MARCH 2017

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CHOOSING MASSACHUSETTS FOR BUSINESS: KEY FACTORS IN LOCATION DECISION-MAKING

RESEARCH BY
UMASS DONAHUE INSTITUTE
Economic and Public Policy Research

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March 2017

Dear Friends,

It is our pleasure to present Choosing Massachusetts for Business: Key Factors in Location Decision-Making, the first of a series that will report on the factors critical to selecting Massachusetts as an expansion location for business.

The genesis of this report grew from the relationships MassEcon has developed over the years with companies that have expanded within Massachusetts - companies from all regions of the state, from diverse industries, and from locations throughout the world. Through the work we do, we have been in the fortunate position to have supported many of these companies' location decisions and to have chronicled and celebrated their growth through our annual Economic Impact Awards.

The report that follows draws from these companies' experiences, providing us with a unique body of intelligence that documents key factors governing the site selection and expansion decision as well as perspectives on operating in Massachusetts.

Our intention in commissioning this report, whose research was ably conducted by the UMass Donahue Institute, is to provide a meaningful resource for economic development officials seeking to market their locations, for public officials and policy leaders who are charged with keeping Massachusetts competitive, and for companies considering locating or expanding in Massachusetts.

Over the coming year, we look forward to discussing the report's findings with various stakeholders, with the overall goal of ensuring that Massachusetts continues to be a location of choice for growing companies.

Executive Director

Brian Cohen
Chairman

ABOUT MASSECON

MISSION

MassEcon, founded in 1993, is a non-profit, non-partisan entity that champions Massachusetts as the best place to start, grow, or locate a business. Bringing the public and private sectors together, we work to create a supportive culture, enhance business growth, promote investment in communities, and spread prosperity throughout the state.

WHAT WE DO

Our services include the state's only Site Selection Service, which helps expanding and relocating companies find a home in the Commonwealth; the Research & Information Service, which provides companies with the information they need to evaluate the Commonwealth as a location to grow; and the Massachusetts Ambassadors, a network of civic and corporate leaders who help market Massachusetts as a place to do business. Under the Team Massachusetts banner, MassEcon celebrates the achievements of Massachusetts companies from all regions of the state through our annual Economic Impact Awards; takes the Massachusetts story on the road through selected trade show and business development missions; and serves on the board of the Massachusetts Marketing Partnership. You can find out more about us at massecon.com.

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1. INTRODUCTION
BUSINESS LOCATION DECISIONS IN MASSACHUSETTS

Why do companies like General Electric, SanDisk, Dassault Systèmes, IBM, and a long list of others choose to locate or expand in Massachusetts?

In a word: ***workforce.*** It's the workers with their deep knowledge, technical skills, and advanced education who attract companies to Massachusetts, and keep them here. Yet, even with a world-class workforce and a broader innovation economy ecosystem in place that reinforces this advantage, it's important that we not grow complacent about the Commonwealth's ability to retain and attract growing companies. The economic prosperity of Massachusetts depends upon it. Beyond the headlines, we need to understand the factors underlying company decisions about where to locate, expand and operate.

FOCUS OF STUDY

That is the focus of this study – analyzing business expansion and relocation projects in Massachusetts over the last 10 years and trying to understand:

- What were the experiences of companies that expanded or located in Massachusetts? What factors were most critical in their location decision? How does this vary by industry and region?
- What are the experiences of these companies as they operate in Massachusetts? Would they choose the same location if faced with the same decision today?
- What do they view as the primary reasons to be located in Massachusetts and what is the overall value proposition of doing business in the state?

The goal of this report, commissioned by MassEcon and undertaken with the Economic and Public Policy Research group at the UMass Donahue Institute, is to apply the voices of the companies that have recently expanded to better understand what truly drives location decisions. The findings and recommendations in this report are intended to inform public policy decisions regarding economic development in the Commonwealth and provide a deeper understanding of the competitive strengths and weaknesses of doing business in Massachusetts.

METHODOLOGY

While significant data exist on the overall economy and the state's industries in the aggregate, much less information is readily available on business expansion and relocation projects in Massachusetts. These business expansion projects are central to the work and initiatives led by economic development professionals at the state, regional and local levels.

To conduct this economic development assessment, we were able to leverage and learn from a database of approximately 375 expansion and relocation projects in Massachusetts over the past decade – business expansions exemplified by job growth, facility expansion, and capital investment (see Figure 1). While there is no universal source of all business expansion and location projects in the state, these data represent the best available information on business expansion and relocation projects in Massachusetts.

This unique set of data led to an in-depth survey of about 75 companies focused on the importance of different site selection factors, the economic development process, and their experiences operating in Massachusetts. Moving beyond published competitiveness rankings and often outdated perceptions of state business environments, we implemented a 30-question survey that allowed for in-depth responses across the full-range of competitiveness factors for location decisions. In addition, we conducted in-depth interviews with 15 companies in

all regions of the state to gain a deeper understanding of the dynamics of their decision to locate and grow in Massachusetts. The complete source document is available from the Economic Public Policy and Research Group at the UMass Donahue Institute.

FINDINGS OVERVIEW

What emerges from this work is a clear picture that companies come to Massachusetts, and choose to stay here, because of the high quality workforce. This is as true for a life sciences company deciding to be close to researchers at Harvard and MIT as it is for a technology company locating along the I-495 belt to access an experienced workforce, or a manufacturing company that establishes a base in western Massachusetts. Respondents noted the emphasis on workforce in several ways:

- *More than 90 percent of the respondents cited the quality and the availability of workforce as top factors in their location decisions.*
- *The vast majority of companies surveyed said that if they were to make the decision again, they would choose Massachusetts.*
- *Industry clusters – and the specialized talent associated with these clusters – represent one of the top three strengths of doing business in Massachusetts.*

There is still much work to be done. While companies tend to locate to be close to their labor force, maintaining proximity can become difficult if housing prices continue to rise. Related to that, an aging transportation infrastructure makes commuting difficult, and certain cost issues challenge our overall competitiveness. Policy makers and economic development officials at all levels will need to fix the vulnerabilities with an eye toward maintaining our strengths in workforce and innovation to keep attracting, retaining and growing companies.

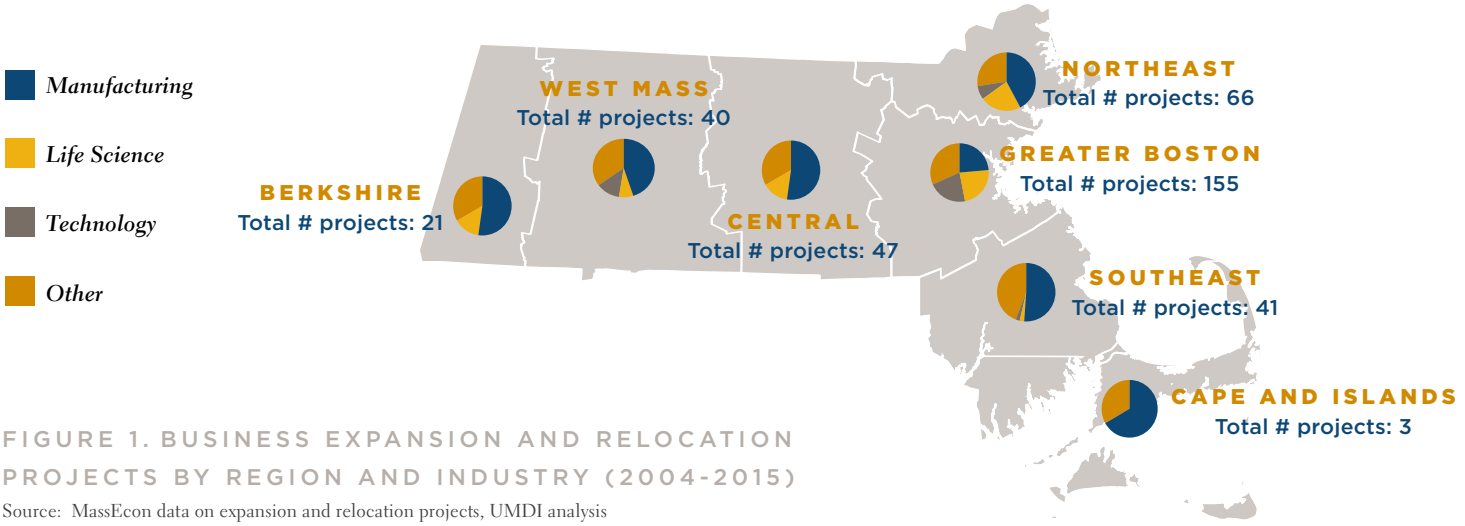


FIGURE 1. BUSINESS EXPANSION AND RELOCATION PROJECTS BY REGION AND INDUSTRY (2004-2015)

Source: MassEcon data on expansion and relocation projects, UMDI analysis

2. KEY STUDY FINDINGS
WHAT FACTORS DRIVE LOCATION DECISION-MAKING?

Expanding companies matter to the prosperity of our Commonwealth; we need to attract them, retain them, and help them thrive. These are the companies that employ our citizens and invest in our communities. And that was the focus of this study – hearing directly from companies about what mattered most when they decided to locate or expand their business in Massachusetts. Ultimately we want to know: would they choose the same location if faced with the same decision today? The vast majority's answer is a resounding "Yes."

The Commonwealth is known for its innovation economy and has created a world-class ecosystem for entrepreneurship. But a vibrant, dynamic economy needs both larger-scale growth companies and entrepreneurial start-ups and small businesses. Established mid to large-size companies are often dependent on the ideas that flow from the entrepreneurs (and the established companies sometimes acquire these start-ups); and the young growth companies seek the established companies as research partners and clients.

Our study findings provide a rare glimpse "under the hood" at business location decision-making

Using a never-before analyzed database of about 375 expansion and relocation projects, the research draws from the experience of actual companies in Massachusetts that have relocated or expanded. Our survey and interview findings provide a rare glimpse "under the hood" at business location decision-making – what works well, what factors are competitive strengths, and what areas need to be improved. This section provides a summary of key study findings, emphasizing both statewide strengths and challenges, as well as differences by region and key industry.

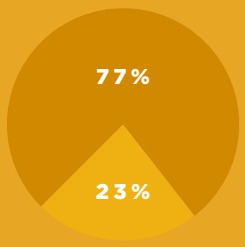
MASSACHUSETTS PROVIDES A STRONG BUSINESS ENVIRONMENT…

When asked if they would make the same business location decision again, over three-quarters of firms (77 percent) stated that yes they would, and 64 percent rated the Commonwealth as a "good" or "very good" place to do business. Exceptional strengths in workforce, world-class industry cluster eco-systems, and a number of other strengths contribute to the state's economic competitiveness. The Greater Boston area is a powerhouse economic engine, one of the strongest in the entire United States, and the state overall consistently ranks at or near the top of innovation and the knowledge economy competitiveness rankings.

… BUT CONCERNS REMAIN

Greater Boston area's strength contrasts with more modest economic growth in other parts of the state. The rest of Massachusetts does maintain industry cluster strengths in sectors like manufacturing, fishing, higher education, and health care, but trails the Boston area in higher-wage fields like life sciences, technology, R&D, and professional services. There are also a number of lingering concerns that relate to the long-term sustainability of our competitive position for economic success. These vary from foundational issues surrounding transportation, and more specifically the public transit system, as well as housing supply and affordability, and cost-specific business challenges for health care and energy. And despite our advantages in workforce and education, a number of companies are struggling to attract and retain younger employees, or find enough technically-trained "middle skills" workers. Addressing these issues in a meaningful and thoughtful way is critical to our long-term economic competitiveness.

1. ACCESS TO A TALENTED WORKFORCE IS THE MOST IMPORTANT FACTOR IN BUSINESS LOCATION DECISION-MAKING IN MASSACHUSETTS



MORE THAN THREE OUT OF FOUR COMPANIES SAID THEY WOULD CHOOSE MASSACHUSETTS AGAIN FOR THEIR EXPANSION LOCATION.

Over 90 percent of survey respondents said that the availability and quality of the workforce was important in their decision to locate or expand in Massachusetts. Additionally, 76 percent identified it as a strength of doing business in the Commonwealth. Company interviews revealed stories about "rock star" hires and "goldmines" of talent. Companies choosing to expand in-state repeatedly commented about how vital the existing, skilled workforce was in their decision-making process. Others commented on how much they depend on and partner with area universities to provide a pipeline of talent for new hires.

2. THE OPPORTUNITY TO PARTICIPATE IN WORLD-CLASS INDUSTRY CLUSTERS IS ESSENTIAL TO BUSINESS EXPANSION AND ATTRACTION, ESPECIALLY IN GREATER BOSTON BUT ALSO IN OTHER REGIONS

Especially for innovation-driven businesses in Greater Boston, the opportunity to be part of a regional industry cluster was a critical element of their location decision-making process. In particular, firms that considered multiple states for their location decision emphasized the value of being engaged in a successful industry cluster ecosystem providing them with access to a large pool of skilled workers, R&D partnerships with area universities, or venture capital firms with experience working in key industries (like life sciences or robotics). Based on our survey, industry clusters represent one of the top three strengths of doing business in Massachusetts overall, and were viewed as particularly important for life sciences and technology companies which tended to aggregate in Greater Boston.

Perhaps more subtly, company location projects in the rest of the state also reflected the strength of industry clusters, especially as it relates to skilled workforce. For example, a manufacturing company that established its first U.S. location in western Massachusetts expressly valued the existing precision machining cluster in that part of the state, and had confidence that the local workforce and training providers could generate a steady flow of trained workers. Similarly, a hardware technology company that located near I-495 specified that the biggest reason they expanded in that area was because of the skilled workforce they can attract from the Worcester and Metro West regions.

3. TRANSPORTATION IS CRITICALLY IMPORTANT WITH A DISTINCT SET OF ASSETS AND CHALLENGES

The data from the surveys and interviews indicates that proximity to existing transportation (and infrastructure more broadly), and the quality and length of the commute are important to companies when assessing locations for their desirability. For example, over 80 percent of business respondents ranked infrastructure as an important aspect of their site location decision, over 70 percent noted highway proximity, and over 60 percent valued the length and quality of the commute. Companies in some parts of the state (such as western Massachusetts) view interstate connectivity as a real strength and allow firms to access customers and suppliers throughout the northeast. Another frequently cited asset is Boston's Logan International Airport, which offers hundreds of domestic flights, helps to connect multinational companies with European offices, and is growing the number of direct flights to global locations throughout the world.

However, transportation is also cited as a prominent challenge and weakness of doing business in parts of Massachusetts. Interviewees mentioned transportation constraints as a current and future concern especially as it relates to access to labor. Companies in Greater Boston keenly sense the impact of highway congestion, the lack of competitive public transit options outside the urban core, and MBTA reliability problems on their ability to attract and retain employees, especially

younger workers. And there is a distinct sense from companies that not enough is being done to boost the transportation system to accommodate the economic and demographic growth that has been experienced in recent years.

4. AVAILABILITY AND AFFORDABILITY OF HOUSING OPTIONS IS CRITICAL FOR ECONOMIC DEVELOPMENT

The availability and affordability of housing was a concern that was most strongly heard through company interviews. Essentially all interviewees mentioned housing as a challenge for Massachusetts statewide in terms of retaining and attracting workers. While housing costs may still be higher in the New York and San Francisco metro areas, the cost of housing is keeping some skilled workers from locating in Greater Boston, and limiting the housing options for low to middle income workers.

Housing is also closely linked to transportation and this important dynamic was mentioned in at least three ways. First, companies in the Boston urban core noted the very high costs of housing and how this can be challenging for their employees (especially as renters try to become home owners). This places even more pressure on the MBTA to deliver reliable public transit options. Second, companies along the I-495 corridor noted that younger workers typically prefer more urban, walkable residential areas and that transportation for reverse commutes is still a work in progress. Third, one major employer in the Berkshires noted that their challenges in attracting and retaining younger talent are directly related to a lack of walkable, mixed-use development areas in that part of the state and were looking for help to create more places where people want to live, work, and play.

5. ECONOMIC DEVELOPMENT SYSTEM GETS GOOD MARKS BUT GREATER CLARITY AND COORDINATION ARE NEEDED

Half of the businesses surveyed interacted twice or more per month with state and local economic development officials in the ramp-up to their expansion or relocation project, pointing to the importance of state and local officials in helping businesses choose and get established in Massachusetts. The majority of company respondents were solidly favorable about the effectiveness of development officials and the responsiveness to permitting and time to market issues, with just under half satisfied with the coordination of local and state officials, suggesting an area for improvement.

Interviewees received help from many different state and local economic development entities, and were quick to mention their appreciation for state incentives to help with expansion projects (in particular the Economic Development Incentive Program). But they also said that the system is too hard to navigate with its overlapping or similarly-named agencies. Some had great experiences, especially when guided step-by-step through a project process from a responsive local official, but others had difficulty accessing the "right" help from the start and hoped for a clearer roadmap of how best to work with local, regional and state development agencies.

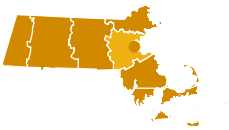
6. COMPANIES IDENTIFY COST CHALLENGES IN MASSACHUSETTS BUT THE IMPORTANCE TO LOCATION DECISIONS VARIES

Labor, health care, and energy costs, as well as taxes and fees, were all identified as significant costs challenges in the state. While these results would seem to validate conventional wisdom about Massachusetts as a relatively high cost state for doing business, an interesting finding is that companies that conducted multi-state searches were less likely to see the various cost issues as being a "major challenge" compared to companies that were already established here. These firms were more likely to locate in Greater Boston and were concentrated in knowledge-based industries like life sciences and software development – choosing access to talent, university partnerships, and participation in industry cluster

Companies that conducted multi-state searches were less likely to see various cost issues as being a major challenge compared to companies that were already established here.

ecosystems as the driving factors for their location decisions. In contrast, manufacturing firms, more widely represented across Massachusetts, expressed much more sensitivity to business cost challenges than other industries. And health care and energy costs were identified as a major challenge to doing business by a higher share of firms located outside of Greater Boston.

7. BUSINESS LOCATION DECISION-MAKING WITHIN AND BEYOND GREATER BOSTON



Implied throughout these findings are the stark differences between Greater Boston and the rest of the Commonwealth. As most keen observers would expect, the survey revealed important differences between firms in Greater Boston and those in the remainder of the state in terms of industry clusters, sensitivity to cost factors, transportation assets and challenges, workforce requirements, housing costs, and the mix of business expansion projects. The concentration of the tech and life sciences clusters in Greater Boston is largely responsible for many of these differences as their location decisions are driven by access to highly skilled labor, partnership opportunities with institutions of higher learning, and R&D activities. Reflecting the relative concentration of manufacturing and other industry strengths, companies with expansion projects beyond Greater Boston are generally more concerned about labor availability and the costs of energy, and less concerned with housing affordability. The firms located beyond the I-495 belt were considerably less sensitive to transportation proximity, consistent with a transportation system that is generally less congested and can provide an advantage for firms seeking access to Northeast markets.

1. TALENT IS OUR KEY ASSET

2. THE POWER OF CLUSTERS

3. TRANSPORTATION BOTH ASSET AND CHALLENGE

4. COST AND SUPPLY OF HOUSING BARRIER TO KEEPING TALENT

5. ROADMAP NEEDED TO NAVIGATE ECONOMIC DEVELOPMENT SYSTEM

6. COST CHALLENGES VARY BY LOCATION AND INDUSTRY

7. GREATER BOSTON AND BEYOND

Another frequently cited asset is Boston's Logan International Airport, which offers hundreds of domestic flights, helps to connect multinational companies with European offices, and is growing the number of direct flights to global locations throughout the world.

96%
OF COMPANIES CHOSE
MASSACHUSETTS
FOR THE QUALITY OF
ITS WORKFORCE

COMPANY PROFILE

Shire, which combined with Baxalta in 2016, is the leading global biotechnology company focused on serving people with rare diseases and other highly specialized conditions. Shire's mission is to develop and deliver breakthrough therapies for the hundreds of millions of people in the world affected by rare diseases and other high-need conditions, and who lack effective therapies to live their lives to the fullest. Massachusetts is home to more than 3,000 of Shire's 22,000 employees.

Shire's current Massachusetts footprint includes almost 2 million square feet of lab, manufacturing and corporate space in Cambridge, Lexington, Waltham, Burlington, North Reading, and Milford. Most recently, Shire announced that it has leased an additional 343,000 square feet of space in Kendall Square.

Before the combination of Shire and Baxalta, both companies had a number of options – both in the U.S. and Europe - for locating their facilities. In 2014, Shire announced that Massachusetts would be home to its U.S. Operational Headquarters. In 2016, Baxalta announced that they would be housing their new R&D center in Cambridge. The city's role as the leading cluster for the biotech industry in the U.S. was and is an important factor when Shire considers where to locate and expand. The life sciences "ecosystem" was critical to their decision as they seek to leverage the area's specialized labor, venture capital, hospitals, universities, and range of small biotech firms. Even in the face of generous incentives from other states, the strength of this cluster was enough to sway the final location decision.

Like other companies interviewed in the Cambridge/Boston area, Shire's challenges focus on traffic and MBTA service that can make the daily commute challenging, as well as the high costs of living, and high real estate costs.

COMPANY PROFILE

Founded in 1976, AccuRounds is a contract manufacturer of precision-machined cylindrical components such as shafts, pins, and bushings for companies in fields like medicine, aerospace, and defense. Based in Avon, AccuRounds is a second-generation family company with 75 employees. Two years ago, it saw an opportunity to grow and expanded into additional space, adding employees and increasing revenue. AccuRounds focused on locating in a modern and larger facility to increase the transparency and collaboration of its work environment. But it also wanted to make sure that it did not greatly disrupt the commute of existing employees. The company searched in Avon and nearby towns but struggled to find suitable properties. Eventually, the company decided to build an 18,000-square-foot addition to its existing facility of 27,000 sq. ft. Not always an easy process, the construction of new space did lead to cost overruns, some delays with the tax incentives, and communication challenges between AccuRounds, the state, and the town. Ultimately, a tax increment financing (TIF) incentive was approved to lower property taxes.

The company continues to see value from this location due to high quality of life, easy highway access, access to labor, and active relationships with area education partners. The most common training pipeline for the company is vocational schools, which provide the machinists that comprise the core of the company's workforce. AccuRounds has increased its number of engineers in recent years, which has led to relationships with local universities and colleges. Looking to the future, the biggest concerns of AccuRounds are the rising costs of living, energy, and health insurance, and the decline of the supply chain in the region. As these supplier and client companies fall victim to high costs or the relocation of their customers, they close. In the short-term, these closures provide a rich source of qualified workers, but in the long-run with fewer suppliers and OEMs, AccuRounds worries that its business could become more difficult in Massachusetts.

3. COMPANIES WEIGH IN FINDINGS FROM SURVEY OF BUSINESS EXPANSION PROJECTS

This business survey gives us a chance to learn directly from Massachusetts companies about their decisions to expand or relocate in Massachusetts, their experiences with the state's economic development delivery system, and the competitive factors that played a role (positive or negative) in their investment decisions and continuing operations. Moving beyond published competitiveness rankings and often outdated perceptions of state business environments, we implemented a survey that allowed for in-depth responses across the full-range of competitiveness factors for location decisions. This section examines companies' experiences from a statewide, regional, and industry perspective, as well as through the lens of companies evaluating Massachusetts against other locations.

A STATEWIDE PERSPECTIVE

The detailed survey effort resulted in 74 business respondents that represented a variety industries and business sizes across all regions of the Commonwealth.[2] In general, survey respondents were:

- Primarily in manufacturing, research & development (including life sciences), and software development & technology.[3]
- Located across the Commonwealth, but more concentrated in Greater Boston and MetroWest.
- Successful businesses expanding to accommodate employee growth, expand to new markets, or better connect with industry clusters.

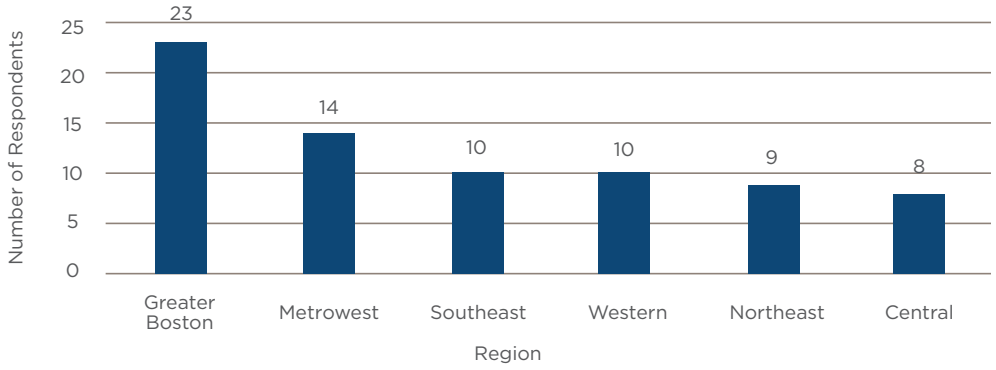
TABLE 1. WHO ARE THE COMPANIES?

INDUSTRY	NUMBER	PERCENT
Manufacturing	35	47%
Research & Development, including Life Sciences	16	22%
Software Development and Technology	14	19%
Professional Services and Communications	6	8%
Other	3	4%
Total	**74**	**100%**

Source: MassEcon business survey data, UMDI analysis

55% OF COMPANIES WERE DRIVEN TO EXPAND BECAUSE OF EMPLOYEE GROWTH

FIGURE 2. WHERE ARE THEY LOCATED?



Source: MassEcon business survey data, UMDI analysis

TABLE 2. WHAT DROVE THEIR BUSINESS EXPANSION OR RELOCATION PROJECTS?

FACTORS	NUMBER	PERCENT
Need to accommodate employee growth	41	55%
Expand market reach to new customers and clients	24	32%
Opportunity to locate in an industry cluster with suppliers, service providers, R&D partners, or other business partners	17	23%
Talent Attraction	8	11%
Other	6	8%

Source: MassEcon business survey data, UMDI analysis

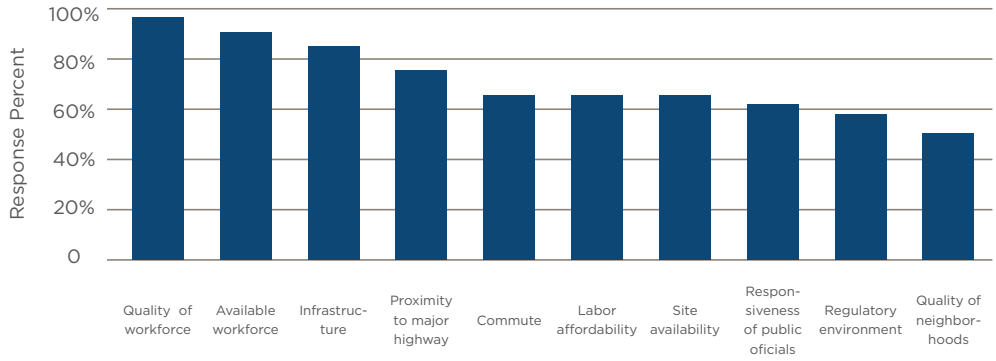
[2] Respondents could choose more than one reason for their expansion or relocation. As a result, the aggregate of the percentages listed in most of the tables and figures will add to more than 100%.

[3] For both research & development (including life sciences) and software development & technology, we included related manufacturing as part of that sector. For example, pharmaceutical manufacturing companies were counted in the research & development group rather than the manufacturing group. This was done, in part, because in the interview phase of this research, key informants in these companies typically referred to themselves as being a part of the life sciences or software development & technology cluster rather than in manufacturing in general.

WHEN CHOOSING MASSACHUSETTS, WORKFORCE QUALITY AND AVAILABILITY WERE THE MOST IMPORTANT FACTORS.

Respondents were asked to rate a wide-range of factors by their importance in determining their site location.[4] Figure 3 below shows the top 10 factors rated on importance. Nearly every respondent said workforce quality (96 percent) and availability (93 percent) were important factors in locating in Massachusetts. These two factors were far and away the most important in choosing Massachusetts locations. Labor affordability, while ranking seventh on the list, was not nearly as important as workforce quality and availability. Massachusetts is known for having a well-educated and higher cost labor force in general. These data show that for companies that chose Massachusetts, the quality and skill of the available labor force outweighs concerns about labor affordability. Available infrastructure (84 percent) and proximity to major highways (76 percent) were the next two most important factors in choosing Massachusetts.

FIGURE 3. WHAT WAS IMPORTANT IN CHOOSING MASSACHUSETTS?



Source: MassEcon business survey data, UMDI analysis

TOP THREE STRENGTHS OF DOING BUSINESS IN MASSACHUSETTS ARE WORKFORCE, COMMUNITY ENVIRONMENT, AND INDUSTRY CLUSTERS.

Consistent with other findings, labor and workforce were identified as strengths of doing business in the state (see Table 3). Massachusetts ranks first among U.S. states in terms of educational attainment, and the availability and quality of labor were the top two factors identified by respondents in determining their company's location for expansion or relocation. Buildings and sites, permitting and public process, and transportation and infrastructure were generally rated as important factors in location decision making, but received mixed reactions in terms of being a business strength or weakness in Massachusetts. Conversely, partnerships and industry cluster did not rate as high among our list of decision factors, but were identified as key business strengths for the state. Costs and fees were mentioned most frequently as weaknesses.

Lower costs outside of I-495 are competitive advantages for communities in this region.

[4] Rating elements were split in to five main categories: labor/workforce, building/sites permitting and public process, transportation/infrastructure, partnerships with local clusters, and community environment. Each element was rated on a five-point scale (extremely important, very important, neither, very unimportant, and not at all important) of how important the factor was in determining their location. For the ease of reporting, Figure 3 aggregates respondents' "extremely important" and "very important" ratings in to a single "importance" rating. The table shows the percentage of respondents that rated a factor as "important".

TABLE 3. DOING BUSINESS IN MASSACHUSETTS – STRENGTHS AND WEAKNESSES

	STRENGTHS		WEAKNESS	
FACTOR	NUMBER	PERCENT	NUMBER	PERCENT
Labor/Workforce	56	76%	14	19%
Community Environment for Workforce	35	47%	7	9%
Partnerships and Industry Cluster	26	35%	10	14%
Transportation/Infrastructure	19	26%	27	36%
Buildings/Sites, Permitting and Public Process	13	18%	27	36%
Costs and Fees	3	4%	45	61%

Source: MassEcon business survey data, UMDI analysis

LABOR AND HEALTH CARE ARE THE MOST SIGNIFICANT OPERATING COST CHALLENGES TO BUSINESS IN MASSACHUSETTS.

Respondents were asked to rank a series of business costs as being either a major challenge, a minor challenge, or not a challenge for doing business in the state. Table 4 (next page) shows that health care and labor were the most significant cost challenges for respondents, with nearly 90 percent of respondents citing labor costs as either a major or a minor challenge for their ongoing operations. At the same time,

Quality and skill of labor force outweighs concerns about labor affordability.

companies are choosing Massachusetts for the quality of labor (Figure 3), suggesting a delicate balance between the value derived from highly skilled labor and the associated costs of securing that talent.

Associated with labor costs, a similar proportion of respondents (85 percent) suggested health care costs were a challenge in Massachusetts. High energy costs in Massachusetts (and most of New England) remain a key cost concern for a large number of businesses, though these cost concerns are less prevalent for certain industries (e.g., software development, life sciences) than others.

"WE ARE HERE IN MASSACHUSETTS BECAUSE OF THE PEOPLE. THE WORK ETHIC OF OUR COLLEAGUES IN WESTERN MASSACHUSETTS IS SECOND TO NONE."

DAVE HOPKINS, PAST PRESIDENT OF COMMERCIAL OPERATIONS, PROLAMINA

TABLE 4. COST CHALLENGES FACING MASSACHUSETTS COMPANIES

COST	PERCENT MAJOR CHALLENGE	PERCENT MINOR CHALLENGE	PERCENT NOT A CHALLENGE
Health care costs	51%	34%	15%
Labor costs	45%	43%	12%
Energy costs	43%	35%	22%
Taxes, permitting fees, etc.	39%	41%	20%
Real estate and/or land costs	39%	41%	20%
Transportation costs	18%	45%	37%

Source: MassEcon business survey data, UMDI analysis

BUSINESSES COUNT ON EDUCATIONAL PARTNERSHIPS TO DEVELOP AND MAINTAIN THE WORKFORCE TALENT PIPELINE.

An important feature of the Massachusetts economic landscape is its institutions of higher learning. Respondents were asked to rate the importance of educational partnership factors in doing business in Massachusetts. Table 5 shows that 93 percent of respondents felt educational partners were important in developing workforce talent. The opportunity to partner with academic researchers on R&D initiatives (73 percent) was also very important, and over half of surveyed companies value the ability to license and commercialize university-developed technologies and research.

TABLE 5. IMPORTANCE OF EDUCATIONAL PARTNERSHIPS

FACTOR	PERCENT IMPORTANT	PERCENT UNIMPORTANT	PERCENT NEITHER
Training/skills development of existing employees	60%	7%	33%
Developing a pipeline of talent with specific skills	93%	0%	7%
Partnering with academic researchers on R&D initiatives	73%	7%	20%
Licensing or commercializing university-developed technologies/research	53%	27%	20%

Source: MassEcon business survey data, UMDI analysis

LOCAL AND STATE OFFICIALS PLAY AN IMPORTANT ROLE IN BUSINESS EXPANSION PROJECTS.

Half of the businesses surveyed interacted twice or more per month with state and local economic development officials in the ramp-up to their expansion or relocation project, pointing to the importance of state and local officials in helping businesses choose and get established in Massachusetts. The majority of company respondents were solidly favorable about the effectiveness of development officials and the responsiveness to permitting and time to market issues, with just under half satisfied with the coordination of local and state officials, suggesting an area for improvement.

Of the surveyed companies, nearly 40 percent indicated that incentives, infrastructure, and other development packages were not applicable to their expansion projects. Of the 60 percent for which these packages were a factor, nearly half said they were not competitive with other states, suggesting that factors other than incentives drove their expansion decisions or that the packages in Massachusetts were "good enough." Regarding available real estate, of the approximately 80 percent of respondents who were actively considering multiple properties, 20 percent were not satisfied with the number of options they had to consider, reinforcing the importance of site readiness programs underway. Overall, these findings highlight the importance of responsiveness and coordination from economic development officials in the Commonwealth, while acknowledging that the responses of businesses which chose to locate outside of Massachusetts are not included.

TABLE 6. EXPERIENCE WITH STATE AND LOCAL ECONOMIC DEVELOPMENT SYSTEM

FACTOR IN WORKING WITH LOCAL OFFICIALS	YES	SOMEWHAT	NO	NOT APPLICABLE
Was there coordination between local and state officials?	47%	27%	25%	0%
Were development officials responsive with permitting and other "time to market" issues?	57%	21%	22%	0%
Were you satisfied with the effectiveness of development officials in support of your project?	55%	26%	19%	0%
Were there a sufficient number of available properties for you to consider?	35%	30%	16%	19%
Were potential incentives, infrastructure, and other development programs competitive with other states?	13%	19%	29%	39%

Source: MassEcon business survey data, UMDI analysis

REGIONAL DIFFERENCES

There are significant differences in economic activity and industry clusters in regions of the state (particularly compared to Greater Boston); this translates into different kinds of business expansion projects and different factors that drive decision-making. To assess how regional factors influence expansion and relocation projects, survey responses were divided into companies inside and outside of Interstate 495. As a beltway that stretches from the northeast part of the state, around the MetroWest region, and encompasses the southeastern section, I-495 stands in as a definition of "Greater Boston." Out of 74 total respondents, 53 expanded within Greater Boston and 21 expanded outside of Greater Boston. The majority of firms surveyed outside of Greater Boston were in manufacturing, while those from Greater Boston were more evenly split between manufacturing, research & development (including life sciences), and software development and technology.

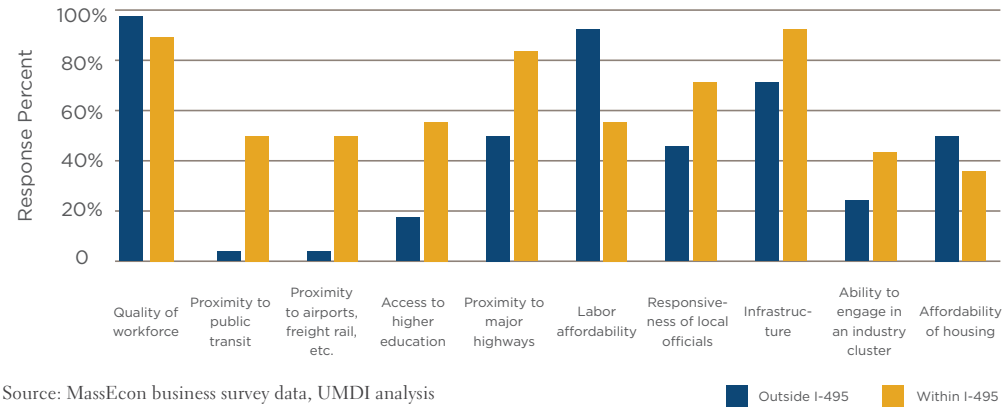
[5] These factors were slightly reworded from the actual survey due to space considerations. For the sub-factors as they appeared in the survey, please see the Business Survey Questions in Appendix D of the full report from the UMass Donahue Institute.

BEYOND WORKFORCE, LOCATION DECISION FACTORS VARY SIGNIFICANTLY FOR COMPANIES WITHIN AND OUTSIDE OF GREATER BOSTON.

- ***Workforce quality and availability were cited by all*** surveyed businesses outside of I-495 and by over 90 percent within Greater Boston as being one of the most important factors for location decisions.
- ***Greater Boston*** – Transportation and infrastructure, access to higher education, responsiveness of local officials, and industry clusters are more important factors for businesses choosing to locate in Greater Boston.
- ***Outside of Greater Boston*** – Low labor and housing costs are more important factors for businesses choosing to locate outside of Greater Boston.

Figure 4 shows the importance of site location factors by region. With the costs of labor and housing in the Greater Boston region higher than in the rest of the state, companies choosing to locate within I-495 seem to accept these elevated costs when making the location decision – perhaps placing greater value on the region's assets, but we know from other sections of this study that labor and housing costs are still a concern in an operating environment. Companies that have expanded outside of the I-495 belt are influenced by labor and housing costs, and indeed, lower costs outside of I-495 are generally competitive advantages for communities in this region. Associated with the concentration of life sciences and technology respondents clustered in Greater Boston, companies within this region placed a higher value on access to higher education and ability to engage industry clusters than did their counterparts outside I-495. Infrastructure availability – water, sewer, and telecom – was cited as vitally important by all companies within Massachusetts.

FIGURE 4. COMPARING COMPANIES FROM WITHIN AND OUTSIDE I-495: WHAT FACTORS MATTER IN THEIR LOCATION DECISIONS?[5]



Source: MassEcon business survey data, UMDI analysis

KEY OPERATING COST CONCERNS STARKLY DIFFER FOR REGIONS OF MASSACHUSETTS.

- ***Greater Boston*** – Labor, transportation, taxes and permitting, and real estate costs are the biggest challenges.
- ***Outside of Greater Boston*** – Energy and health care are biggest cost concerns.

Table 7 (on page 22) analyzes the operating cost challenges in different regions of the Commonwealth.

Companies within I-495 consider labor costs more of a challenge than do companies outside of I-495 as wages are higher in Greater Boston. Similarly, real estate and land costs are a greater challenge within the I-495 region, with relatively low real estate and land costs an advantage outside of I-495. Energy costs outside of I-495 are a more significant concern among survey respondents, partly due to the greater proportion of manufacturing respondents in that part of the state. Of note, when compared to competitors such as Greater New York or San Francisco, Greater Boston still fares well in terms of housing and business cost structure, but it will take effort to maintain and improve upon this competitive position.

TABLE 7. BUSINESS OPERATING COST CHALLENGES BY REGION OF MASSACHUSETTS

	A MAJOR CHALLENGE	
COST	OUTSIDE I-495	WITHIN I-495
Labor	38%	47%
Energy	57%	38%
Health care	57%	49%
Transportation	10%	21%
Taxes, permitting fees, etc.	33%	42%
Real estate and/or land	33%	42%

Source: MassEcon business survey data, UMDI analysis

CONSIDERING MULTIPLE LOCATIONS: LOOKING OUTSIDE MASSACHUSETTS AND LOOKING WITHIN

Massachusetts competes with other locations in attracting and growing business. Of the 74 total respondents, 27 considered locations outside of Massachusetts – including California, North Carolina, New Hampshire, New York, Texas, and Rhode Island. These are the companies that often make the headlines and are frequently targeted by development officials with incentive packages to attract their business. The factors most frequently cited as important in determining their location were:

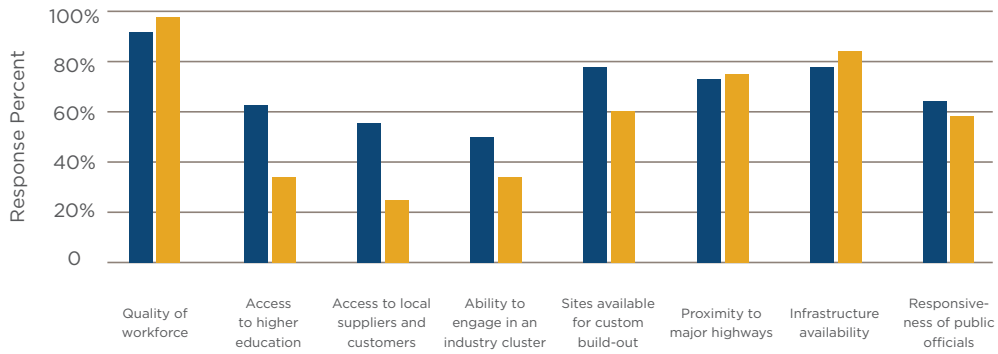
- Availability and quality of workforce
- Infrastructure availability, buildings and sites available for custom build-out
- Proximity to highways

> "IN 2014 I WAS GIVEN THE ASSIGNMENT TO MOVE THE U.S. COMMERCIAL ORGANIZATION FULLY TO MASSACHUSETTS... I AM ABSOLUTELY PROUD OF THAT DECISION. IT HAS BEEN A TRUE PRIVILEGE TO BE HERE."
>
> PERRY STERNBERG, HEAD OF U.S. COMMERCIAL OPERATIONS, SHIRE

COMPANIES CONDUCTING MULTI-STATE SEARCHES PLACED GREATER VALUE ON EDUCATIONAL PARTNERSHIPS AND INDUSTRY CLUSTERS.

In comparison to companies that sought locations only in Massachusetts, firms that considered multiple out-of-state locations placed greater value on key statewide strengths like access to higher education institutions, the ability to engage in world-class industry clusters and access local suppliers, and practical considerations like having sites available for custom build-out. That nearly every location factor was identified by the majority of these firms as important highlights the comprehensive decision-making process firms apply when choosing among multiple states.

FIGURE 5. MOST IMPORTANT FACTORS IN DETERMINING LOCATION BY TYPE OF SEARCH



Source: MassEcon business survey data, UMDI analysis

BUSINESS COSTS NOT A MAJOR CHALLENGE FOR COMPANIES CONDUCTING MULTI-STATE SEARCHES

Companies that conducted multi-state searches were less likely to see various costs as being a "major challenge" compared to companies that only considered Massachusetts for their expansion location. This is likely related to industry mix differences since technology, life sciences, and R&D firms, driven by the value gained by the Massachusetts ecosystem, formed the vast majority of companies conducting multi-state searches.

TABLE 8. BUSINESS COST CHALLENGES BY TYPE OF SEARCH

COSTS	MULTI-STATE	MA-ONLY
Labor	30%	54%
Energy	26%	52%
Health care	30%	65%
Transportation	19%	17%
Taxes, permitting fees, etc.	33%	41%
Real estate and/or land	33%	41%

Source: MassEcon business survey data, UMDI analysis

COMPANY PROFILE

IBM's search for new space started with the goal of consolidating multiple Massachusetts locations into a single campus in the state for its software development teams. IBM strongly preferred to remain in Massachusetts, in large part because of the state's highly talented workforce. Thanks to a strong collaborative effort by state and local officials, IBM did not need to look at relocation options in other states.

The Littleton location met the company's basic requirements, but was not without its challenges. The scale of accommodation and cooperation between IBM, the state, town, and others was extensive. State and local government combined to provide tax incentives for the relocation project, and collaborated to address the site's power and transportation needs. For example, a second power line was built to provide greater reliability for IBM's control center, which is relied upon by systems around the world, and the commuter rail schedule was modified to provide a viable "reverse commute" option for IBM's workers.

Generally, IBM feels that the public-sector efforts show that it is appreciated in the region which gives it more assurance for future investments. IBM sees other advantages of its location such as the technology and health care clusters in Massachusetts which provide a deep pool of highly-skilled talent, and opportunities for collaboration and sales, especially for its Watson platform. IBM can also rely on the region's multiple universities to replenish the talent pool with workers with the diverse and specialized credentials needed for its different business units. Even with modifications to the train schedule and its location outside of the core urban area, IBM still has difficulty ensuring the daily presence of its staff, resulting in more telecommuting and challenges recruiting young workers because they prefer to live in the city.

COMPANY PROFILE

Jarvis Surgical is a fifth-generation family-owned business in Westfield that manufactures large joint medical devices and components for hip, knee, shoulder, and ankle assembly. The company began work in 1901 in Connecticut and expanded its operations in Westfield, Massachusetts in 1994. After considering space in Connecticut and Massachusetts, Jarvis Surgical decided to remain and expand in Westfield where it doubled its footprint to 35,000 square feet and hired 15 new employees in 2016.

The company selected Westfield due to tremendous support from the local and state government, tax benefits from the state and town, and ease of the expansion process. Jarvis Surgical worked with local vendors, including a local construction company who was efficient, and worked within budget and time frame to complete the expansion. Westfield was also an attractive location due to the local workforce. The area's vocational high school produces a millennial talent pool from which Jarvis Surgical has hired several employees. Jarvis Surgical is a draw for young workers because they can make a good living as a machinist, and cost of living is affordable in the western part of the state. Most of the company's 70 employees live in Westfield and neighboring communities of Ludlow and Chicopee.

In addition to its 2016 expansion, the company recently opened another business within the same building, Echelon Industries Corporation, which has an AS9100 accreditation and focuses on manufacturing devices for the aerospace industry. Echelon Industries also purchased a welding company which is housed within the same building as Jarvis Surgical and Echelon. Looking to the future, Jarvis Surgical plans to keep hiring and expanding, eventually passing the company down to the daughters of the company's President and CEO, Clayton Jarvis.

93%
OF COMPANIES CITE THE NEED FOR EDUCATIONAL INSTITUTIONS TO DEVELOP A PIPELINE OF TALENT WITH SPECIFIC SKILLS

UNDERSTANDING HOW DIFFERENT INDUSTRIES EVALUATE LOCATION FACTORS

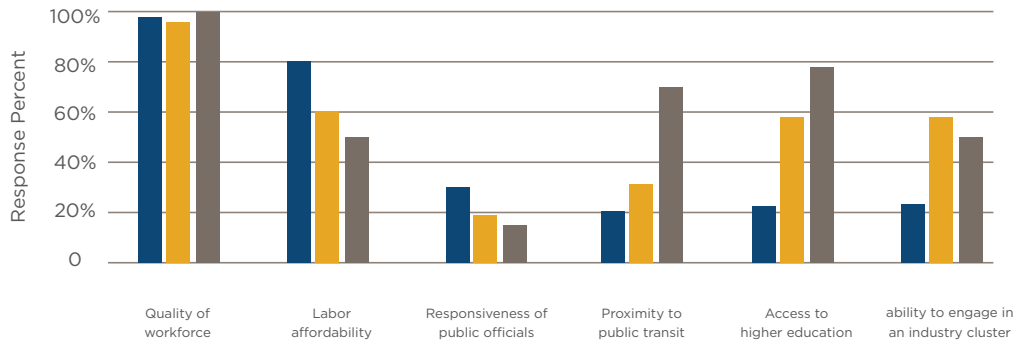
Of the 74 survey respondents, 65 were in one of these three general sectors 1) manufacturing 2) research & development (including life sciences) and 3) software development & technology.[6] As shown in this section, these key industries vary in terms of the importance they place on various decision factors, as well as their workforce needs.

MANUFACTURERS PLACED HIGH IMPORTANCE ON LABOR COSTS, RESPONSIVENESS OF PUBLIC DEVELOPMENT OFFICIALS, AND PROXIMITY TO MAJOR HIGHWAYS AS KEY FACTORS IN THEIR LOCATION CHOICE.

Manufacturing often requires larger facilities for operations, and siting new plants may entail complications regarding permitting and regulations. So, it is not surprising to see that responsiveness of local officials is especially important to manufacturing firms as they seek to find and expand into new locations. In addition, the need to transport goods makes proximity to highways important for the industry in general. While manufacturing generally pays higher average wages compared to the overall economy, they are often more sensitive to labor costs and typically pay less than the other two sectors in this analysis (R&D and software). Manufacturers are also generally more concerned with business cost challenges, highlighted by health care, energy, and labor costs.

Conversely, traditionally knowledge-based industries such as research & development and software development & technology firms place a lower emphasis on labor affordability, with more emphasis on highly advanced skills and education. These companies are more likely to be in Greater Boston and are choosing the area because of other competitive advantages known to the region (namely labor quality and industry clusters).

FIGURE 6. IMPORTANCE OF LOCATION FACTORS BY INDUSTRY



Source: MassEcon business survey data, UMDI analysis

Manufacturing R& D and Life-Sciences Software Development

LIFE SCIENCES AND SOFTWARE DEVELOPMENT & TECHNOLOGY FIRMS PLACE HIGH IMPORTANCE ON ACCESS TO HIGHER EDUCATION AND RESEARCH INSTITUTIONS, LOCAL INDUSTRY CLUSTERS, AND PROXIMITY TO PUBLIC TRANSIT.

Engagement with the larger industry clusters, including institutions of higher education, is of critical importance for research & development and software development firms, and a key reason so many

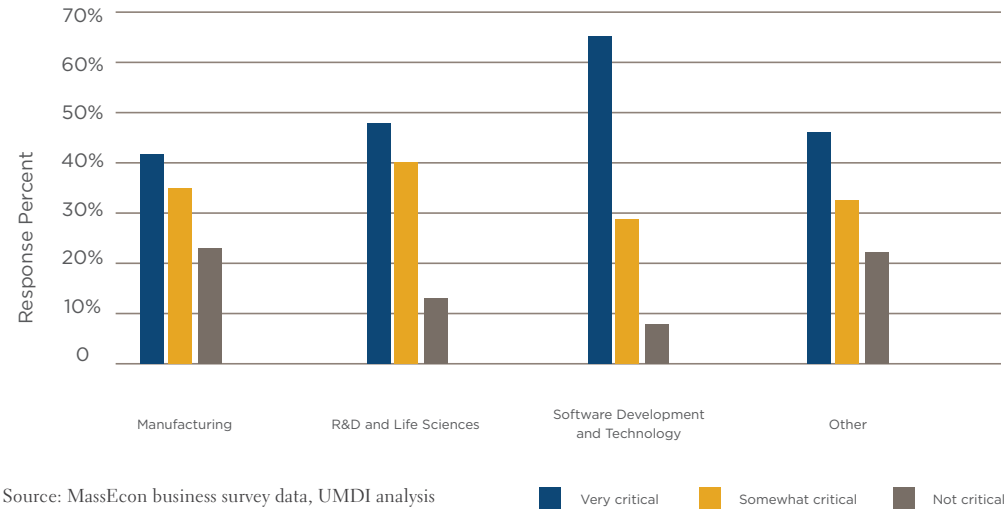
[6] Companies were permitted to select multiple industry classifications. For analytical purposes, respondents that identified themselves as Research and Development and Manufacturing were included in the Research and Development group. The same was done for the Software Development and Manufacturing firms.

firms are concentrated in Greater Boston. It's also interesting to see such a high importance placed on proximity to public transit for software development firms. While this may partly reflect the location of actual survey respondents in the core Boston/Cambridge urban area, this finding is consistent with a trend of tech-based firms increasingly choosing to locate in more urban, walkable, transit-served office locations over more suburban office parks.

JOB CANDIDATES WITH ADVANCED EDUCATION ARE OF CRITICAL IMPORTANCE ACROSS ALL INDUSTRY SECTORS.

As expected, bachelor's level candidates are important to companies in research & development and software development & technology (See Figure 7 below). Reflective of the continuing shift towards innovation-based advanced manufacturing in Massachusetts, bachelor's level candidates are important for manufacturing firms in the state as well. Interviews with leaders of manufacturing firms in this study revealed that changes in the manufacturing process today requires more on-site engineering and design help for customizing production, as well as some computer programming skills.

FIGURE 7. BACHELOR'S CANDIDATES DESIRED BY INDUSTRY



Source: MassEcon business survey data, UMDI analysis

The survey results also indicate that job candidates with middle skills are of greater importance to manufacturing, but are also in demand at R&D and software firms. Almost 50 percent of surveyed manufacturers state that middle skills (often via vocational schools or technical training certificates) are very critical with another 28 percent indicating that these technical/vocational skills are somewhat important. Perhaps less associated with "middle skills" occupations, both research & development and software development & technology firms noted some need for job candidates with less than a college education (e.g., technical or vocational training). For example, 20 to 30 percent of these firms indicated that these middle skills candidates are very critical, and about 50 percent stated that they are somewhat critical to their industry.

This points to potential employment and job training opportunities for less educated adults in the Commonwealth to engage and be employed by these traditionally knowledge-based industries. It is important for job training professionals and local community colleges to work with employers in these industries to understand the needs for middle-skill positions in order to ensure a talent pipeline for these roles, as well as position modestly skilled adults in the state for opportunities to work in our growth sectors.

COMPANY PROFILE

CARBONITE

Carbonite is a technology company providing cloud backup and disaster recovery services to consumers and businesses. When the company needed more space to expand, it did not look outside of its native Boston, finding a space in Downtown Crossing that it is happy with. The new office is home to approximately 280 employees who have seen their collaboration and cohesiveness improve as the move resolved the space and office layout constraints present in their previous location.

Boston's quality of life and rich talent pool were the primary reasons Carbonite did not consider leaving the city during its search. The diversity of Boston in both its population and businesses was attractive and provided a vibrant environment for different perspectives and ideas that are beneficial to the workers and company. The area's competent and hardworking talent pool provides a "goldmine" for companies that depend on intellectual capital.

High real estate and electricity costs were singled out as issues for Carbonite, along with the unreliability of the transportation system. The expanding Boston economy and tight housing market are impeding Carbonite's ability to find enough workers who reside locally. Its staff come from New Hampshire, Rhode Island, and across Massachusetts. Ultimately, the company believes that without coordinated policy effort there will be a shortage of the type of workers upon which the eastern Massachusetts economy is built.

COMPANY PROFILE

GE Healthcare

GE Healthcare's Life Sciences is a $4 billion business with over 11,000 employees operating in more than 100 countries. It provides tools for drug discovery and biomanufacturing, as well as a suite of diagnostic pharmaceuticals to help drug manufacturers, researchers, and clinicians accelerate precision medicine. GE Healthcare Life Sciences' North American headquarters is based in Marlborough, Massachusetts. When the business decided to consolidate its northeastern operations into one site, it considered multiple states. In the end, the company found the state's life sciences cluster to be the most compelling reason to locate in Massachusetts due to the workforce, and the large amount of National Institutes of Health (NIH) funding, venture capital, research hospitals, and universities.

While searching for a Massachusetts location, GE Healthcare met with and received advice from many state agencies and economic development organizations, and singled out Marlborough's Economic Development Corporation and local government for their help finding a site and rendering assistance for this relocation project.

The benefits of the Massachusetts life sciences cluster have been most obvious in finding and hiring skilled talent. Since moving to Marlborough, GE Healthcare has hired more than 250 employees who, according to senior leaders at the company, have been "outstanding." Overall, the company says that even though it came in with high expectations, recruiting has been easier and the quality of hires even better than expected. Like other companies interviewed, they see transportation challenges and high housing costs as two long-term issues for the Commonwealth.

4. GOING DEEPER WITH COMPANIES THAT HAVE EXPANDED IN MASSACHUSSETTS

To truly understand business location decision-making and how companies value doing business in Massachusetts, you need to go beyond broad industry trends and typical state competitiveness rankings. So, to supplement the knowledge gained from the surveys and data analysis, the team conducted in-depth interviews with 15 companies that had recently undertaken expansion or relocation projects in Massachusetts. The 14 companies were chosen to provide representation across the Commonwealth and key industry sectors that were reflective of the overall study (e.g., manufacturing, software and technology, and life sciences). The objective of the interviews was to amplify our understanding of economic development in Massachusetts, and provide a fuller picture of the opportunities and challenges of doing business in Massachusetts.

STRENGTHS AND COMPETITIVE ADVANTAGES

RETAINING CURRENT WORKFORCE AND ABILITY TO RECRUIT NEW TALENT ARE THE MOST CRITICAL FACTORS FOR EXPANSION AND RELOCATION PROJECTS.

"This is where it's at," was the sentiment of one interviewee when asked why his life sciences company chose Massachusetts. Eastern Massachusetts is a "goldmine" of talent said a technology company. When asked about the value proposition of doing business in Massachusetts, time and again, the interviewees came back to the richness of specialized knowledge that has accumulated in the state because of its life sciences, technology, and, to a lesser extent, precision manufacturing clusters. In contrast, companies outside of these clusters were less effusive in their praise for the business climate in Massachusetts.

It is hard to over-emphasize the importance the interviewees, especially those in the life sciences and technology sectors, put on their ability to hire and retain exceptional employees. Many existing companies did evaluate other options, especially in Texas, California, Colorado, and North Carolina, as well as international locations. They cited the costs and disruption of losing their current employees as one critical factor that kept them in Massachusetts despite wide-ranging site selection processes.

COMPANIES PLACE A HIGH VALUE ON LOCATING WITHIN STRONG INDUSTRY CLUSTERS.

Many of the firms interviewed for this study are in the life sciences, technology, or precision manufacturing sectors. Taken as a whole, many of the benefits and value derived from being in Massachusetts can be attributed, directly or indirectly, to the agglomeration economies created by the existence of robust clusters.

Massachusetts is home to the most significant life sciences cluster in the U.S., if not the world. Companies in this field told the team that they were prepared to shoulder the high costs of doing business in the Commonwealth to be among the talent, research, and collaboration that this cluster makes available to them. One interviewee drew an

IN-DEPTH COMPANY INTERVIEWS

COMPANY	SECTOR	REGION
Accurounds	Precision Manufacturing	Southeast
Anonymous	Anonymous	Greater Boston/ West Mass
Asahi/America	Plastics Manufacturing and R&D	Northeast
Carbonite	Software Development	Greater Boston
Dassault Systèmes	Software Development	Greater Boston
eClinicalWorks	Healthcare Software	Central
EF Education First	Educational Services	Greater Boston
EMD Serono	Bio-tech/Pharma	Southeast
GE Healthcare	Bio-tech/Pharma	MetroWest
General Dynamics	Defense Manufacturing	Berkshire
IBM	Software Development	MetroWest
Jarvis Surgical	Medical Device Manufacturing	West Mass
Menck Windows	Precision Manufacturing	West Mass
SanDisk	Software Development	MetroWest
Shire	Bio-tech/Pharma	Greater Boston

Source: MassEcon business survey data, UMDI analysis

analogy between professional basketball and life sciences saying, "The best basketball players in the world come to the U.S. to play. The same is true for life sciences. And, the place to be in the U.S. for life sciences is Cambridge. That is how you know you are on the map in the field."

Though costs of doing business are generally high in eastern Massachusetts, for firms benefiting from agglomeration economies, the higher productivity of available labor and the specialization of supply chain firms offset these costs and make the region a profitable place to do business. Industry clusters also provide an opportunity for firms to collaborate with each other, and these collaborations can take the form of shared investment in a common product, basic research, or development and marketing. One pharmaceutical company said that they "need to be near key players" and Boston-metro is home to "40% of the world's IP in R&D." Whether or not this statistic is exact, it highlights how important the Massachusetts life sciences' cluster is to prominent players in the industry.

Company interviews revealed stories about "rock star" hires and "goldmines" of talent.

VENTURE CAPITAL, ENTREPRENEURSHIP OPPORTUNITIES ARE CRITICAL TO LIFE SCIENCES AND TECHNOLOGY INDUSTRY CLUSTERS

A number of companies also spoke of Massachusetts as being a good place for life sciences entrepreneurs due to its incubators, universities, hospitals, and specialized venture capital ecosystem. While Silicon Valley is famous for its concentration of investors, the venture capitalists there are focused on consumer-facing technology and do not possess the life sciences industry knowledge that is found among VCs in Massachusetts. Their expertise makes them more willing to invest in the field and provide the guidance that nascent firms need. According to the PwC MoneyTree report, the healthcare sector receives the most VC investment of any other in the Commonwealth at over $1.8 billion in 2016. The dynamic business environment also makes Massachusetts attractive to large firms seeking partnerships or acquisitions to grow their business.

The technology cluster in Massachusetts is also large and vibrant enough to continue to attract fresh investment. For example, VC investment in software is second only to biotech at $1.8 billion. Because their business models are more focused on innovation and high-skilled labor, tech companies are less sensitive to the relatively high costs in the Commonwealth. And although high, these costs are still less than market wages and rents in Silicon Valley which helps keep the Commonwealth attractive.

PARTNERSHIPS WITH AREA COLLEGES AND UNIVERSITIES ARE HIGHLY VALUED FOR WORKFORCE AND R&D.

A complementary component to the industry clusters are the colleges and universities in Massachusetts, both in terms of providing training for high-skill workers and important synergies in research and development, and product commercialization. Predictably, local colleges and universities provide an important talent pipeline for high-skill workers, at both the bachelor's and graduate levels, for the life sciences and technology firms. Beyond that, though, local colleges and universities also play a critical role in training skilled machinists and other workers needed by the Commonwealth's precision manufacturing sector. Many of the firms mentioned partnerships with local schools to provide entry-level workers. Other firms, such as those developing new drugs, that have a concentration of mid- to late-career employees, benefit more from research and development relationships with area universities. Along similar lines, the Commonwealth's many hospitals also function as centers of research and development in the life sciences and valuable partners to firms in this sector.

A DIVERSE ARRAY OF CULTURAL AND NATURAL AMENITIES CONTRIBUTE TO A POSITIVE PLACE TO DO BUSINESS IN MASSACHUSETTS REGIONS.

Beyond the business environment, many companies are happy with the physical and cultural environment of Massachusetts. No matter the region they are in, interviewees in most of our case studies mentioned the Commonwealth's access to mountains, parks, lakes, and ocean and the outdoor activities they provide as benefits of living here. Businesses in western Massachusetts and Boston area also mentioned the diversity of people, ideas, and cultural opportunities as business strengths and positive factors for their employees.

There was strong preference among existing companies to stay in Massachusetts. These companies were eager to continue to find ways to be profitable and grow without having to undertake the disruption and risk of relocation. Some of these companies felt that Massachusetts was part of their identity. For them, the value proposition was not as important as was their history in the state and their investment in their current labor force and local community.

THOUGH NOT THE DRIVING FACTOR, AVAILABLE INCENTIVES AND RESPONSIVE ECONOMIC DEVELOPMENT SUPPORT ARE HIGHLY VALUED BY COMPANIES.

Existing local companies often feel that their past and current efforts at creating jobs should be rewarded with more attention and support from state and local officials. A few companies went so far as to say that the amount of the incentive they received was less important to them than the cooperation and attention displayed in the process. "It makes us feel wanted", one company said. Many said that a smooth and helpful incentive process was a sign that officials were "partners" and "invested" in the company's success. And firms that did receive incentives (usually the EDIP) to expand, all made sure to mention how much they valued that financial support. Beyond incentives, companies suggested that helping to connect them with similar businesses or those along the supply chain would be helpful. For example, precision manufactures could benefit from collaborations with software development companies or those researching new medical devices. Lastly, while recognizing the benefit to the state's economic development image of landing high-profile entrants, some companies expressed that the system can be more focused on attracting large companies than helping to develop existing or early-stage firms.

TRANSPORTATION NEEDS VARY BY COMPANY, BUT ARE IMPORTANT FACTORS IN LOCATION DECISIONS.

One area that appeared as both a strength and challenge throughout the interviews was transportation. While the next section details some of the ways the current transportation infrastructure creates challenges for firms, here it worth noting the benefits it provides. The interviewees mentioned highway access and Logan International Airport as critical pieces of the Commonwealth's transportation network. Firms have access to important interstate highways with 90, 91, and 95 all passing through the Commonwealth while being supplemented by other interstates and federal and state highways. These highways provide a link to customers and shipping options for the Commonwealth's manufactures. A number of the companies interviewed have European headquarters or other operations. These companies highly value the proximity of Massachusetts to Europe and the ever-growing number of daily flights from Logan. For example, one company relies on the airport for streamlined access to its international staff, who frequent Boston for orientation and training. Another company, with wide-ranging international operations, relies on the airport for critical access to its foreign programs and European headquarters.

CHALLENGES AND AREAS TO IMPROVE

The challenges heard by the team can be summarized in a few key topic areas: transportation and infrastructure, housing availability, high business costs, and the complexity of the economic development system. Every interviewee in eastern Massachusetts and many in the western part of the state independently mentioned these issues and the associated challenges they create.

HIGH HOUSING COSTS AND HOUSING AVAILABILITY ARE A MAJOR CONCERN.

The challenges around housing fall into two broad categories: availability and cost. The growth in employment in eastern Massachusetts has not been met with an equal increase in new housing units (despite the number of multi-story residential buildings being constructed). High residential demand coming up against limited supply has increased the cost of housing and caused people to look further afield in the search for available homes at a reasonable price. In western Massachusetts, the primary problem for older employees is the availability and price of quality housing. There does not appear to be a shortage of housing in total but rather a shortage of housing they actually want at fair prices. Most interviewees also mentioned that the housing problem is especially acute for their younger workers who cannot afford the prevailing rents or cannot find housing with the amenities they seek (e.g., dynamic, walkable neighborhoods) near their place of work.

DIFFICULT TO ATTRACT AND RETAIN YOUNGER WORKFORCE IN SOME AREAS OF THE STATE.

The companies interviewed and current conventional wisdom both say that today's young workers want to live in walkable urban areas, do not want cars, and demand entertainment and cultural amenities in their neighborhoods. This trend has created problems attracting or retaining young workers for firms located outside the core Boston area. In Berkshire County, there is a lack of dynamic urban neighborhoods with mixed-use development options for live, work and play. This leads to young workers spreading across the region, and difficulties in attracting and retaining workers (even when good, well-paying jobs exist). In the suburbs of Boston and the 495 belt, it can also be difficult

to attract young workers. Companies located in the more far-reaching suburbs of Boston mainly cited transportation and transit constraints that make it difficult for carless workers to reliably commute to places like Avon, Littleton, Westborough, and Marlborough (even with commuter rail reaching some of these communities). In addition, business leaders in the region expressed concern that the lack of amenities and local transit options keep young workers from choosing to live in these communities.

HIGHWAY CONGESTION AND LACK OF RELIABLE TRANSIT SERVICE VIEWED AS A NEGATIVE BY MOST EASTERN MASSACHUSETTS BUSINESSES.

While much of the younger workforce still prefers to live in the inner Boston metro areas, some have moved out of the city spurred by rising housing prices. And the population growth seen in Boston and surrounding communities puts even more pressure on an already overburdened transportation system. These network constraints have led to firms reporting trouble with attendance, attraction, and retention. To some extent a victim of its own success, the rapid employment growth in the Greater Boston region has brought about large daily commuter flows that tax the region's highways, commuter rail, subway, and bus system. Like with housing, transportation capacity has not kept pace with demand. Firms on the periphery complain about traffic and long commutes while those in Greater Boston are acutely impacted by the poor reliability of the T. While some of this elevated concern could be a lingering hangover from the difficult winter and record snowfall of 2014-2015, concerns about the long-term ability of the region's transportation network to meet future needs were cited by virtually all companies.

RELATIVELY HIGH BUSINESS COSTS, ESPECIALLY ENERGY AND HEALTH CARE, WERE MENTIONED AS A CHALLENGE BY MOST COMPANIES.

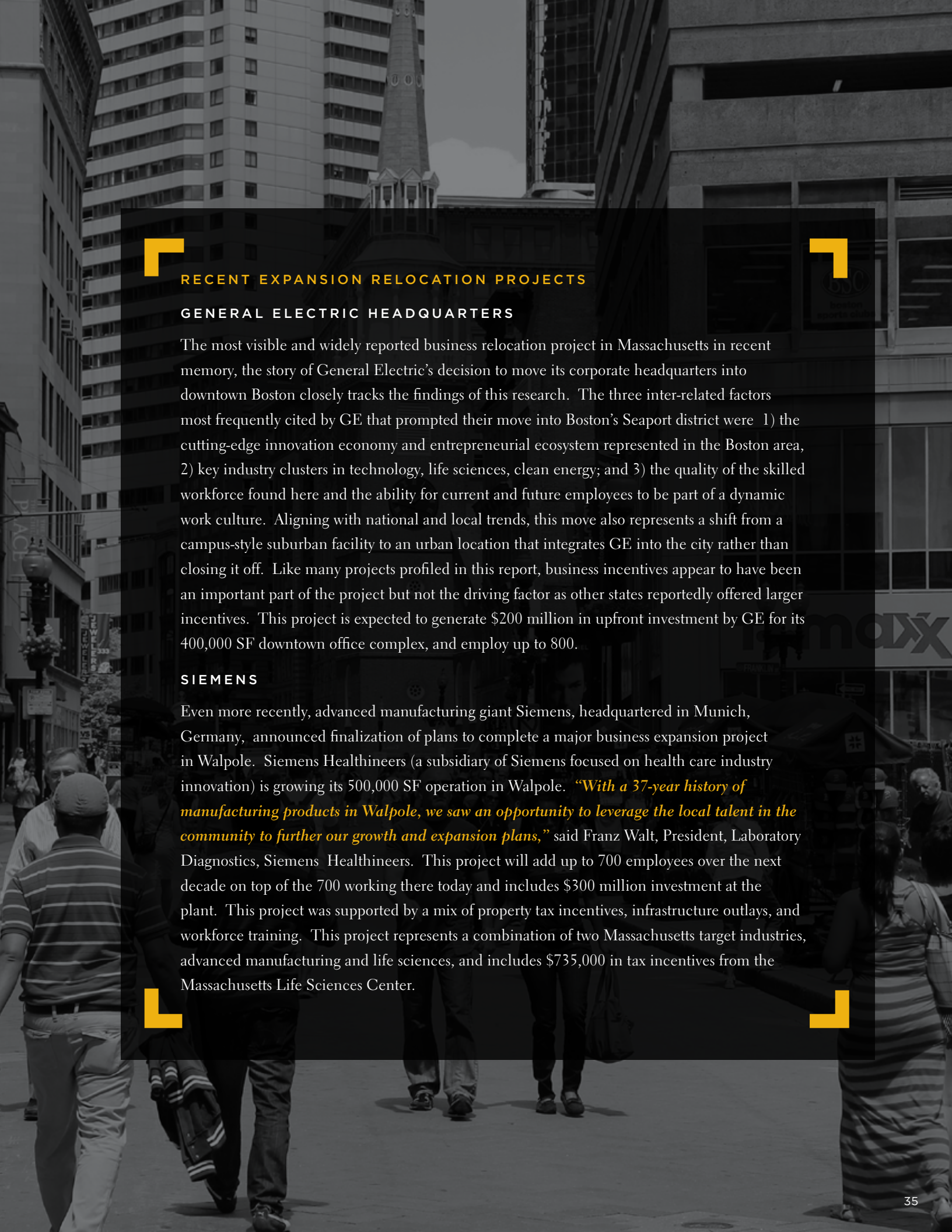
Businesses are facing the same land and space constraints as households. Office and other commercial space is increasingly expensive in certain areas (especially Cambridge and Boston). Plus, those firms that built or rehabilitated a building all said that their actual construction costs exceeded their estimates though none were ultimately unhappy with the result. High electricity costs were cited by a number of firms, especially those technology companies with data centers. High costs of living and a competitive labor market have combined to push up wage costs, though for highly-skilled positions these wages do not yet seem problematic for companies. In fact, several companies noted that labor would be more expensive in Greater Boston than other locations in the U.S. (such as North Carolina), but that the cost was "worth it" to be a part of the larger industry cluster associated with the region. Manufacturing firms that we interviewed were especially sensitive to the cost of energy and often chose their location within state partially based on energy options.

THE MASSACHUSETTS ECONOMIC DEVELOPMENT SYSTEM AND LARGE NUMBER OF ORGANIZATIONS CAN BE DIFFICULT TO NAVIGATE.

Economic development assistance programs are administered by a variety of state and local governments, quasi-public agencies, and other industry advocacy groups. Entities such as MassEcon, the Massachusetts Office of Business Development, MassDevelopment, MassBio, the Mass Technology Collaborative , the Massachusetts Life Sciences Center, economic development councils, chambers of commerce, and town-level offices all participate in the economic development ecosystem of the Commonwealth. Companies were happy to mention when these organizations played a vital role in their business expansion project, and generally recognize that there are unique skills and responsibilities that each organization plays to address specific challenges and or opportunities. Still, many of the interviewees were confused by the "alphabet soup" of acronyms and agencies and were unsure where to start or whose assistance they should seek.

The team also asked each of the interviewees about incentives they received and how they compared to other states they considered. A number of the interviewees stated that their companies benefited from state and local programs such as the Economic Development Incentive Program (EDIP), tax increment financing (TIF), or infrastructure improvements. However, companies that conducted a multi-state search felt Massachusetts benefits packages were less generous than those in other states. The strength of the local industry clusters, quality of local labor, and in some cases a company's longstanding history in the state proved more important than the size of the incentives offered by local and state governments. [7]

[7] It should be noted, however, that all the companies interviewed in this study had decided to expand or relocate to Massachusetts. While their reasoning is illustrative for this study, a natural extension to this work would be to discuss these same factors with companies that either chose to leave Massachusetts or passed over Massachusetts for locations in other states or countries.



RECENT EXPANSION RELOCATION PROJECTS

GENERAL ELECTRIC HEADQUARTERS

The most visible and widely reported business relocation project in Massachusetts in recent memory, the story of General Electric's decision to move its corporate headquarters into downtown Boston closely tracks the findings of this research. The three inter-related factors most frequently cited by GE that prompted their move into Boston's Seaport district were 1) the cutting-edge innovation economy and entrepreneurial ecosystem represented in the Boston area, 2) key industry clusters in technology, life sciences, clean energy; and 3) the quality of the skilled workforce found here and the ability for current and future employees to be part of a dynamic work culture. Aligning with national and local trends, this move also represents a shift from a campus-style suburban facility to an urban location that integrates GE into the city rather than closing it off. Like many projects profiled in this report, business incentives appear to have been an important part of the project but not the driving factor as other states reportedly offered larger incentives. This project is expected to generate $200 million in upfront investment by GE for its 400,000 SF downtown office complex, and employ up to 800.

SIEMENS

Even more recently, advanced manufacturing giant Siemens, headquartered in Munich, Germany, announced finalization of plans to complete a major business expansion project in Walpole. Siemens Healthineers (a subsidiary of Siemens focused on health care industry innovation) is growing its 500,000 SF operation in Walpole. ***"With a 37-year history of manufacturing products in Walpole, we saw an opportunity to leverage the local talent in the community to further our growth and expansion plans,"*** said Franz Walt, President, Laboratory Diagnostics, Siemens Healthineers. This project will add up to 700 employees over the next decade on top of the 700 working there today and includes $300 million investment at the plant. This project was supported by a mix of property tax incentives, infrastructure outlays, and workforce training. This project represents a combination of two Massachusetts target industries, advanced manufacturing and life sciences, and includes $735,000 in tax incentives from the Massachusetts Life Sciences Center.

5. POLICY IMPLICATIONS

The ultimate goal of this report is to inform and help shape economic development policy and services in Massachusetts – at the state, regional, or local levels – to help the Commonwealth do all it can to help retain and attract companies that are growing jobs and private investment. Based on the key findings, a few policy-relevant implications are worth emphasizing:

BECAUSE ACCESS TO A TALENTED WORKFORCE IS SO IMPORTANT, THE STATE NEEDS TO CONTINUE TO PRIORITIZE AND FUND A FULL SPECTRUM OF EDUCATION, ADULT LEARNING, AND WORKFORCE TRAINING INITIATIVES. The education and workforce training systems are incredibly complex. Getting into the details of specific programs is beyond the scope of this report. That said, the findings of this report confirm the importance of the work of the state, regional employment boards, community colleges, career centers, and vocational and technical schools in providing the talent and skilled labor demanded by Massachusetts companies. Along with the number of top rated colleges and universities in the state, labor talent and skill remain a key strength for the region. Increased input and involvement from employers directly into training curriculum can serve to enhance this critical system. Plus, findings from company respondents confirm that the combination of quality and availability of workforce is the most important factor for business location decisions, with the direct implication that if we are going to grow our economy and key industries, then we also need to grow our supply of quality of workers. One key aspect of this is immigration and international students, which has been a crucial source of population growth in Massachusetts for years and is increasingly important as we face an aging population.

HOUSING AND TRANSPORTATION ARE CLOSELY LINKED FOUNDATIONAL ASPECTS OF ECONOMIC DEVELOPMENT BUT ARE FEELING STRAINS, ESPECIALLY IN GREATER BOSTON. Transportation is clearly one of the most important factors for business decisions, and in some cases can be a real strength. This is particularly true for Boston-area companies that value Logan Airport and its growing number of domestic and international flights. This is also the case for companies located outside of I-495 near interstates that can leverage transportation to gain access to markets throughout the northeast. Moreover, the demand by millennials and other demographic groups to live in interesting urban places near their work is helping push a residential, multi-family building boom in and around Boston that has not been seen in decades. But, the population growth in Greater Boston is resulting in high housing costs in the region in general. This trend pushes some workers and families further outside of the city, placing additional strain on the highway and public transit systems. Policies that help increase housing production, including zoning reform to allow multi-family housing development where appropriate (e.g., near transit, or near existing town centers) can alleviate this issue over time. For transportation, the importance of maintaining and expanding this system is crucially important for future economic growth. Initiatives that can help link lower cost areas (e.g., New Bedford, Springfield) to the Boston market with fast, reliable transit are worth careful consideration.

ECONOMIC DEVELOPMENT COLLABORATION AND RESPONSIVENESS IS ESSENTIAL TO RETAIN GROWTH COMPANIES AND CAPTURE NEW BUSINESS ATTRACTION OPPORTUNITIES. Based on our business survey findings and interviews, it's clear that the responsiveness of economic development officials is critically important to companies looking to

expand. We also heard that some companies feel that the system is too complex and hard to navigate. This can serve as a reminder about the critical role played by local, regional and state economic development leaders in successful business expansion projects. The numbers in our report show too many firms that were not satisfied with the economic development delivery system (and that does not include companies that considered Massachusetts but decided to locate somewhere else). The ease of permitting, along with competitive regulations and incentives, is also critical to business retention and attraction, especially in areas outside of Greater Boston that do not have the same talent-driven cluster-based economic advantages.

Acknowledging that there are logical reasons (that span decades and administrations) that we have such a wide-range of economic development organizations in Massachusetts, the findings from this research highlight the importance of four characteristics of a successful economic development delivery system: 1) responsiveness of development officials from start to finish of expansion and relocation projects 2) collaboration among development officials at all levels to create an integrated support structure for company expansions 3) market-ready development properties that are responsive to time-to-market imperatives; and 4) speed and transparency of business permitting processes.

BOOSTING ECONOMIC AND INDUSTRY OPPORTUNITIES OUTSIDE OF GREATER BOSTON WILL REQUIRE DIFFERENT PRIORITIES AND STRATEGIES. In many ways, the data results and interview findings in this report are a clear reminder about how starkly different Greater Boston is from the rest of the state. Outside of I-495, the key factors for location decisions, the industry mix (more manufacturing, less tech/life sciences), and the cost pressures are very different. Consequently, the right strategies to boost these regional economies are inherently different from Greater Boston and may require more public-private partnerships to catalyze investment and job creation. The Baker-Polito Administration's *Economic Opportunities for All* plan recognizes these differences, and provides specific programs to enhance these regional economies. As regional economies are enhanced, efforts to link economic activities among regions should also be encouraged

ENHANCING OUR INTERNAL AND EXTERNAL MARKETING TO CAPTURE BUSINESS EXPANSION AND RELOCATION PROJECTS. Promoting the assets of Massachusetts and its regions should be a shared goal of state, regional, and local economic development leaders. Enhancing economic development marketing through establishing and disseminating a Massachusetts brand, strategically targeting key industries and prospects, and showcasing our many success stories will enable the Commonwealth to compete even more robustly for business expansion. Collaboration among economic development players is key, especially with the many creditable marketing efforts currently underway. While external marketing is important, it is no less important for companies within Massachusetts to understand the value of expanding here; through marketing across regions, the company that does its research in Cambridge will know that it can do its manufacturing in Worcester or Springfield or Fall River. Indeed, the majority of companies of companies surveyed for this study represented expansions of businesses already located in Massachusetts. The seeds for a powerful marketing program are here - through MassDevepment's ampitup!, MassEcon's ReadyMA 100 portfolio, Speaker DeLeo's Bay State Business Link initiative, and www.massitsallhere.com, among others. Building on these and injecting fresh ideas can help close the state's economic gap with Greater Boston and ensure that Massachusetts makes the short list for companies seeking to expand.

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