

# The Massachusetts Data Science Workforce Challenge: Expanding the Size and Diversity of the Early Stage Data Science Pipeline/Pathway

## RATIONALE

### Current Workforce Realities

- “Among all respondents [to the question, ‘Of the following, which has the most detrimental effect on your organizational bottom line?], the length of time to hire qualified candidates (33%) [and] worker turnover (25%) ...accounted for the biggest headaches and detriment to the bottom line.” (2018 Job Trends Forecast, MassBioEd)

### Future Workforce Realities

- 11,976 new jobs are forecast to be created between May 2017-May 2023. A 21.5% growth rate for this period is expected at Biotechnology R&D Organizations. (2018 Job Trends Forecast, MassBioEd)
- Statisticians rank #9 among The Projected Fastest-Growing STEM/Technical Occupations, 2017-2023 with a projected increase of 153 jobs. (2018 Job Trends Forecast, MassBioEd)
- The number of students entering college is stagnating, and the recent increase of majors in scientific fields is not sufficient to meet growth projections. (Life Sciences Workforce, 2020, MassBioEd)

### The Workforce-Equity Nexus

- Respondents to a 2018 survey question “Do you have diversity/inclusion initiatives?” answered as follows: Non-Management Hires – 29% Gender, 28% Race/Ethnicity; Management – 33% Gender, 29% Race/Ethnicity; Board – 17% Gender, 17% Race/Ethnicity; and None – 61% Gender, 59% Race Ethnicity. (2018 Job Trends Forecast, MassBioEd)
- In 2000, the U.S. demographic population of K–12 Public schools was: White 61%, Black 17%, Hispanic 16%. In 2029, the projected demographic populations of K–12 Public Schools are as follows: White 44%, Black 15%, Hispanic 28%. The 2029 projections show White students at 44% will be equal to the total of Black and Hispanic students at 43%. ([https://nces.ed.gov/programs/coe/indicator\\_cge.asp](https://nces.ed.gov/programs/coe/indicator_cge.asp))
- For the class of 2017-18, women earned more than half of bachelor's degrees (57.3%), master's degrees (60.1%), and doctoral degrees (53.3%). (<https://catalyst.org/research/women-in-the-workforce-united-states>)
- Arguably, companies/academic institutes without both a dynamic in-house gender and race/ethnicity initiative and strong, external engagement in gender and race/ethnicity initiatives will be at a competitive disadvantage.

### Working Toward a Systemic, Sustainable, and Scalable Strategic Long-Term Solution

- The Massachusetts Life Sciences Center (MLSC) conducts internship funding programs for high school and college students, including a new track for data science opportunities, as well as STEM Equipment and Professional Development grants.
- The Massachusetts Biotechnology Education Foundation (MassBioEd) operates both their Career Ambassadors Program and BioTeach Program.
- Education Development Center (EDC) is currently working with Community Colleges to develop Data Science certificate and Associate Degree programs, and has active NSF-funded projects that will develop both new high school curricula (in Computational Biology, Chemistry, and Physics) and a two-course Data Science pathway for high school students.
- EDC, MLSC, and MassBioEd, together with additional partners, are committed to building and implementing a multi-year **systemic, sustainable, and scalable strategic long-term solution** that promotes Data Science careers in the life science industry.