The State of the Massachusetts Tech Economy

2022

MASSTLC

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Thank you to the following for their contributions and support:
Tom Leighton, CEO, Akamai Technologies; Stefanie Bishop, Head of People, Hi Marley; Sara Fraim, Vice President, Programs & Policy, MassTLC; Ruth Morris, Vice President of Marketing, MassTLC; Catherine Knicker, EVP, Chief Strategy Officer, PTC; Steve Lufkin, CEO, Selux Diagnostics; Vincent de la Mar, Founder and CEO, Sustaira; Cathleen Finn, Greater Boston Community Engagement Director, State & Local Government Affairs, Verizon; Stephanie Lee, Director, State Government Affairs and Public Policy New England, Verizon; Nia Mathis, Vice President of State and Local Government Affairs, Verizon; Zoë Barry, Founder and CEO, Zingeroo

About Massachusetts Technology Leadership Council, Inc.
The Mass Technology Leadership Council (MassTLC) is the region's leading technology association and the premier network for tech executives, entrepreneurs, investors, and policy leaders. MassTLC's mission is to accelerate innovation, growth, and the development of an inclusive tech ecosystem in Massachusetts. We do this by connecting people from across the technology landscape, providing access to industry-leading content and ideas, and offering a platform for our members to advance their collective interests. More at www.masstlc.org.

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This State of the Massachusetts Tech Economy report is an addendum to the State of the Massachusetts Technology Economy dashboard on MassTLC.org.

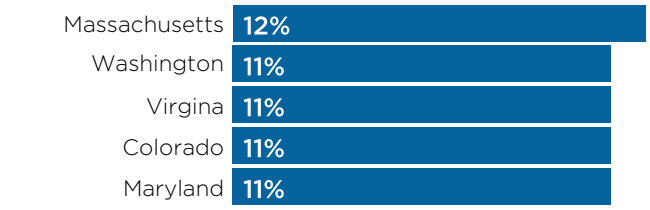
INTRODUCTION

The tech sector in Massachusetts remains strong. While the pandemic negatively impacted some subsectors of the tech industry (e.g., travel & hospitality platforms and others), many of these companies were able to alter their business models and ultimately survive the storm. Other subsectors of the tech industry saw huge growth related to the pandemic (e.g., technologies that support remote work, telehealth technologies, and others). Ultimately, tech fared much better than many other sectors of the economy in this time.

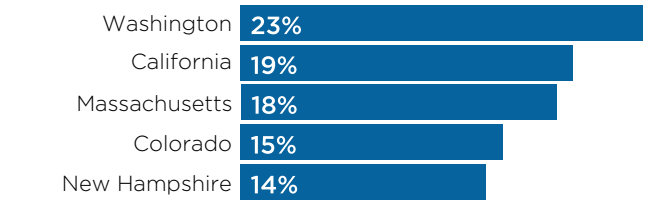
The state continues to rank number one nationally in concentration of tech workers. The opportunity for tech workers continues to grow with one out of every three jobs created in Massachusetts estimated to be in STEM fields. Tech offers an estimated annual median salary of more than $97,000 and is responsible for over $102 billion of the Massachusetts Gross State Product (GSP).[1]

There are over 18,000 technology companies in the Commonwealth. In terms of employment opportunities, there are 130,178 open jobs across the tech sector and tech occupations in other sectors.[2] Capital investments remain very active. Massachusetts remained a top location for venture-backed funding in 2021 with 1,096 financings raising $35.5 billion, coming in just behind New York City and California.[3] The colleges and universities in Massachusetts are once again attracting students from all over the world, keeping Massachusetts a hotbed of innovation and highly skilled talent.

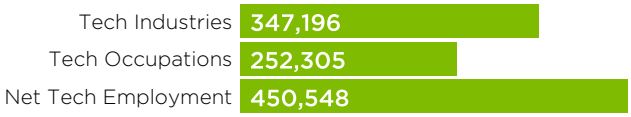
Top 5 States by Concentration of Tech Sector Jobs (percent of total workforce)



Top 5 States by Tech Sector Economic Impact as Percentage of State's Economy (%GSP)



Tech Employment in Massachusetts (number of jobs)



Yet these same positive growth trends continue to exacerbate the increasing wage gaps in the Commonwealth. Massachusetts is among the costliest areas in the country for housing and overall cost of living. Despite the strength of the Massachusetts higher education sector, there is still an enormous, unfilled need for talent. This need will continue to grow steeply with 143,000 tech workers expected to retire by 2027.[4] There is no better time to train and hire those who have not taken the traditional pathway toward technology jobs or for companies to look beyond a college degree and focus on attributes and acumen directly correlated with the roles.

1 https://www.masstlc.org/state-of-the-ma-tech-economy/
2 https://www.masstlc.org/state-of-the-ma-tech-economy/
3 WilmerHale 2022 Venture Capital Report
4 Massachusetts Business Alliance for Education Member Report, March 2022

We believe that taking a broader approach to sourcing new tech workers will not only help companies fill roles but will also bring in the diversity many companies are seeking. Simultaneously, bringing more diversity into the tech sector will help to address income inequality, which most often impacts people of color. That is why MassTLC created the 2030 Challenge, underwritten by Massachusetts headquartered companies Akamai and PTC.

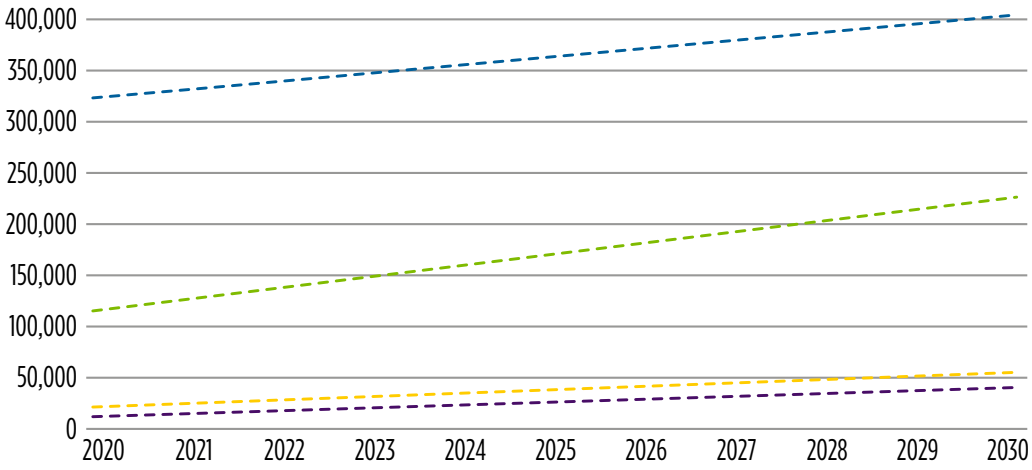
2030 CHALLENGE

What It Is

Since 2014, MassTLC has benchmarked and reported on the demographic makeup of the region's tech workforce, focusing on race, ethnicity, and gender. Building upon that work and striking at a time when massive social justice protests were happening across the country, the Council's board-level Executive Diversity and Inclusion Steering Committee (EDISC) launched the 2030 Challenge and created the MassTLC Tech Compact for Social Justice. The Tech Compact offers twelve different potential corporate commitments that will help individual companies advance their diversity, equity, and inclusion efforts and ultimately lead to change in the demographic landscape of the region's tech sector.

The 2030 Challenge is a call to action to the tech sector—and beyond—to double the percentage of Black (from 5% to 10%) and Latinx (from 7% to 14%) workers in tech jobs in Massachusetts by 2030. MassTLC will benchmark ongoing progress against the 2030 Challenge goals, provide programming to help the tech industry reach them, and work with all stakeholders to support the initiative.

2020 to 2030 Technology Occupations Actualized vs. Challenge



Assumes 25% Job Growth in MA CompTia 3-digit SOC Tech Occupations cluster 2020–2030 vs. 28% in previous decade.
Source: Emsi • Get the data

Why It Matters

It is difficult to parse out the state of the Massachusetts tech economy from the overall state of the economy in the Commonwealth. Overall, the tech sector is responsible for 18% of the Commonwealth's Gross State Product (GSP). Tech sector wages in Massachusetts are over $67 billion with the median tech wage at $105,721, roughly twice the median state wage.[5]

The stark difference between tech wages and those in other industries illuminates the income inequality in the state. Exacerbated by the pandemic, two, unequal states continue to exist inside and outside the tech sector and disproportionately fall across racial lines.

In 2015, The Federal Reserve Bank of Boston's study *The Color of Wealth in Boston* found that Boston has an astronomical net worth gap based on race. The study found that white households in Boston had a median net worth of $247,500, Caribbean Black households had a median net worth of $12,000, and Dominicans and U.S. Blacks had a median net worth close to zero.[6]

This disparity, along with a long-standing reputation that Massachusetts is unwelcoming to people of color, has created a reluctance among people of color to move to the region.

With the health of the tech sector—and that of the Massachusetts economy holistically—being tied to a talent and pipeline shortage, we must work to change that reputation and bring in more skilled talent. In Season Two of the MassTLC podcast *On the Tech Trail*, Sheena Collier, CEO of The Collier Connection and Boston While Black, remarked, "I personally think that Boston misses out on a lot of talent and a lot of people who could be contributing to improve the city. This is because of not engaging the people that come here for these amazing opportunities and not cultivating the people already here to lead and change the city."[7]

Helping to lead that change, in addition to Boston While Black, are organizations such as Conexión that works to build a pipeline and network of Latinx leaders and The Commonwealth Racial Equity and Social Justice Fund that, in addition to providing thought leadership and resources, has a goal of raising $100 million to fund Black and Brown communities, leaders, and organizations across the Commonwealth.

There are also a number of organizations, ranging from accelerated bootcamps and certification programs to traditional four-year universities offering non-traditional pathways toward obtaining degrees, whose mission is helping those in underrepresented or non-traditional populations move into the tech industry. Many of these programs, along with funding organizations, are listed in MassTLC's MassTalent directory.[8]

5 https://www.masstlc.org/state-of-the-ma-tech-economy/
6 https://www.bostonfed.org/publications/one-time-pubs/color-of-wealth.aspx
7 On the Tech Trail: Walks with Strategic Leaders. S2E1 The Boston Brand Problem.
8 https://www.masstlc.org/masstalent/

Private corporations are also investing resources toward helping to change the equity equation. According to Nia Mathis, Vice President of State and Local Government Affairs at Verizon, "[We have] 60% employee diversity in our workforce. Thirty-one percent of our senior managers in the U.S. are people of color. In 2020, we had 100% pay equity in salary for women and men across all of Verizon, and in the U.S., we also had 100% pay equity in salary with respect to race and ethnicity." Verizon has laid out its commitment to equity in its Human Capital Report.

Creating the pipeline and opportunity for workers from underrepresented groups to enter the tech sector will simultaneously help fill necessary talent needs, create upward mobility and economic opportunity, and help to change the Boston brand from being unwelcoming to welcoming. Furthermore, companies will benefit from the increased diversity by improving their ability to innovate and ensuring their workforce represents the customers they are hoping to reach.

OVERCOMING SYSTEMIC ROADBLOCKS

Broadband

To affect change, we must begin with acess: to education, healthcare, housing, and, of even greater importance in the age of COVID-19, broadband.

Broadband equity is a significant economic and equity issue across the Commonwealth, impacting all ages, races, and even incomes. The impact is especially profound for underrepresented communities, resulting in greater economic disadvantage for lower income residents with an elevated impact on the state's Black and Latinx populations.[3]

There is no question that the pandemic has drawn attention to and amplified the importance of reliable, affordable access to the Internet. With more people learning from home, working from home, and seeking medical expertise from home, our homes have become centers of commerce. Much of the focus over the years has been on providing infrastructure for rural communities, which is important, but similar attention must be given to ensuring equal broadband access in urban areas. Not only are inner city residents burdened by the cost of Internet access, but the buildings in which many live are often not equipped to provide the performance levels required for reliable service.

As of this writing, Massachusetts has dedicated $50 million from the American Rescue Plan Act (ARPA) funding to go into the Broadband Innovation Fund to help close the digital divide by providing access and training, but it will take more than just money. Talking about the complexity of broadband access and affordability on an episode of *On The Tech Trail*, Pam Reeve, Lead Director of the American Tower Corporation, remarked, "The issues are quite complicated and quite expensive . . . I don't think there's any one company or any one entity that can resolve them. We need a collaboration among

government, companies, non-profits, and education to come together to provide all these solutions. You have got to have the connectivity that you can afford, a piece of equipment that will do what you need, and you need to know how to use it."

In addition to the state-supported initiatives, the FCC, through its Affordable Connectivity Program (ACP), provides a monthly discount toward internet service for eligible households and a one-time discount toward a laptop, desktop, or tablet. Many providers build on to the ACP and offer additional discounts. For example, eligible households can receive very low-cost or even free FIOS from Verizon.

Education and Building Pipeline

Access is not simply providing broadband; it is building pipeline and readying students for technology and technology-enabled jobs. Massachusetts is often celebrated for its number one academic status, yet we also have the unfortunate distinction of having one of the largest achievement gaps in the country, which is tied back to zip code, demonstrating the racial and economic segregation of communities across our state.[9]

Tying pipeline development to industry partners is very complex and does not always correlate directly; however, the state has developed and adopted some successful and scalable solutions. One such program is Massachusetts' Early College Initiative, which just received an influx of $25 million from ARPA funding. Early College accelerates college and career readiness by offering high school students—primarily from low-income communities—the opportunity to take specific college courses and earn up to twelve transferable college credits. In addition to earning college credits that will significantly reduce the cost and time to complete a degree if that is the chosen path, students gain knowledge that will enable them to pursue a higher-paying job with a better path toward upward mobility.

Of course, pipeline development is not confined to K–12 students. Many organizations and companies have implemented their own specialized training programs for adults. These programs not only bring people in off of the sidelines, but they also solve the ever-growing talent woes that the industry is facing. Internal professional development programs, which can be offered directly from the company or by a third-party, can be advantageous and provide the on-ramps needed for non-traditional employees, from hiring through ongoing advancement.

On the micro level, investing in employees will help with retention efforts. On the macro level, if more employers offer consistent training overall, as employees come and go, companies will have a larger pool of trained prospects. Additionally, through the quasi-public Commonwealth Corporation, companies are able to offset some of that training investment by applying for Workforce Training Funds.

9 Massachusetts Business Alliance for Education Member Report, March 2022

The Great Reexamination

While the post-pandemic mass movement of workers from one employer to another has been labeled *The Great Resignation*, the reality has been more of a *Great Reexamination*. In January of 2022, 44% of workers were looking for a new job.[10] True, some people are leaving their careers and industries, but many are taking stock of their current situations and determining if they are in the role, the company, or the region of the country they want to be in. Are they having to come into the office but prefer to work remotely, or prefer to be in an office but their company no longer has one? Do they want to increase their salary and have more flexibility? Whatever the goal, the shift in individual priorities and the ongoing market skew toward candidates has enabled this change.

On the other hand, many start-ups and smaller companies, which previously faced almost insurmountable odds in attracting talent without the resources of much larger companies, have found this reexamination beneficial.

> "At Hi Marley, we believe success is being part of a purpose that is much bigger than any individual. An advantage of being a startup company is that every new hire has the opportunity to make an impact; we encourage everyone to dream big, try new ideas, and take measured risks. We're fortunate to be growing at this time, so an obvious benefit to the great resignation is a larger pool of talent out there that's looking for a change and can bring new ideas to our company."
>
> *Stefanie Bishop, Head of People, Hi Marley*

More nimble companies, particularly those that were founded at the start of the pandemic, were born into a fully remote workplace and therefore did not face many of the hurdles of shifting to that model that established companies faced.

> "As a CEO, I know that if you value your team, they'll deliver greater value in return. Working from home is only effective if you support your employees; that's why Zingeroo offers competitive benefits for an early-stage startup and listens to our employees regarding if and when they'd prefer to return to in-person work. Zingeroo scaled from 2 to 16 FTE across the pandemic. Thus, our team organically embraced remote work to accommodate individuals working through lockdown and taking care of their families."
>
> *Zoë Barry, Founder and CEO, Zingeroo*

10 https://www.cnbc.com/2022/03/22/great-resignation-continues-as-44percent-of-workers-seek-a-new-job.html

More established companies are having to adapt. For instance, PTC has noted a slight increase in attrition post-pandemic, but has taken this opportunity to focus more on culture, employee experience, and professional development opportunities to ensure they meet employees' new expectations. Others have not seen any attrition; however, they have had to introduce new work models.

"Kendall Square is our global headquarters and has always been our hub. We don't expect to shrink our workforce in Massachusetts. Post-COVID, we expect about 40% of our local employees to work mostly from home (by their own choice) rather than return to the office full time. While we will have a more distributed workforce, we still believe that Massachusetts offers one of the strongest workforces in the world, so we will continue to source our talent here while maintaining our partnerships with local educational institutions."

Tom Leighton, CEO, Akamai Technologies

The full impact of the *Great Reexamination* will not be fully known for several years, but it is clear that the dramatic mobility of workers rapidly shifting from employer to employer is further straining the talent acquisition and retention efforts of tech companies while simultaneously expanding the pool of potential hires. These two conflicting truths are causing a chaotic hiring environment.

THE MASSACHUSETTS TECH ECOSYSTEM

Given the ability of tech companies to now hire from anywhere in the world into the new remote/hybrid normal, there was fear of a shrinking Massachusetts tech footprint and expanding "brain drain." These fears are not being realized. In fact, local employers continue to value Massachusetts' unique ecosystem of leading academic institutions, innovative research centers, and a highly educated workforce.

"Few other parts of the country can compare to Boston when you consider how we are at the intersection of academia, large health systems, medical device makers, and a fast-growing community of biotechnology companies. Furthermore, thought leadership in areas like artificial intelligence and machine learning at our local universities will have a profound impact as Boston stays in the lead. Simultaneously, the influx of start-ups has been a hallmark of this market, and they will continue to prosper over the next three to five years."

Steve Lufkin, CEO, Selux Diagnostics

> "The mix of top colleges and universities, successful startups, and established companies makes Massachusetts a talent epicenter for the tech industry. Massachusetts invites innovation, encourages new ideas, and fosters an environment where everyone can succeed. We're proud to call Massachusetts home."
>
> *Catherine Knicker, EVP, Chief Strategy Officer, PTC*

> "The ingredients for a vibrant and self-sustaining tech ecosystem are well established: world-class research universities, world-class talent, a culture of entrepreneurship and innovation, access to venture capital, a high quality of life. We see the work of the Tech Compact for Social Justice and the collective effort of companies partnering with MassTLC making a difference here. As a result, we expect that the ecosystem here will continue to grow, develop, and diversify over the next three to five years."
>
> *Tom Leighton, CEO, Akamai Technologies*

POLICY CAN RESHAPE THE TECH LANDSCAPE

Environmental, Social, and Governance (ESG) concerns increasingly influence the goals and behavior of local companies, both in terms of organizational reporting and how companies expect to be held accountable to their investors, customers, and communities. ESG thus far has served as a broad, catch-all term encompassing a range of varied sub-topics, including but not limited to supply chain, DEI, governance, stakeholders, climate, and investment. Many companies are starting to navigate this space and seeking support and resources to understand ESG and incorporate it strategically.

Notably, the SEC recently launched its proposal to enhance and standardize climate related disclosures for investors. This will cause a ripple effect among organizations of all sizes as they take action to provide the necessary transparency.

As ESG standards continue to evolve, there will be increased pressure on organizations to enhance their ESG reporting and strategies. Investors, customers, and communities want to see lofty pledges turned into concrete actions that encompass social outcomes. This includes increasing board diversity, divesting from companies with poor ESG practices further down the supply chain, ensuring the availability of decent work conditions, and more. New reporting standards will require more credible disclosures, and new technologies and talent expertise will be needed to collect and interpret the inputs, outputs, and outcomes associated with ESG data so that meaningful action can be taken.

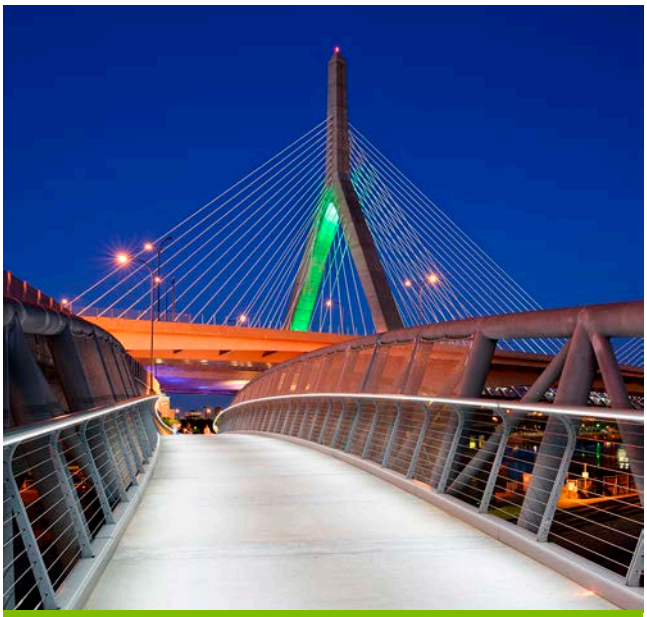
> "ESG isn't only driven by regulations, but also by a growing pressure from a new and younger generation of talented employees who demand transparency around environmental impact such as carbon footprints and also social inclusion. Going beyond the shareholder and truly outlining ESG goals, measuring sustainability KPIs, and taking actions are a must-have moving forward in this next chapter of running a business."
>
> *Vincent de la Mar, Founder and CEO, Sustaira*

CONCLUSION

The world faced unprecedented upheaval, including geopolitical strife, a global pandemic, and continued systemic social justice issues, over the past several years; yet, the dependence on technology to live, to work, and to survive is greater than ever. The turmoil over the last few years has accelerated trends that were already underway and facilitated the implementation of new business models and policy initiatives.

From reliance on more remote tools, increased cloud and networking capabilities, automation, and security to the adoption of more sustainable practices and increasing access to healthcare and education, technology is foundational.

Massachusetts, with its world-class colleges and universities, innovation labs, access to capital, and overall robust tech ecosystem, is well positioned to continue its strong growth.



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