Association, The Goddard School, Prudential Financial, Boston Redevelopment Authority, Hawthorne Hotel, Winchester Hospital, Anthony & Dodge, PC
Suffolk University	N/A	State Street Corp, Merrill Lynch, BNY Mellon, EMC, PriceWaterhouseCoopers, Commonwealth of Mass, Raytheon, Boston Children's Hospital, EY, Partners Healthcare
Berklee College of Music	N/A	SonicBids, Apple, Sony Corporation, NBC Universal, Warner Music Group and Live Nation.
Framingham State University	N/A	TJX Companies Inc., Staples, Massachusetts Secondary Schools, Framingham State University, MetroWest Medical Center, Sodexo
Brandeis University	N/A	Walt Disney Parks & Resorts, Boston Celtics, Citigroup, Broad Institute, PepsiCo, Museum of Contemporary Art Chicago, EMILY's List, Amazon, Quest, Federal Trade Commission
Endicott College	N/A	Georgetown University Hospital, National Center for Missing and Exploited Children, The Madison Square Garden Company, PwC, Boston Celtics, Jackson Hole Mountain Resort, United Nations Development Program, Rapid7, Citigroup Global Markets, EF Educational Tours
Emerson College	N/A	Phoenix Media/Communications Group, Warner Bros. Television, Clear channel, Miami Herald, The Boston Globe, Forbes, American Repertory Theatre, CBS Radio & Television, Paramount Pictures, WEEI Sports Radio Network, WGBH, Harvard University, NBC
Merrimack College	N/A	Morgan Stanley, Pfizer Inc., Boston Public Schools, PepsiCo, Inc., Dell EMC, Raytheon, Goldman Sachs, Wayfair, Ernst and Young, PwC
Curry College	N/A	Lahey Hospital Medical Center, EMC, ESPN, Reebok, Brown Brothers Harriman, Wayfair, May Institute, PriceWaterhouseCoopers, Massachusetts General Hospital
Fisher College	N/A	Blue Cross Blue Shield of Massachusetts, Brigham and Women's Hospital, Boston University School of Medicine, Rue La La, CVS Caremark Corporation, UMass Memorial Health Care, Chanel, Citizens Bank, Timberland, Michael Kors, United Healthcare, Microsoft
Gordon College	N/A	IBM, ESPN, Childrens Hospital, US Army Research Laboratory, NOAA,

		Christian Book Distributors, EBSCO Publishing, Boston College, Verizon, LLP, Siemens
Mount Ida College	N/A	TJX Corporation, Parker Torres Design, CBS Radio, Biogen, EBSCO Publishing, Newton Police Department, Myrtle Beach Safari, Massachusetts State Police Crime Lab, Carolina Panthers (NFL), Arden Jewelry (Headquarters)
Dean College	N/A	Sereda Dance Works, Alvin Ailey, The Kraft Group, Putnam Investments, The Walt Disney Company, Ralph Lauren Corporation, North Shore Music Theatre, Patriot Place, Enterprise, Fusionworks Dance Company, Comcast
Eastern Nazarene College	N/A	Novartis, Price Waterhouse, Blake Cassels & Graydon LLP Law Firm, Department of Public Health, Sun life Financial, State Street Bank, AmeriCorps, Raytheon, South Bay Mental Health, Propel Marketing
Bay State College	N/A	Boston Medical Center, Beth Israel Deaconess Hospital, Anna Jaques Hospital, Liberty Mutual, Childrens Hospital, Ernst & Young, State Street, Tufts Medical Center, Sun Life Financial, Brigham & Women's Hospital
University of Massachusetts- Boston	N/A	Mass General Hospital, Lahey Hospital, State of Massachusetts, City of Boston / Boston Public Schools, Amazon, Boston Children's Hospital, IBM, Beth Israel Deaconess Medical Center, Brigham & Women's Hospital, Framingham State University, Harvard University, State Street Corporation, May Institute, UMass Boston, Veterans Administration
Simmons College	N/A	Beth Israel Deaconess Medical Center, Boston Children's Hospital, Brigham & Women's Hospital, Eliot Hospital, Franciscan Children's Hospital, Lahey Hospital, Massachusetts General Hospital, Spaulding Rehabilitation Hospital, Tufts Medical Center

Source: U.S. News and World Report College Rankings and Data, https://premium.usnews.com/best-colleges. % of class of 2016 alumni respondents reporting being employed.

i. Percentage of graduates migrating out of your community. Percentage of graduates staying in the region.

Boston and the surrounding region are recognized globally for their world-class higher education institutions. The region imports a large number of students from outside the region and provides them with a college education. Specific data on how many students from each college stay in the area after graduation do not exist. However, the lists of top companies provided earlier suggest that many graduates find employment and remain in the Boston area. Data from the American Community Survey (ACS) suggest that, while many of the "imported" college students do leave the area after college graduation, the majority remain in the region. Other young adults also come to the area from other regions after graduation to work. This age group has high rates of mobility, but the Boston area retains or attracts enough graduates to fill the available jobs, in a process that may be considered a "Brain Swap" rather than a "Brain Drain".

The Boston area is strong net importer of college students. An average of 32,300 18-21 year olds arrive each year in the 7-county region and enroll as undergraduates, while 28,600 18-21 year olds leave and enroll as undergraduates, resulting in a net gain each year of 3,700

undergraduates.[64] These inflows help swell the population of young adults from 281,000 14 to 17 year olds to 338,768 18 to 21 year olds.

While public schools attract mostly in-state students, the private colleges and universities attract students from all over the country and the world. In 2016, less than a quarter of the incoming freshmen were from Massachusetts at schools such as MIT, Wellesley, Olin College of Engineering, Harvard, Boston University, Babson, Tufts, Emerson, Northeastern, Boston College, and Brandeis.[65] Each year approximately 5,700 students arrive in the 7-county region from abroad and enroll as undergraduates.[66]

Each year four-year college in the 7-county greater Boston region grant approximately 50,330 Bachelor's degrees.[67] The regional job market does not currently need all of these graduates or have the capacity to employ them; the number of graduates is greater than the number of relevant job openings.[68] After graduation, many students choose to leave the Boston area to pursue opportunities elsewhere or to return home for personal reasons.

Each year, at least 16,100 22 to 25 year olds with Bachelor's degrees (or higher) leave the 7-county region to live elsewhere in the United States.[69] However, many other recent college graduates from other regions to move to the Boston area. An average of 23,000 22 to 25 year olds with Bachelor's degrees or higher arrive in the 7-county region from elsewhere in the United States and abroad.

Without any in- or out-migration, we would expect a 4-year age cohort of 22 to 25 year olds in the 7-county region to include approximately 201,300 Bachelor's degree holders. The ACS estimate of residents of the 7-county region aged 22 to 25 with a Bachelor's degree is approximately 149,600,[70] suggesting a net out-migration of 26% over four years, a level of adjustment appropriate to the role Boston area institutions of higher education play in educating young adults from all over the country and the world.

---

[64] U.S. Census Bureau, 2012 to 2016 1-year American Community Surveys, PUMS, BPDA Research Division Analysis.
[65] The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis.
[66] U.S. Census Bureau, 2012 to 2016 1-year American Community Surveys, PUMS, BPDA Research Division Analysis.
[67] The Integrated Postsecondary Education Data System (IPEDS), 2016, BPDA Research Division Analysis. Note: the 7-county region (Suffolk, Norfolk, Middlesex, Essex, Plymouth, Worcester, & Bristol) is used here due to data limitations in the migration analysis.
[68] Lima, Alvaro, "Retaining Recent College Graduates in Boston: Is There a Brain Drain?" Boston Redevelopment Authority Research Division, 2014.
[69] Additional young adults also leave the region to live in another county; however, these people are lost to follow up by the U.S. Census.
[70] U.S. Census Bureau, 2016 1-year American Community Surveys, PUMS, BPDA Research Division Analysis.

j. Programs and services provided to business in your community (including companies with existing partnerships with colleges/universities)

Four-year Universities in Five-County Region	College/Business Partnerships
Berklee School of Music	Berklee is leading an initiative called **Open Music** in collaboration with the MIT Media Lab which uses blockchain technology as a means of simplifying musical rights ownership attribution and payment flows. The initiative's membership stands at over 200 companies including all three major record labels, companies like Spotify, Pandora, YouTube, Viacom, Intel, Alibaba, Soundcloud, SiriusXM and dozens of blockchain startups. Berklee has a joint design/music thinking course with innovation and design firm IDEO. Finally, in 2017 Berklee has secured a grant from the Barr Foundation to launch a new institute called Music, Mind + Health. The institute, which poses unique partnership opportunities with Boston-area medical and biotech companies, seeks to understand the impact of music on our bodies, brains and overall biology.
Boston College	Boston College is highly integrated into Greater Boston's business community. The college provides numerous programs and services to businesses that augment scientific research, corporate strategy and employee opportunities. **Schiller Institute for Integrated Science and Society:** This institute will create a multi-disciplinary, collaborative research process to address critical societal issues in the areas of energy, health and the environment. The Institute will be the centerpiece of a new 150,000 square-foot science facility scheduled for construction beginning in the spring of 2019. **Boston College Chief Executives Club**: Several times each year, Boston's business leaders gather at the Boston College Chief Executives Club, long recognized as one of the country's premier business forums. The keynote speakers at these events are CEOs drawn from the top echelons of their fields – thought leaders who welcome the opportunity to address an audience of their peers. Among the recent speakers are Disney's Bob Iger, Nike's Mark Parker, and IBM's Virginia Rometty. A unique setting for candid conversation, networking, and connecting with the city's most influential voices, Boston College's Chief Executives Club is where business gets done in Boston. [https://www.bc.edu/bc-web/schools/carroll-school/sites/ceo-club.html] **Center for Corporate Citizenship**: The Center is by far the largest corporate membership organization in the burgeoning arena of corporate social responsibility. It promotes this work through executive education, best-practices research, and other offerings including the world's largest annual gathering of corporate citizenship professionals. [https://ccc.bc.edu/] **Center for Work and Family**: The Boston College Center for Work & Family is the country's leading university-based center focused on helping employers enhance the employee experience, increase employee productivity, and improve the quality of employee lives. [https://www.bc.edu/bc-web/schools/carroll-school/sites/center-for-work-family.html] **Center for Retirement Research**: The Center plays a leading role in nationwide discussions of retirement policy. It conducts research, disseminates data, trains new scholars, and acts as an information and resource hub for the policy community and public. [http://crr.bc.edu/]

	Program on Innovation and Entrepreneurship (PIE): The Boston College Law School Program on Innovation and Entrepreneurship (PIE) draws upon the intellectual capital of its faculty and the energy of its talented students to develop activities designed to build strong bridges between BC Law and the innovation and entrepreneurship communities in Boston and beyond. PIE hosts speakers, discussions, conferences, and symposia at BC Law, in and around Greater Boston, and in other cities as well, in partnership with collaborators in the innovation and entrepreneurship space. PIE also supports experiential opportunities, academic research and student work related to innovation and entrepreneurship. [https://www.bc.edu/bc-web/schools/law/centers/program-on-innovation-and-entrepreneurship.html] **TechTrek** is Boston College's award-winning curricular / co-curricular program with field study experiences in Boston, New York, the West Coast and Ghana. Undergraduate and graduate students engage in master-class sessions with senior executives, entrepreneurs, and venture partners. Students study tech industry strategy and competition, entrepreneurship, and venture finance, examining how firms go from startup to blue chip. [https://www.bc.edu/bc-web/schools/carroll-school/sites/shea-center/ExperientialLearning/techtrekshea.html] Boston College has a long history of significant engagement in the local business community. The Director of Government Relations and the Director of Community Affairs are current board members, have held leadership positions and are active participants in the following groups that support local businesses: 1. Allston Village Main Streets 2. Brighton Main Streets 3. Allston Board of Trade 4. Brighton Board of Trade Additionally, BC is a longstanding member of the Newton-Needham Regional Chamber of Commerce. Boston College's **Institute for Scientific Research** conducts investigations in several widely diverse areas of national interest, including basic and applied research in space chemistry, plasma chemistry, astrophysics, and space weather forecasting, as well as protection of orbiting satellites. The institute provides analysis, expertise, and data management support for advanced remote hyperspectral imaging technology for our nation's defense. The university engages in lab-based research collaboration and contractual services with businesses in the area. Finally, Boston College's human capital – both the student talent pool and the exceptional alumni network – is an asset to businesses in the Boston community and beyond. As an institution, Boston College leverages this talent through a robust offering of on-campus interviews, career fairs, networking events, career education workshops, and experiential programming. Alumni programming includes the Technology and Entrepreneurship Council, whose mission is to bring together Boston College affiliated members of the technology and entrepreneurship communities for networking and career development opportunities.
Boston University	Boston University is currently engaged with approximately 50 companies, which have provided ~$100 million in support to the university over the past three years. The university is in the process of creating an **Office of Industry Engagement** which will provide one point of contact for companies. This office will house Corporate Relations, Office of Technology Transfer and Industry Contracting.. At Boston University, private companies such as Novartis host on-campus courses and workshops for students and faculty and industry executives sit on advisory boards for

	the college. The university facilitates an **Industry Scholar Lunch and Learn** series wherein scientists from industry talk about their work and areas of potential synergies. Participating companies include Boston Scientific, CISCO, Schlumberger, Phillips, and Janssen, among others. **Red Hat Research and Education Agreement -** Boston University and Red Hat are working together by engaging computer scientists from both organizations to pursue innovative research and technology development. Red Hat has provided $1 M per year to support sponsored research, fellowships, and internship programs for students and visiting scientists. **Massachusetts Open Cloud (MOC)** is a unique academic, industry, and government partnership with the goal of developing an open, production-quality cloud computing system. Core industry partners in MOC include Brocade, Cisco, Intel, Lenovo, Red Hat and Two Sigma. The project secured an excess of $14 million of funding from industry in addition to the $3 million in seed funding that the MOC received from the Mass Tech Collaborative in 2014. **The Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator (CARB-X),** headquartered at BU Law, is a public-private partnership to spur the development of new antimicrobials. CARB-X brings together leaders in industry, philanthropy, government, and academia with the aim of rejuvenating the antimicrobial pipeline for the next 25 years. Funded by $450 M over 5 years from the US Department of Health and Human Services and the Wellcome Trust of London, CARB-X is one of the world's largest public-private partnerships focused on tackling antibiotic resistance. **Engineering Product Innovation Center (EPIC)** is a 15,000 square foot, multi-million dollar makerspace that is open to all BU students, regardless of major. EPIC features teaching spaces, demonstration areas, laboratories, and a production fabrication facility. EPIC is funded through the University, ENG alumni and friends, and regional industry. A representative from each principal industry sponsor, GE Aviation, P&G, PTC, Schlumberger, and Rolls Royce sits on EPIC's Industrial Advisory Board, and offer suggestions on how the ENG undergraduate curriculum can best prepare students for employment in the years ahead. Other corporations provide direct financial support, including Ametek, Buehler, Garlock, Stanley Black , Teledyne Dalsa, and Peterbilt.
Emerson	Emerson College excels at engagement with the business community through supporting business marketing initiatives, enabling public policy research and creating a dedicated maker space. Emerson College provides strategic marketing communication consulting for companies interested in audience research, content strategy and feasibility studies. Emerson has worked with Microsoft, Zipcar, Mercedes Benz, McCann Erickson and more. Furthermore, Emerson College's **Marketing Communications** program has partnered with HubSpot to provide training on the company's digital marketing platform. Emerson touts a strong history of enabling public policy and business research. The **Emerson Polling Society** offers research services to companies, public policy organizations, and governmental entities. Emerson has worked with Footwear Distributors & Retailers of America, Marijuana Policy Project, Massachusetts Coalition of Nurse Practitioners, the City of Boston and more. The Journalism Department worked with the political desk of the Boston Globe to cover the 2016 election. It holds a class embedded within the Boston Herald to innovate next generation journalism. The Department has internship relationships with every major newsroom in Greater Boston and across the nation. The **Emerson Launch Center** houses a maker space available to partnering companies to stage hackathons, presentations and innovation competitions. Emerson

	has partnered with IXL, MadValley Labs, Social Map and more. Emerson College also has a focus group room, high definition video studios, video and audio editing bays, mobile video studios, an eye tracking laboratory and video conferencing facilities that can be offered as services to companies.
Emmanuel College	**Merck Partnership** In 2004, Merck Research Laboratories-Boston opened its doors on Emmanuel's campus, establishing a first-of-its kind partnership which over the years has provided unique collaborative opportunities for Emmanuel students and faculty, as well as Merck scientists and employees. The agreement between Emmanuel and Merck has also yielded enormous benefits for students and faculty. Merck scientists regularly participate as guest lecturers in a variety of undergraduate courses, as well as participate in luncheons twice a semester on campus with students and faculty to discuss research and the pharmaceutical industry. Every year, Emmanuel students are research interns at Merck, with seniors performing their honors theses with them. Merck has also made research equipment available to Emmanuel faculty for use in their own academic investigations. Students majoring in biology, chemistry, neuroscience, and biostatistics are eligible for Merck Scholarships, a small merit-based award for juniors and seniors that recognizes achievement in these fields. Merck employees have access to the Emmanuel College campus, including dining, recreation and special events. **Career Services** Through the Career Center, Emmanuel College provides a number of services to area businesses and organizations, including: access to recent graduates seeking employment through the HireSaints database; regular recruiter series with Emmanuel providing accommodations for employers to recruit on campus; and information sessions, employer panels, and career fairs at Emmanuel. A sample of businesses and organizations participating in the College's recruiter series or conducting on campus interviews include: Mass Technology Leadership Council, MGH Department of Comparative Medicine, Commonwealth Care Alliance, The Department of Commerce, Mass Life Sciences and more. **Community Service in Boston** In addition to services for businesses, engagement with a variety of organizations around the city of Boston is a hallmark of the Emmanuel College experience. Last year, 80 percent of the student body participated in volunteer activities, resulting in more than 50,000 hours of service to the community. A sampling of community partnerships include: ABCD Parker Hill/Fenway, Boston Rescue Mission, Community Servings, Cradles to Crayons and more.
Harvard University	The **Harvard Innovation Labs** include: **i-Lab**: The Harvard i-Lab offers students the chance to design, prototype, and test their products and move ideas from invention to commercialization. In addition to sponsoring a range of events, challenges and mentoring sessions, the i-Lab runs a "Venture Incubation Program" (VIP) for nascent projects. VIP participants benefit from direct guidance from community partners, faculty and staff. **Pagliuca Life Lab**: The Pagliuca Life Lab is a co-working wet space for ventures in biotechnology, life sciences, and medical technology. Members of the lab have access to a full suite of lab benches and equipment. **Launch Lab**: Harvard Launch Lab is a space for high-growth, high-potential Harvard Alumni Ventures. Since opening in September 2014, the Launch Lab has been home to 45 ventures. **Harvard Business School** crafts company-specific integrated offerings in consultation with c-level leaders, blending elements of Harvard Business School's Custom

	Executive Education programs, Harvard Business Publishing Corporate Learning, and HBX for organizations to deliver fully integrated transformative learning across business units and entire companies from the C-suite to front line management. Harvard Business School has 77 open enrollment Executive Education offerings for high-potential individuals and seasoned leaders who seek to complete Comprehensive Leadership Programs or short timeframe Focused Programs, without leaving their current roles. Companies and HBS faculty connect on practical research that feeds into articles, books, and case writing. Many networking and topical connections exist with the School's interdisciplinary initiatives, such as the Digital Initiative, Business and the Environment, Entrepreneurship, the Forum for Growth and Innovation. HBS is host to dozens of notable industry and regional conferences led by many of the over 70 MBA student clubs, including: Tech; Entertainment & Media; Marketing; Entrepreneurship; Entrepreneurship Through Acquisition; Social Enterprise; Transportation, Infrastructure & Logistics; Energy & Environment; Retail & Luxury Goods; regional and demographic (e.g. Latin American Conference; Dynamic Women in Business). These events create a range of presenter, panel, and sponsorship possibilities. **Alumni:** An estimated 50,300 Harvard alumni currently live in Massachusetts and 2,430 alumni hold senior leadership positions in or were founders of Massachusetts companies.[71] **Venture Capital Connections**: Between 2011 and 2016, 64 % of the Massachusetts companies that received $24.9 billion in venture capital investment had a high-level connection to Harvard.[72] During FY 2017, **Harvard's Office of Technology Development** established 81 new industry-sponsored research agreements at Harvard, amounting to $51 million in newly committed funding
MIT	MIT adds to the vibrancy of Boston's business community both through MIT based programming and by partnering with additional organizations. **Programming:** **The MIT Industrial Liaison Program (ILP):** This program is dedicated to creating and strengthening mutually beneficial relationships between MIT and corporations worldwide. Over 200 of the world's leading companies partner with ILP to advance research agendas, and the ILP continually evolves to meet the interests, needs, and aspirations of MIT faculty and corporate partners. **MIT Professional Education**: MIT Professional Education offerings are organized under the School of Engineering. These programs provide continuing education courses and lifelong learning opportunities for science, engineering, and technology professionals at all levels. MIT's degree and non-degree executive programs are led by experienced MIT Sloan faculty, and provide excellent networking opportunities with business leaders from around the world. **Partnerships:** **Cambridge Chamber of Commerce** MIT is also a long-standing member of the **Cambridge Chamber of Commerc**e, and works closely with the broader business community on public policy matters related to the local economy. **Kendall Square Association**

[71] https://hwpi.harvard.edu/files/comm/files/facts_impact_2017.pdf
[72] http://impact.community.harvard.edu/impact

	MIT is an active collaborator with the **Kendall Square Association** (KSA), a membership-based organization that consists of companies and institutions committed to promoting the health, vitality and vibrancy of Kendall Square in Cambridge, Massachusetts. The KSA's mission is to promote Kendall's vibrant ecosystem through its convening power and vital programming.
Northeastern University	Northeastern recently launched the region's first university-supported loan program for women and minority owned and other small local businesses. It is called the **Impact Lending** program and it will enable local small business owners to secure loans, at below market interest rates, to acquire crucial resources to expand their businesses. As part of this program, Northeastern will be hosting a convening of local small businesses at Northeastern Crossing to match these businesses with Northeastern departments in need of their services. **Northeastern Crossing** is a dedicated venue for programming that fosters dialog, creative collaborations, and new connections between Boston residents and the Northeastern University community. In addition, Northeastern Crossing, which is under the umbrella of City and Community affairs, hosts classes and seminars for local small business owners, on topics that cover everything from finances to marketing.
Simmons College	Since the founding of the college, more-than-a-century ago, Simmons College has established strong ties with organizations, businesses and industries throughout the City of Boston. Highlights include the work of the Office of Advancement, the Simmons Leadership Conference, Executive Education programs, and the Women's Initiative Forum. **Simmons Leadership Conference** The Simmons Leadership Conference (SLC), is widely considered the premier women's leadership conference in the world. Now in its 39th year, the conference convenes more than 3,300 middle- and senior- level leaders from companies and organizations throughout the nation and around the world for inspirational workshops, speeches, and networking. Taking place on April 5th in Boston, the theme this year is "Disrupt the Ordinary." In addition to raising more than $1 million for student scholarships, the SLC strengthens the college's ties to industry leaders. In addition to funding the conference Dell offers a one-year full scholarship to a worthy Simmons student. Other generous sponsors of the conference include: Cisco, Seaport Hotel & World Trade Center, United Technologies, 2U, Liberty Mutual Insurance, the Walt Disney Company, Hewlett Packard Enterprise, Philips, Putnam Investments, MFS Investment Management, PricewaterhouseCoopers, Analog Devices, Eaton Vance Investment Managers, Lincoln Laboratory at MIT, Sun Life Financial, WGBH, Autodesk, Avanade, Barings, BAE Systems, Biogen, Blue Cross Blue Shield of Massachusetts, Cambridge Savings Bank, CDW, Celgene, Dimension Data, Ettain Group, Fidelity Investments, Great Lakes Cheese, Home Market Foods, Iron Mountain, Kronos, Oracle, Partners Healthcare, PSMJ Resources, RBC Wealth Management, RSM, Sensata Technologies, Sensitech, Somos, Stop & Shop, USAA, Vertex, VISA, and Zoetis. **Executive Education** Simmons offers robust Executive Education programs for senior women executives at leading corporations. Companies that have taken advantage of the programs include Dell, Merck, and EMC. The open enrollment program is well-attended and includes groups from such diverse companies as Fidelity Investments, MassMutual, the Massachusetts Department of Children & Families, and NASA. Simmons also runs an executive education program on behalf of the Greater Boston Chamber of Commerce, which sends approximately 120 participants from their member companies each year.

	Women's Initiative Forum Simmons understands the value of networking and idea sharing in today's modern work world. Each year Simmons holds a Women's Initiative Forum, engaging women leaders from 110 different companies from a wide range of industry, size, and scope. The Forum is designed to harness the collective knowledge of the group, and to provide support for members, who are often managing their organization's women's network or employee resource group. Meeting topics are chosen by the group or proposed by Simmons faculty with new research to share. Recent topics have ranged from talent management from a gender lens, innovative program ideas, and building the business case for getting more women into leadership positions
Suffolk University	Through the **Sawyer Business School's Center for Executive Education**, Suffolk provides custom corporate education programming to business clients. The university specializes in leadership development and additionally runs programs related to accounting, finance, and strategy. Suffolk also has a Partner Scholarship Program, through which Sawyer Business School provides discounted tuition to corporate partners in exchange for a commitment to promoting Suffolk's programs to their employees/members. **Suffolk Law School Intellectual Property & Entrepreneurship Clinic (IPEC)** provides free legal services to select business clients with limited resources on issues relating to new and emerging businesses, with a focus on intellectual property (copyrights, trademarks, patents, and trade secrets). Advanced law students provide a broad variety of intellectual property and transactional services. Representative clients include entrepreneurs, inventors, scientists, designers, software developers, Web publishers, cloud service providers, artists, authors, filmmakers, and musicians, who may be individuals, for-profit businesses, or nonprofits in Boston. **Suffolk Law's Legal Innovation & Technology Concentratio**n has partnered with businesses on computer programming and process improvement projects designed to improve the efficiency and effectiveness of businesses' legal departments. Suffolk has several undergraduate and graduate courses in **Advertising and Public Relations (ADPR)** that take on outside clients, and prepare PR or Advertising campaigns for them. The clients often are small businesses, as well as nonprofits and government agencies. Approximately 100 interns from Suffolk work in Marketing Communication, Social Media, Media Relations, Advertising, and other businesses throughout Boston and the region every year. In addition, several ADPR faculty serve as consultants to businesses in the Boston region, nationally, and internationally. **Communication and Journalism (CJN) Departments** work with business clients on projects that the client can use at the end of the semester. Projects include non-fiction video shorts and marketing projects.
UMass - Boston	**Center for Collaborative Leadership**: offers programming and training in the development of the leadership pipeline for corporations and nonprofits. Businesses send their emerging leaders to a nine-month collaborative leadership seminar. **Venture Development Center**: An entrepreneurial and innovation center on campus which has spun off dozens of new business enterprises in technology and life sciences. **Institute for Community Inclusion**: A research and training institute which promotes full inclusion of people with disabilities through a variety of means, including corporate consultation and employment services. **Labor Resource Center**: Provides professional certificates and training in labor law for individuals and companies. **Center for Social Policy**: Develops cutting edge research and assesses practices in a variety of policy and employment related areas. **Early Education and Care Small Business Innovation Center**:

	Assists in efforts to develop and support strong early childhood programming, in concert with the state's corporate leadership. **Commonwealth Compact**: Connects the region's employers with a diverse applicant pool for career and leadership positions. **State Street Scholars**: Provides a workforce pipeline for the financial services industry through paid internships, of which 80% result in full-time employment with State Street upon completion. **Triumvirate**: Innovative workforce development and higher education partnership with a curriculum developed by Triumvirate and UMass Boston's School for Environment. Students will take classes toward a bachelor's degree while working full-time for Triumvirate. In exchange for a commitment from the student to work at Triumvirate after graduation, Triumvirate will pay for the student's tuition and an hourly wage. **Commercial Real Estate Success Training (CREST) Program with CV Properties**: A workforce development program providing students full-time paid opportunities with top real estate, engineering and hospitality firms with the goal of developing a pipeline in commercial real estate careers. **Sanofi/Genzyme and Oracle Undergraduate Research Fellowships**: The College of Science and Mathematics received a $1 million grant from Sanofi/Genzyme to support student success within STEM majors. This program revamped advising, academic support, and orientation, and developed a learning community program as the centerpiece of this strategy. Retention in the program is more than 15 points above the college's pre-existing levels, with large increases of students remaining in STEM majors. **Social Academic Interprofessional Leadership (SAIL) for Success**: Sponsored by Harvard Pilgrim Health Care, this program prepares students for healthcare leadership roles and the health professions through connections with professionals and intensive personalized advising. **Dana Farber/Harvard Cancer Center U54 Partnership**: Offers a pipeline for diversifying the life sciences field through several training programs for students to develop the necessary skills needed to excel in science research - specifically targeting the area of cancer and cancer health disparities. **Broadening Advanced Technological Education Connections (BATEC)**: Works in partnerships with community colleges, high schools, and corporate partners to increase the information technology pipeline offering an array of internship, training, and tech pathway programs. **CAPS Corporate and Professional Development Programs**: are committed to adult learners with their diversity of interests and needs, which vary from focused short-term, non-credit training to wide-ranging, long-term academic undergraduate and graduate professional degrees. No single plan can satisfy the career aspirations, time constraints, or personal needs of adult learners. The College of Advancing and Professional Studies is focused on providing quality education in a form that is relevant and accessible to all. **Clinical Leadership Collaborative for Diversity in Nursing, Partners Health**: The CLCDN is a leadership and scholarship initiative dedicated to increasing the diversity of the Registered Nurse workforce in all Partners HealthCare System hospitals. This initiative grew out of a mutual desire by UMass Boston and Partners HealthCare System leadership to effect a change in nursing so that it better reflects the diversity of the population of Boston and the Commonwealth.
Worcester Polytechnic Institute	WPI's **Corporate and Professional Education (CPE)** specializes in the learning needs of working professionals and is committed to helping organizations and individuals achieve their educational goals. This includes designing and delivering

	customized programs of study in both graduate and professional development programs delivered online, on campus, and at company locations. In the past five years, WPI has educated over 580 Massachusetts residents in customized corporate graduate programs and delivered professional development programs to approximately 2500 residents. This includes hands-on training at their world-class BioManufacturing Education and Training Center (BETC), which is an example of how the state, private industry, and WPI work together. Approximately 37% of WPI's 892 current online course takers live in Massachusetts. WPI now boasts a **new location in Boston's Seaport District** at 303 Congress Street. WPI looks forward to creating more strategic partnerships with abutting innovators and technology companies to foster research opportunities. WPI will use this new space for industry-centric meetings, classes, projects, and events that are tailored to the interests and needs of neighboring companies who are working in areas such as healthcare technology, robotics, cybersecurity, and big data.

Source: City of Boston, Survey of Local Universities and Colleges, February 2018