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Leading the Way, or Falling Behind? What the Data Tell Us About Disability Pay Equity and Opportunity in Boston and Other Top Metropolitan Areas

Executive Summary

The Ruderman Family Foundation in partnership with the American Institute for Research (AIR) and the Institute for Educational Leadership (IEL) created two research briefs that inform the business community in Boston and several other top metropolitan areas about the challenges faced by workers with disabilities and the contributions that disability-diversity can make to the workforce.

In this research brief, through an examination of 2017 American Community Survey data on working-age adults with disabilities ages 15 to 64, we quantify the pay gap between workers with and without disabilities in the Boston metropolitan area.¹ Despite historically forward-thinking state policies and antidiscrimination laws, the Boston metropolitan area (Boston Metro) shows greater inequalities than other comparable metro areas in the United States. Specifically, we found

- The income gap between people with and without disabilities in Boston Metro is about \$24,000, which is almost \$10,000 more than the U.S. average pay gap, while holding educational attainment constant. In other words, people with disabilities earn 63 cents to the dollar as compared to people without disabilities.
- The pay gap rises as educational attainment increases. For people with disabilities with a bachelor's or master's degree, the pay gap in Boston Metro is higher than any other region in the United States.
- In Boston Metro, people with disabilities are much less likely to be in positions of management (i.e., chief executives, legislators, and managers) than in other comparable metro areas.
- Income inequality in Boston Metro leads to more than \$5,000 per person federal income tax loss and more than \$2.5 billion in total loss of federal income tax for the area.

How can Massachusetts continue to be a leader and Boston to be a source of economic strength when close to 8% of the working-age population has disabilities and they lack opportunities to earn a fair and comparable wage like their nondisabled peers? The challenge to Boston-area businesses in particular is to create a legacy of leadership that is disability-diverse and inclusive of everyone who has the skills and required education to contribute to an increasingly competitive national economy.

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¹ In this brief, the Boston metropolitan area is based on the metropolitan statistical areas from the U.S. Office of Management and Budget and consists of a large urban area outside of Boston City in the states of Massachusetts and New Hampshire.

Where Are We as a Nation With Disability Pay Inequality?

Historically, people of working age with disabilities (ages 15 to 64) have fared poorly in both education and the labor market relative to people without disabilities. Since the 1970s, policies were created to increase educational, employment, and other opportunities for people with disabilities. However, as recently as 2017, only 13% of working-age adults with disabilities² in the United States had a bachelor's degree or higher, compared with 30% of working-age adults without disabilities. The employment rate in 2018 was only 19% for people with disabilities but more than 65% for those without disabilities.³

Even when people with disabilities find jobs, their hourly, weekly, and monthly earnings are lower than those of people without disabilities. Research at the national level has shown that people with disabilities on average earn 37% less than their peers without disabilities even with the same educational attainment and comparable demographic characteristics (Yin, Shaewitz, & Megra, 2014). This pay gap is nearly twice as much as the 20% gender pay gap in the United States⁴ and has an economic impact on individuals, states, and the nation in terms of lost income taxes. The U.S. economy would have received an additional \$141 billion in 2011—roughly 1% of the gross domestic product—if people with disabilities were paid comparably to those without disabilities. The earnings difference for people with disabilities would have translated into another \$25 billion in federal taxes and \$6.5 billion in state taxes.

Yin et al. (2014) also found that income inequality varied by state and educational attainment,⁵ providing valuable evidence for policymakers to design targeted regulations or policies to support fair wages for all people in the public and private sectors. However, there is no detailed research that compares urban areas where business and industry offer more opportunities for work. Beginning with Boston as our focal point in a state with strong policies in support of antidiscrimination for people with disabilities, we selected similarly sized metropolitan areas across the country to examine pay inequality and how pay inequality varies by level of educational attainment.

When Good Policy Is Not Enough

Massachusetts has a history of being at the forefront of gender equity in work and in pay. The Massachusetts Equal Pay Act passed in 1945 was the first in the country to ensure statewide pay equity between men and women. Following the federal Rehabilitation Act of 1973 that prohibited discrimination on the basis of disability, Massachusetts went a step further in 1983 to amend the Massachusetts Fair Employment Practices Law to prohibit employment discrimination on the basis of disability (higher minimum

² The current American Community Survey (ACS) covers six disability types (and their PUMS variable): “Hearing difficulty deaf or having serious difficulty hearing (DEAR). Vision difficulty blind or having serious difficulty seeing, even when wearing glasses (DEYE). Cognitive difficulty Because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions (DREM). Ambulatory difficulty Having serious difficulty walking or climbing stairs (DPHY). Self-care difficulty Having difficulty bathing or dressing (DDRS). Independent living difficulty because of a physical, mental, or emotional problem, having difficulty doing errands alone such as visiting a doctor’s office or shopping (DOUT). Respondents who report anyone of the six disability types are considered to have a disability” (U.S. Census Bureau, 2017, para. 12).

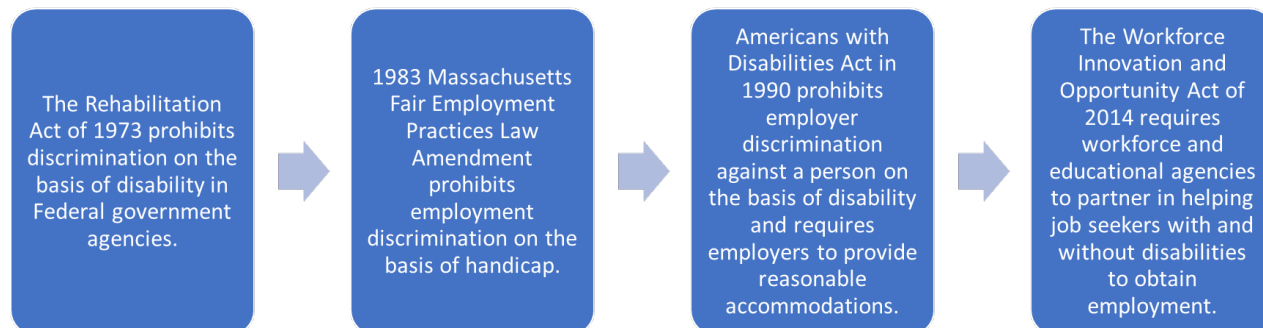
³ According to Current Population Survey, 2018 release by the Bureau of Labor Statistics (Bureau of Labor Statistics, 2019).

⁴ According to the latest report retrieved from American Association of University Women (2019)

⁵ For people with and without disabilities who have a high school diploma or equivalent, the highest average income inequalities were observed in Vermont (\$12,700), Connecticut (\$12,000), and Iowa (\$10,000). For those with bachelor’s degrees, the greatest inequality was observed in Washington, DC (\$20,000), followed by Minnesota (\$18,000) and the state of Washington (\$17,000). At the master’s degree and higher levels, income inequalities were highest in Nevada (\$38,700), Connecticut (\$35,500), and Hawaii (\$33,800).

wage requirements, healthcare coverage, sick leave, etc.). The Americans with Disabilities Act trailed this Massachusetts law in 1990. In general, the state's antidiscrimination policies remain more comprehensive than the Americans with Disabilities Act or the later Workforce Innovation and Opportunity Act passed in 2014 (Figure 1).

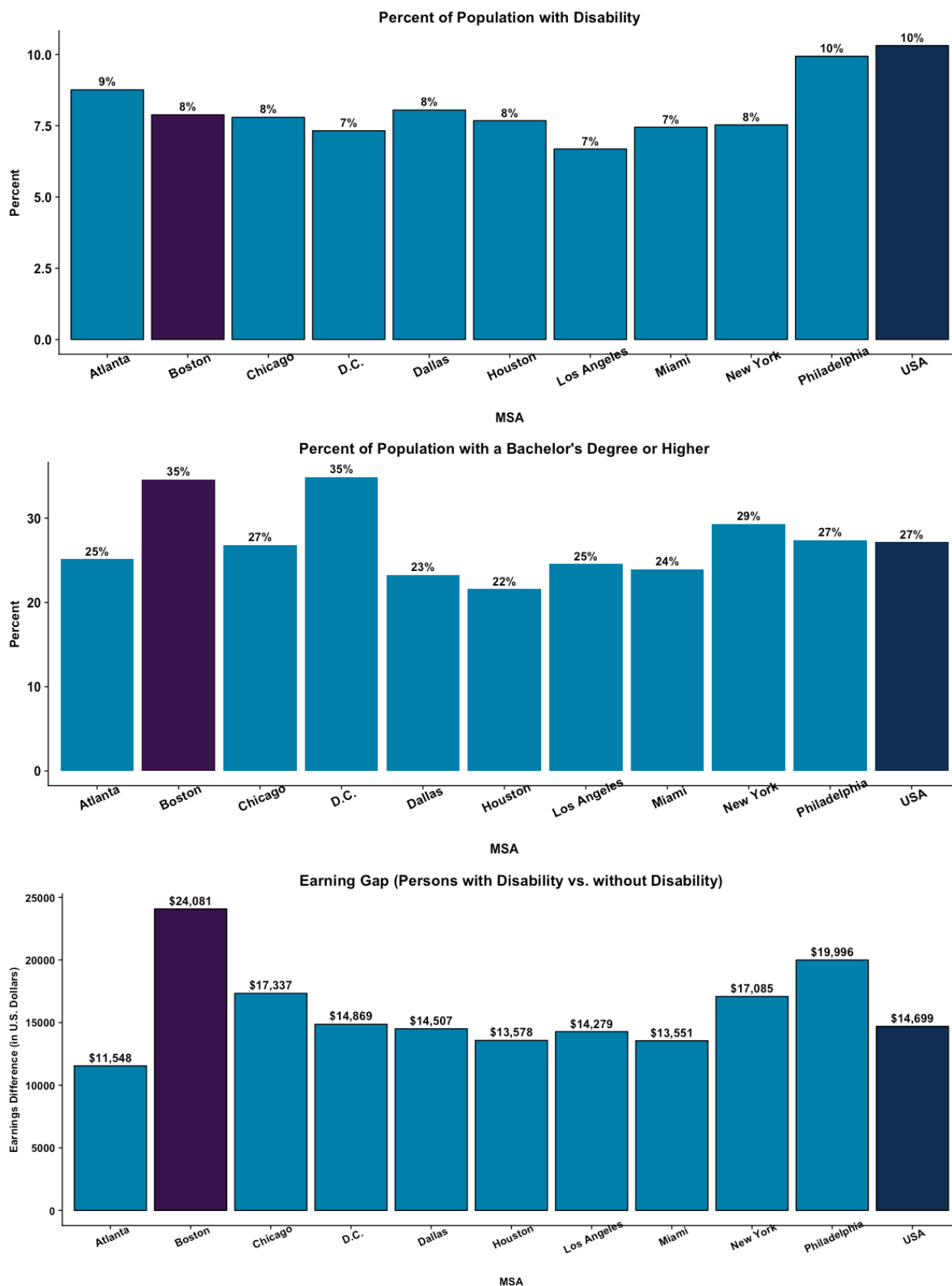
Figure 1. Disability Policy and Regulation Development in Massachusetts and the United States



Using the 2017 American Community Survey (U.S. Census Bureau, 2018), we found that about 8% of the Boston Metropolitan region (Boston Metro) working-age population includes persons with disabilities, compared with 10% of the U.S. population. Also, 35% of people in Boston Metro have a bachelor's degree or higher, compared with 27% of people in the United States, as shown in Figure 2. Given the state's leadership in gender pay equity and antidiscrimination for people with disabilities, combined with a slightly lower proportion of people with disabilities and higher than average educational attainment, we hypothesized that working-age adults with disabilities in Massachusetts would have lower pay inequity than other metropolitan areas of about the same population size.

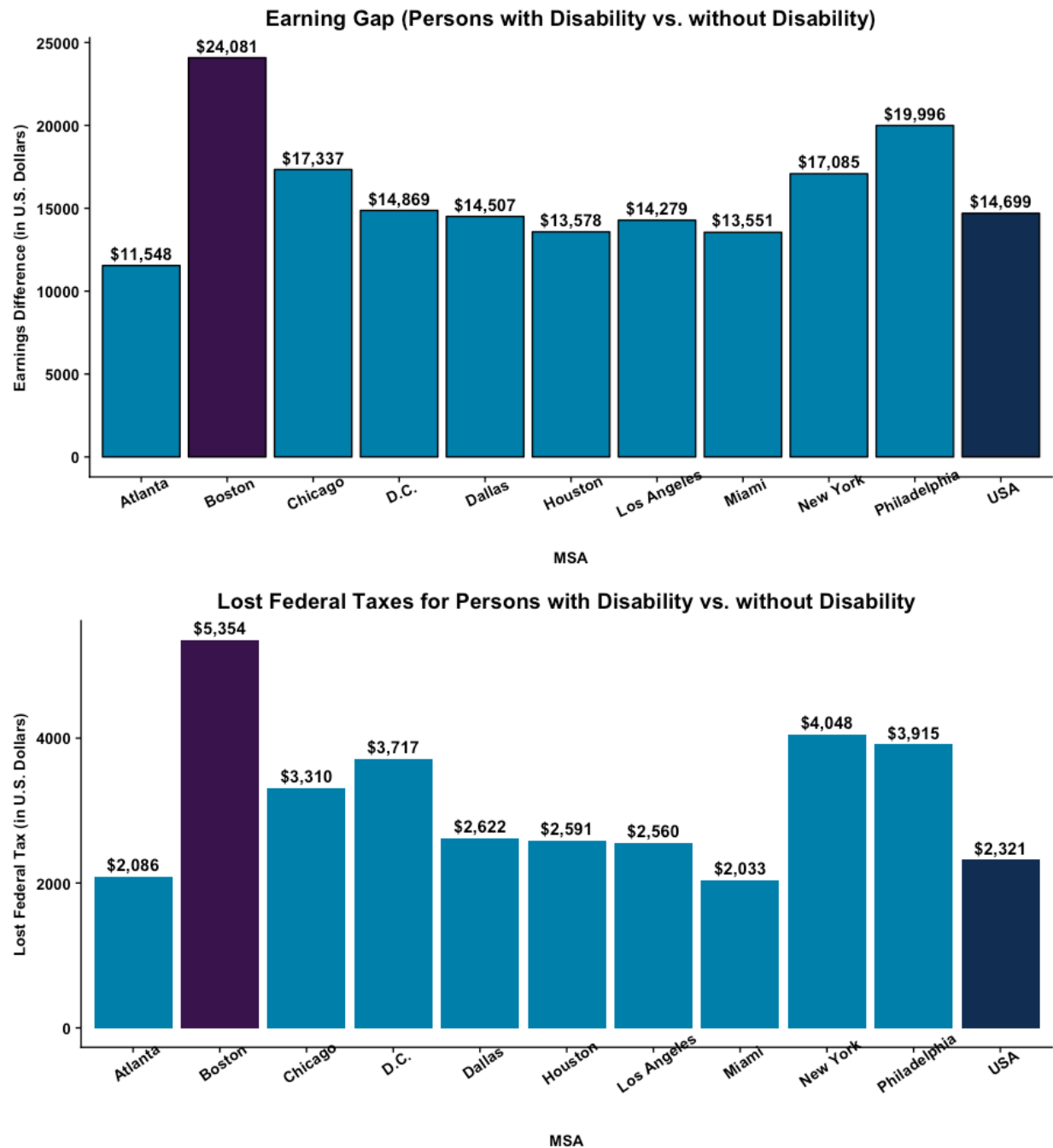
To test the hypothesis, we used data from the U.S. Census Bureau's 2017 American Community Survey (U.S. Census Bureau, 2018) to estimate pay gaps between people with and without disabilities in 10 largest metropolitan statistical areas (MSAs) in terms of population size and across five educational attainment levels: high school graduate, some college, associate's degree, bachelor's degree, and master's degree or higher. We found that, although Boston has a slightly lower percentage of working age adults with disabilities than other similarly sized metro areas, it surpasses them all in terms of pay *inequity*. The income gap between people with and without disabilities in Boston Metro is about \$24,000, which is almost \$10,000 more than the U.S. national average pay gap. In other words, people with disabilities earn only 63 cents to the dollar as compared to people without disabilities.

Figure 2. Panel Displaying Percentage of Population With Disability, Percentage of Population With a Bachelor's Degree or Higher, and Earning Gap in 10 MSAs



The loss in federal taxes is significant as well, as shown in Figure 3 and appendix Table A2. The average federal income tax loss is more than \$5,000 per person, amounting to over \$1.3 billion for Boston Metro. These dollars represent lost contributions to funds for infrastructure, education, social services, healthcare, and other important public services that ensure the current and future strength of the social and economic network.

Figure 3. Panel Displaying Earning Gap by MSA and Lost Federal Taxes Due to the Earning Gap



Leading the Way, or Falling Behind?

Every city in the United States has distinct advantages and disadvantages in terms of economic advancement, educational opportunities, and population diversity. Why does Boston Metro stand out from other similar MSAs in relation to people with disabilities? We investigated available data to determine what may be causing the income gap in Boston Metro, and to identify where the city and state may have opportunities to improve outcomes and to leverage its strengths. We examined differences in Educational attainment and Occupational categories, and the similarities between Boston Metro, Boston City, and another pay gap outlier, San Francisco.

Education

Massachusetts is well known for institutions of higher education with Boston in particular attracting talent from around the globe to pursue higher education. As shown in Figure 2, people in Boston Metro are above the U.S. average rate of achieving a bachelor's degree or higher. However, when we break down the data by disability status and level of educational attainment we find interesting variations. First, as shown in Figure 3, people with disabilities in Boston Metro have lower educational attainment than in other metro areas. Specifically, Boston Metro shows larger percentages at the lower end of educational attainment with more people with disabilities achieving less than or a high school diploma and less people with disabilities achieving a bachelor's or master's degree than the U.S. average and compared with other metro areas. Second, as shown in Figure 4, people with disabilities in Boston Metro make less than their peers without disabilities, even when their educational attainment is the same. In fact, the pay gap rises as educational attainment increases. For people with disabilities with a bachelor's or master's degree, the pay gap in Boston Metro is higher than any other region in the United States.

Figure 3. Percentage of People With Disabilities by Educational Attainment and by MSA

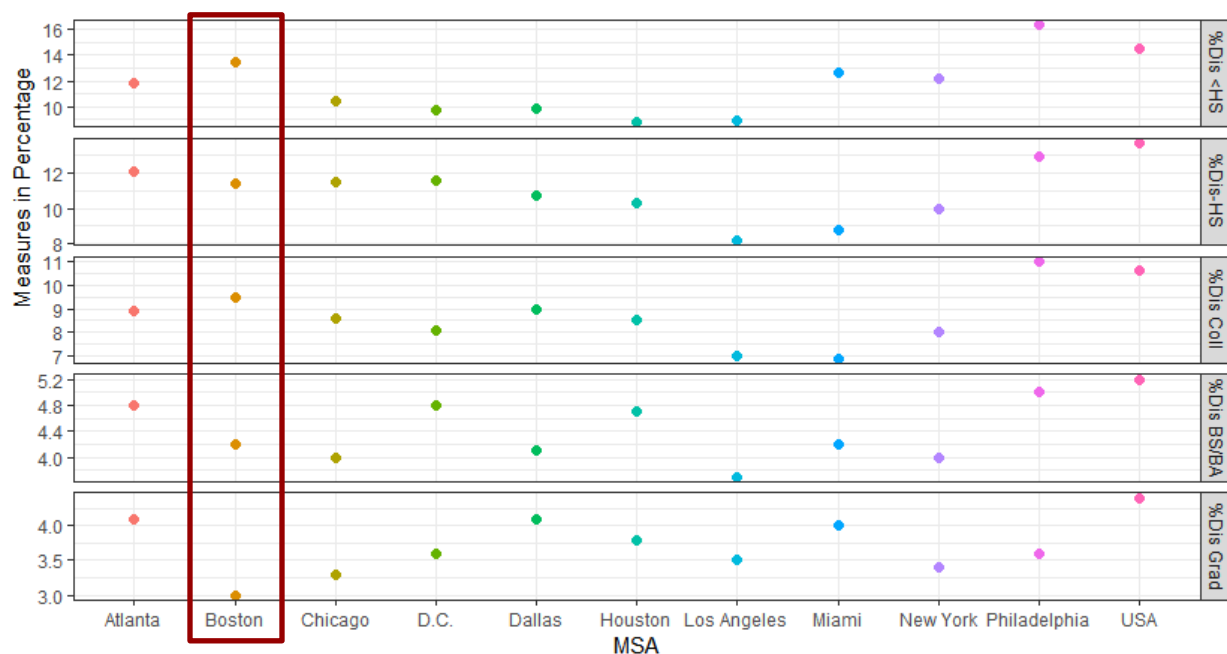
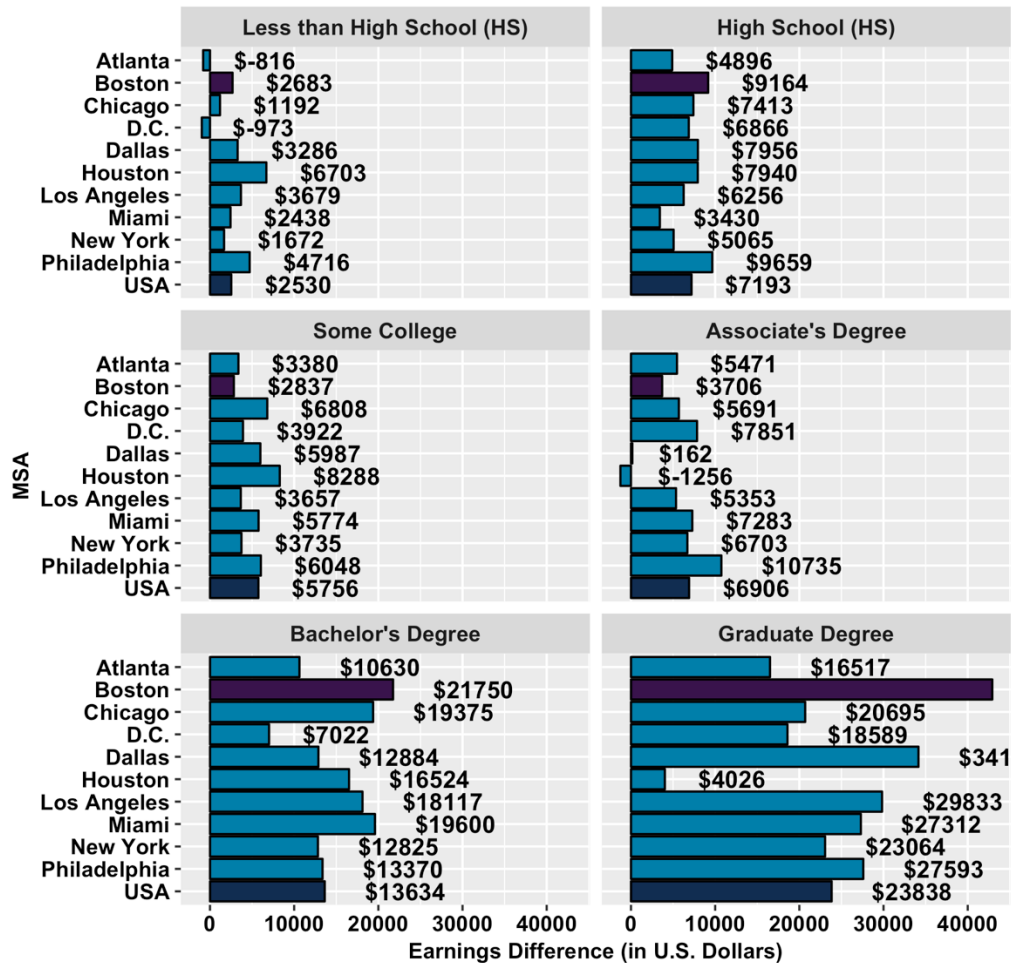


Figure 4. Earning Gap by Education Level by MSA

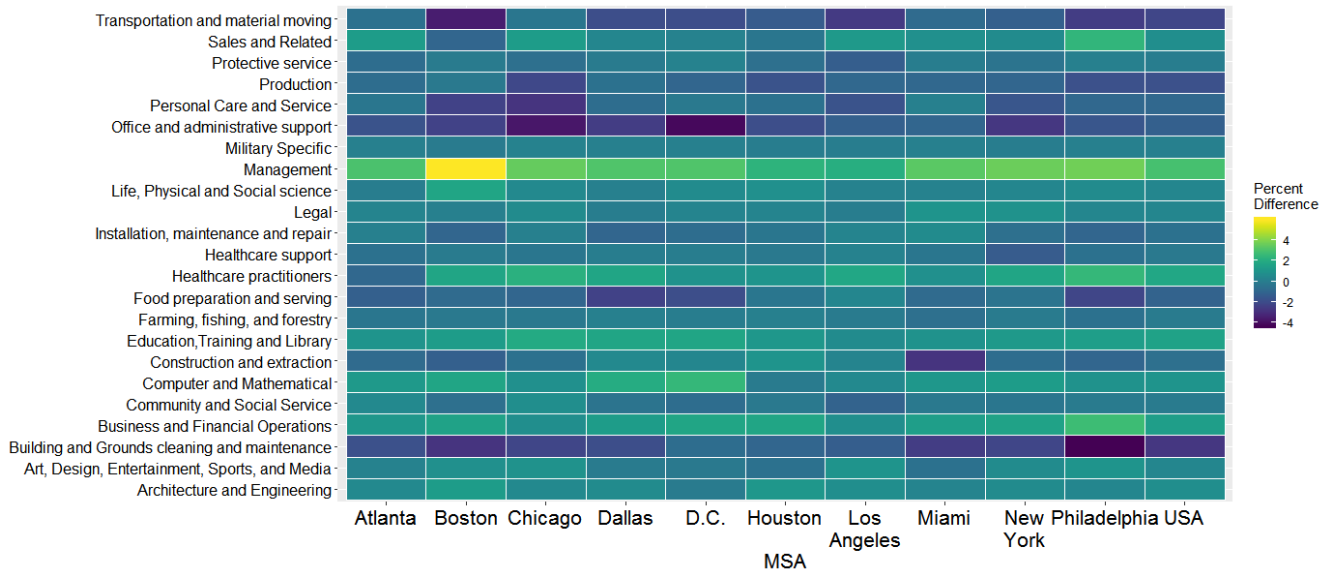


Occupation

Massachusetts is home to a number of high-paying industries (Koehler, 2015), including technology, life sciences, and financial services. Boston Metro serves as a hub for these high-value businesses. These fields tend to require higher levels of education (master's degree or higher), and the pay is commensurate. Could this be a potential driver of the pay gap? Using ACS occupation data,⁶ we plotted differences in the percentage of people with and without disabilities in each major occupation field by MSA. As Figure 5 shows, there are no noticeable differences between Boston and the other metropolitan areas in terms of occupation fields, except for "management" occupation which shows a 5.9% difference between people without and with disabilities. In other words, people with disabilities are less likely to be in positions of management (i.e., chief executives, legislators, and managers) in most metro areas, and this difference is starkest for Boston Metro. In addition, people with disabilities are more likely to be in positions of "transportation and material moving occupations," such as drivers, moving workers, and other operators, which has a -3.5% difference between people with and without disabilities. A contributing factor to the pay gap in Boston Metro may be driven by the types of jobs people with disabilities have that may not be commensurate with their level of education.

⁶ We used Census 2010 Occupation Codes in this analysis (Bureau of Labor Statistics, 2016).

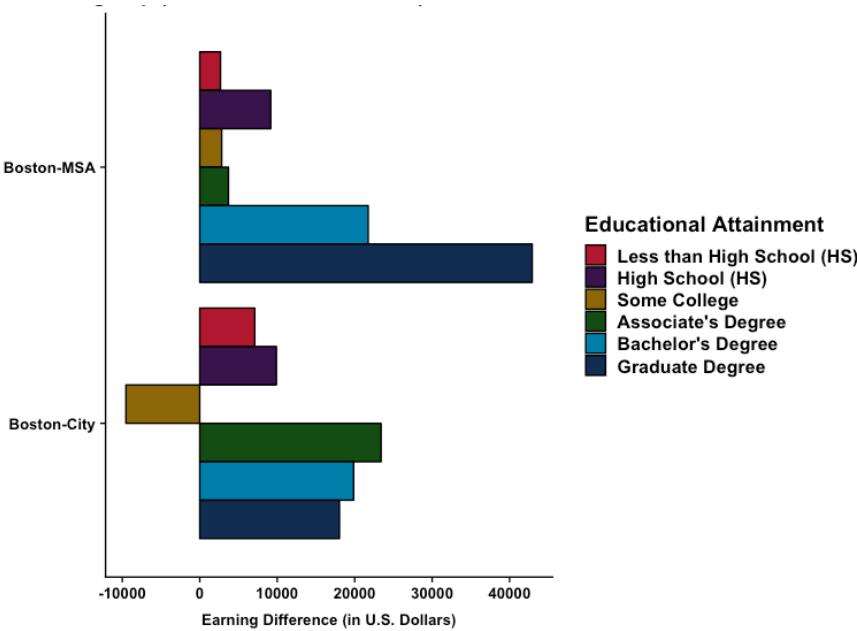
Figure 5. Differences in Percent Distribution of Occupations Between People With and Without Disabilities by MSA



Boston Metro Versus Boston City

As shown in Figure 6, there are differences between Boston City and the Boston Metro. Within Boston city limits, people with disabilities with some college earn more on average than people with a similar education and no disabilities. In every other category, however, people with disabilities earn less than their counterparts. In Boston Metro, the difference in pay for people with graduate degrees is much higher than the difference in pay for those with a bachelor's degree and those with a high school diploma. In Boston City, difference in pay for those with a graduate degree is not strikingly different from those with a bachelor's or an associate's degree, implying that the pay gap is higher outside the city limits. This finding may reflect the different types of job opportunities and industries between these areas.

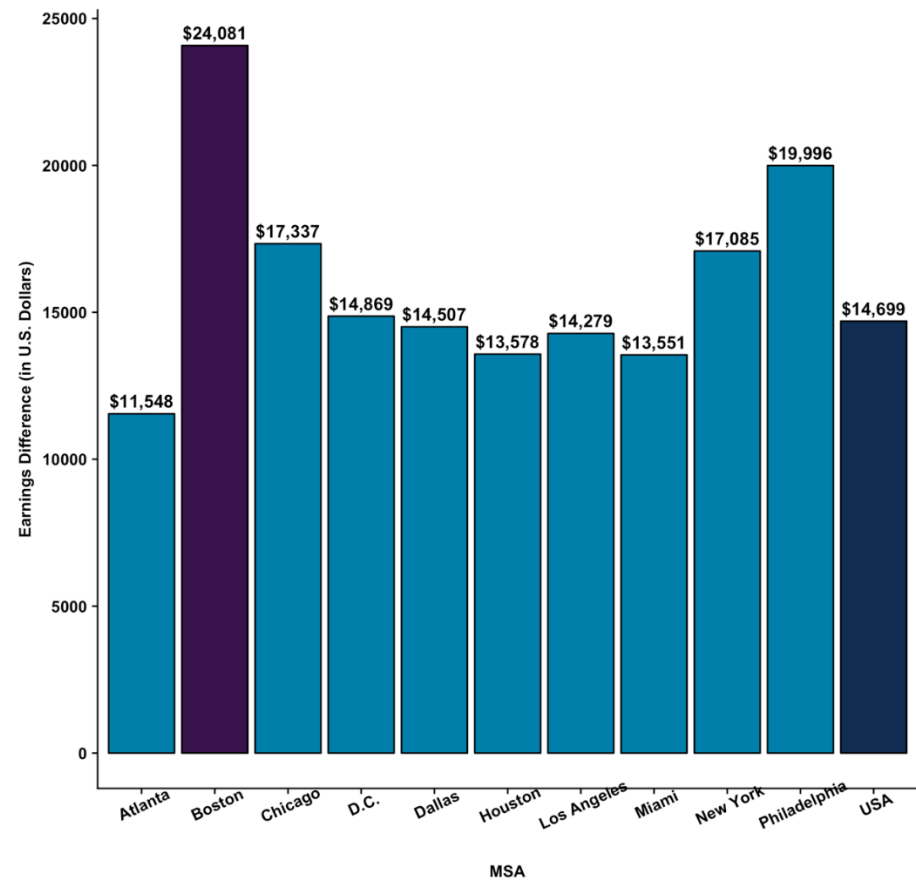
Figure 6. Earning Gap Between People With and Without Disabilities by Levels of Education in Boston City and Boston Metro



Boston Metro Versus San Francisco

In reviewing the data for pay equity and educational attainment for Boston Metro, the researchers wondered whether one particular type of industry that offers extremely high salaries or that attracts individuals with higher educational attainment may have influenced the pay gap. Boston MSA is shown to have a much higher percentage of individuals with bachelor's degrees or higher and a large number of technology firms, not unlike the workforce of Silicon Valley. Although other cities in the cohort have higher-wage sectors as well, we wondered whether the technology industry might have a particularly strong bearing on this difference in pay. To test this hypothesis, we examined San Francisco,

Figure 7. Earning Gap Between People With and Without Disabilities by MSA

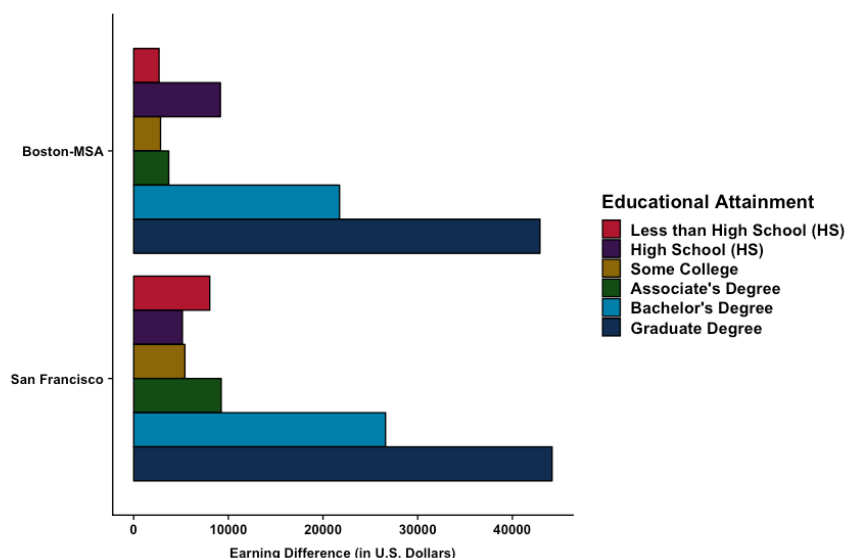


which was not included in the original analysis because of the smaller population size. We found that San Francisco Metro does show some similarity to Boston Metro in terms of having more individuals with bachelor's degrees or higher (as shown in Figure 8) and inequity in pay. As shown in Figure 7, the San Francisco area has a higher average pay gap than Boston Metro between people with and without disabilities. The pattern of pay inequality is similar in comparison by educational attainment in Boston Metro and the San Francisco areas, except for those with less than high school degrees where the pay gap is wider in San Francisco than in Boston Metro (shown in Figure 8). This additional comparison with San Francisco supports the finding that the wage gap continues to climb in cities where higher educational attainment is needed for higher wage jobs, and that this has a negative overall impact on wages for people with disabilities.

In sum, people with disabilities in Boston Metro are less likely to have achieved high levels of educational attainment, and when they do, their salaries do not match that of similarly educated peers without disabilities. This may be the result of people with disabilities in lower paid jobs despite their educational attainment, and the lack of managerial and upwardly mobile opportunities. Boston Metro is surpassed only by San Francisco in our analysis for inequity in pay, which confirms that jobs requiring higher educational levels do not lead to higher pay for people with disabilities. This research points to the challenges faced by Boston Metro and examines potential factors that may, in combination, contribute to the pay inequality.

However, further research is needed to explain why this difference is more striking in Boston than in other similar metropolitan areas. For example, research is needed to understand the effects of common barriers to economic progress for people with disabilities, such as a lack of accessible transportation, a lack of affordable housing, limited access to education, and limited community and social inclusion. These issues must be examined further and addressed not only in Boston but also in other cities where pay inequity exists.

Figure 8. Earning Gap Between People With and Without Disabilities by Levels of Education in Boston Metro and San Francisco



From Challenge to Opportunity

The data presented in this report tell a story about the economic advancement of workers with disabilities in Boston Metro. Two challenges that Boston-area businesses must address are the low employment rates of people with disabilities and the pay gap for those who are employed, especially those with higher educational attainments. Boston Metro offers a range of jobs with some of the highest salaries in the country, yet a disproportionate number of people with disabilities remain unemployed or underemployed. The second issue is pernicious because it is less obvious. Employees with disabilities see their pay gaps continue to increase compared with their equally educated peers without disabilities as both groups achieve higher levels of education. While this is true across most of the United States, in Boston Metro the gap is highest compared with regions of similar size. As shown in Figure 5, management occupations show the greatest difference in Boston Metro for people with disabilities compared with other areas. This is striking, as it points to the lack of career advancement and a lack of representation in and input to management and leadership decisions. For cities like Boston that strive to attract the best and brightest workers from around the globe, an intention must be set to determine how to include people with disabilities who are highly educated and ambitious.

Data also tell a story of opportunity in Boston. Despite the challenges described in this report, the Boston area maintains a strong job market. The Boston Planning and Development Agency reported in 2018 that the Massachusetts economy is growing (+2.1%), jobs are growing (+3.2%), wages are increasing (+3.5%), and there is continued commercial and housing expansion (Boston Planning & Development Agency Research Division, 2018). Unemployment is at historic lows of about 3.4% overall. This is a promising time for Boston area businesses to create a legacy of leadership that is disability diverse and inclusive of everyone who has

skills and knowledge to contribute to an increasingly competitive world of work. The first step to creating this opportunity is to develop self-awareness about how we can value workers with disabilities.

Whom do you think of when you imagine a person with a disability? Many employers, human capital managers, and other company leaders may have preconceived notions and biases about people with disabilities as lacking the cognitive or physical ability to do a given job. Yet, people with disabilities include a wide and varied range of talented individuals at work: the college professor with multiple sclerosis, the computer programmer with Parkinson's, the roofer with traumatic brain injury, the lawyer with cerebral palsy, the deaf dentist, the ride-sharing driver with autism, the boutique store employee with intellectual disabilities, the librarian with visual impairments, the business owner with severe learning disabilities, the high school teacher with mental health challenges, the truck driver recovering from cancer, or the artist with a spinal cord injury. Dispelling myths and biases about people with disabilities throughout any organization is a major step toward opening the doors to new hires with potential and diversity of thought and experiences.

Another way to consider this is to ask, "What is the potential loss by Boston area businesses that fail to create conditions for hiring, retaining, and advancing qualified workers with disabilities? This underutilization of skilled labor limits the ability of Boston companies and industries to grow and thrive. More and more businesses are focused on diversity—including disability-diversity—to fill their labor market shortages, increase their insights into design and development of products and services for customers, including those with disabilities, and build brand loyalty among consumers. Boston Metro businesses will have to consider how to move from challenge to opportunity, and from market inequality to market success.

From Market Inequality to Market Success

The Ruderman Foundation, in partnership with AIR and IEL, presents this data to the Boston City and Boston Metro business community to spur a conversation about economic growth that includes and is supported through increased promotion, pay, and hiring of qualified people with disabilities. Together, we ask the following questions:

- How do we want to address this challenge?
- What are our goals, and what will it take to get us there?
- Whom will we partner with to achieve these goals?
- How do we ensure that people with disabilities are integral to this conversation and to this work?

We believe there has been a lack of awareness within the business community that the issue exists. This report helps to surface this issue. Boston businesses need to have a better understanding of the assets that employees with disabilities bring to the office, the industry, and the market. Specific considerations in hiring people with disabilities may be overlooked by businesses. Employers can take the following steps to improve hiring of people with disabilities:

- Establish an increased disability-diversity focus.
- Instill practices that improve hiring and retention of people with disabilities.
- Ensure accessibility to the job application, the interview, and the workplace.
- Offer reasonable accommodations and make this clear on the job application site.
- Increase disability awareness at all levels of the organization, from line staff to the C-suite.

After the employee is in the workplace, strategies exist for employers and business owners to reduce the pay gap. These strategies include the following:

- Examine the company's career ladder and ensure employees with disabilities understand their opportunities for career progression.
- Ensure the process for requesting accommodations is clear, centrally organized and funded, and destigmatized.
- Hire or promote individuals with disabilities to leadership positions and encourage leaders with disabilities to share their disability story (or identity) including people with invisible and visible disabilities.
- Create a culture that emphasizes inclusion and create a safe space for self-disclosure of a disability.
- Provide mentors or support services to staff with disabilities and their families.
- Set big audacious goals and track your progress, then share your successes and remaining challenges with staff regularly.

In addition, collaborations among local and state governments, chambers of commerce and industry associations, and the business community can lead to broader changes and greater access to jobs and potential employees with disabilities. Collaborations are key to improving access to information, changing organizational practices, and creating the infrastructure needed to support the workforce. Some practical solutions are given next.

Improve Access to Information

- Organize opportunities and events to connect companies with and recruit individuals with disabilities.
- Create opportunities for businesses to share success stories or effective practices with other businesses in different industries to learn how companies thrive with a disability-diverse workforce.

Improve Organization Practices

- Correct the narrative about hiring a person with a disability by acknowledging the assets of a disability-diverse workforce and training that workforce for leadership positions.
- Promote the value of employing leaders with disabilities and the corresponding benefits to hiring processes, corporate culture, and the consumer market.
- Build relationships between intermediary organizations and businesses to assist with understanding and support of recruitment and accommodations.
- Recognize that the bottom line for business and industry is paramount and communicate how people with disabilities contribute to business success.

Create Needed Infrastructure to Support the Workforce

- Provide training to hiring managers, human resources/human capital partners, and staff on disability awareness and inclusion.
- Build career ladders that are inclusive of all staff, including those with disabilities from diverse backgrounds.
- Create a chief diversity and inclusion officer within the organization with established authority, accountability, and budgets.

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About the Ruderman Family Foundation

The Ruderman Family Foundation believes that inclusion and understanding of all people is essential to a fair and flourishing community. Guided by our Jewish values, we advocate for and advance the inclusion of people with disabilities throughout our society; strengthen the relationship between Israel and the American Jewish community; and model the practice of strategic philanthropy worldwide. We operate as a nonpartisan strategic catalyst in cooperation with government, private sectors, civil society, and philanthropies.



About the American Institutes for Research

One in five members of the U.S. workforce has some form of disability. Many people with disabilities need education, training, or employment services to find the right career. At the American Institutes for Research (AIR), our goal is to use the best science available to find and apply effective ideas and approaches to enhance everyday life for all people, including those with disabilities. AIR's diverse portfolio of work in this area generates knowledge and resources to help those with disabilities pursue employment opportunities; assist employers through trainings and support services to connect, recruit, and retain individuals with disabilities; conduct disability evaluation and research with rigorous designs; and train providers through capacity building to improve impact. For more information, contact Michelle Yin, principal economist, at myin@air.org, (202) 403-5580.



About Institute for Educational Leadership

Future-oriented leaders add significant value to their organizations by recognizing the power of hiring a talent pipeline. For more than 30 years, Institute for Educational Leadership (IEL) has helped public and private sector business leaders transform their next generation of talent—young people with disabilities. IEL equips young people with disabilities with the right tools to put into their toolboxes—and yours! IEL understands the challenges faced by businesses to find workers and to create an inclusive environment for all employees, including those with disabilities. We can help you to create meaningful connections with young people with disabilities to diversify your workforce. For more information, contact Dahlia Shaewitz, Vice President, Transition, Disability, & Employment, Institute for Educational Leadership, at shaewitzd@iel.org, (202) 822-8405 x167.



Appendix A. Data and Methods

To carry out this analysis, we used data from the U.S. Census Bureau’s 2017 American Community Survey to estimate the percentage of people with disabilities in 10 selected metropolitan areas at five educational attainment levels: high school graduate, some college, associate’s degree, bachelor’s degree, and master’s degree or higher. As shown in Table A1, in our metropolitan analytical sample, people with disabilities tend to have lower educational attainment than their counterparts. For example, less than 26% of people with disabilities had bachelor’s degrees or higher, compared with 40% for people without disabilities. Only 10% of people with disabilities had master’s degrees or higher, compared with nearly 15% of people without disabilities.⁷

Table A1. Educational Attainment of Individual in the 10 Metropolitan Areas by Educational Attainment

Educational Attainment	With Disability	Without Disability
No degree	14.4	10.6
High school or equal	26.7	21.6
Some college	24.4	20.2
Associate’s degree	8.3	7.6
Bachelor’s degree	16.7	24.9
Master’s degree and higher	9.5	15.1
Total	100	100

Note. The list of metropolitan areas included in the sample include Atlanta, Boston, Chicago, Dallas, Houston, Los Angeles, Miami, New York, Philadelphia, and Washington, DC.

Next, we estimated earnings for people with and without disabilities by educational attainment level for each metropolitan city and at the national level. In this study, we opted to use the average earnings that people receive primarily from their full-time jobs. In other words, we did not consider other forms of income, such as income from Social Security payments, pensions, child support, public assistance, or annuities. This allowed us to directly compare income due to employment between people with and without disabilities. The results in Figure 7 and Table A2 show that the average earnings for people with disabilities were much lower than those of their counterparts at all metropolitan areas.

⁷ In some states, the sample size for people with disabilities with different educational attainment was small and might not have provided an accurate estimate of the average earnings. However, the American Community Survey offered the most current data available for the study.

Table A2. Earning Gap Between Those Without and With Disability by Educational Attainment for Each Metropolitan Area and the Whole United States

Metropolitan Area	Educational Attainment						
	Average Earning Gap	No Degree	High School or Equal	Some College	Associate's Degree	Bachelor's Degree	Master's Degree or Higher
Atlanta	\$11,547.69	\$(815.88)	\$4,896.10	\$3,379.88	\$5,470.74	\$10,629.94	\$16,516.55
Boston	\$24,080.61	\$2,683.05	\$9,164.01	\$2,837.44	\$3,705.70	\$21,749.65	\$42,917.80
Chicago	\$17,337.42	\$1,191.94	\$7,413.24	\$6,807.98	\$5,690.58	\$19,375.18	\$20,695.40
Dallas	\$14,507.00	\$3,286.48	\$7,956.05	\$5,987.31	\$ 161.54	\$12,883.73	\$34,155.04
Houston	\$13,578.45	\$6,703.36	\$7,940.36	\$8,287.58	\$(1,256.50)	\$16,523.84	\$4,026.43
Los Angeles	\$14,279.29	\$3,678.95	\$6,255.55	\$3,657.41	\$5,353.44	\$18,117.20	\$29,832.81
Miami	\$13,551.05	\$2,438.07	\$3,430.23	\$5,773.79	\$7,282.59	\$19,599.86	\$27,312.25
New York	\$17,085.40	\$1,671.50	\$5,065.29	\$3,734.95	\$6,702.66	\$12,824.88	\$23,064.45
Philadelphia	\$19,996.28	\$4,716.16	\$9,659.37	\$6,047.75	\$10,734.80	\$13,370.14	\$27,592.69
Washington, DC	\$14,869.04	\$(972.66)	\$6,866.07	\$3,921.55	\$7,851.19	\$7,021.97	\$18,589.47
Boston City	\$22,595.79	\$7,101.27	\$9,897.29	\$(9,532.06)	\$23,407.46	\$19,863.08	\$18,039.34
USA	\$14,699.07	\$2,530.42	\$7,192.66	\$5,755.89	\$6,906.30	\$13,634.10	\$23,838.13

Using the disability and income estimates, we next quantified the income inequalities by metropolitan city and calculated corresponding lost federal income taxes. To do so, we used the federal income tax rate⁸ from 2017 to first estimate the lost income taxes at the individual level. Using the metropolitan city's population and disability statistics, we estimated the lost income taxes for each city and at the national level as shown in Table A3.⁹

Table A3. Lost Federal Taxes Due to Income Inequalities Between People With and Without Disabilities by Metropolitan Area

Metropolitan Area	Average Without Disability	Average With Disability	Per-Person Difference	Total
Atlanta	\$6,111	\$4,025	\$(2,086)	\$(794,610,219)
Boston	\$9,581	\$4,227	\$(5,354)	\$(1,289,198,536)
Chicago	\$6,999	\$3,689	\$(3,310)	\$(1,654,407,740)
Dallas	\$6,341	\$3,719	\$(2,622)	\$(1,069,961,799)
Houston	\$6,612	\$4,021	\$(2,591)	\$(929,918,966)
Los Angeles	\$6,271	\$3,711	\$(2,560)	\$(1,562,154,313)

⁸ Federal taxes were calculated using rates that were obtained from <http://taxfoundation.org/data>. Rates for single individuals were used to estimate the average federal tax.

⁹ The number of observations decreases while moving up the educational attainment ladder. This might cause overestimation or underestimation of the earnings difference in states with small populations. Data from the American Community Survey remain the best available source for this type of analysis, but further studies will be needed to validate these findings.

Metropolitan Area	Average Without Disability	Average With Disability	Per-Person Difference	Total
Miami	\$4,848	\$2,816	\$(2,033)	\$(616,773,480)
New York	\$8,940	\$4,892	\$(4,048)	\$(4,156,627,581)
Philadelphia	\$7,516	\$3,601	\$(3,915)	\$(1,583,930,364)
Washington, DC	\$9,763	\$6,046	\$(3,717)	\$(1,256,381,739)
Boston City	\$7,877	\$3,427	\$(4,450)	\$(212,144,845)
USA	\$5,516	\$3,195	\$(2,321)	\$(51,189,976,243)

Finally, we tested whether people with disabilities face greater economic discrimination than those without disabilities in a regression framework, after controlling for certain demographic and labor market supply characteristics. The regression framework eased concerns about the sample size for this study. We examined the relationships between a set of individual characteristics, including disability status and earnings (and log earnings), using an ordinary least square model. The results in Table A4 show that people with disabilities face a level of economic discrimination similar to that of female employees—that is, 37% lower pay for people with disabilities compared with 34% lower pay for women.

Table A4. Regression Results: Earning Inequalities After Controlling for Demographic and Geographic Characteristics

Characteristics	(1) Actual Earning	(2) Log Earning
Age	1,140.4*** (8.008)	0.0316*** (0.000165)
Hispanic	-11,253.5*** (297.4)	0.0140* (0.00535)
Disabled	-14,945.8*** (444.0)	-0.468*** (0.0125)
Female	-24,030.4*** (222.2)	-0.416*** (0.00366)
Black alone	-14,799.8*** (253.3)	-0.123*** (0.00651)
American Indian alone	-7,912.5** (2,754.9)	-0.193*** (0.0481)
Alaska Native alone	-25,666.9* (10,443.2)	-0.234 (0.240)
American Indian and Alaska Native	-6,746.2*** (1,888.1)	-0.129* (0.0520)

Characteristics	(1) Actual Earning	(2) Log Earning
Asian alone	-11,330.7***	-0.102***
	(348.8)	(0.00628)
Native Hawaiian/Pacific Islander alone	-13,469.2***	-0.0931
	(2,310.3)	(0.0672)
Some other race alone	-4,552.6***	-0.0107
	(301.9)	(0.00781)
Two or more races	-6,713.1***	-0.119***
	(596.4)	(0.0141)
High school degree	7,380.2***	0.484***
	(211.2)	(0.00708)
Some college	15,164.4***	0.602***
	(198.5)	(0.00719)
Associate's degree	19,457.7***	0.833***
	(340.9)	(0.00914)
Bachelor's degree	45,922.8***	1.249***
	(314.9)	(0.00798)
Master's degree or higher	76,693.2***	1.563***
	(443.6)	(0.00744)
Boston MSA	3,036.0***	0.0395***
	(561.2)	(0.0115)
Boston City only	4,540.8**	0.0170
	(1,487.8)	(0.0217)
Chicago MSA	970.3	0.00405
	(501.0)	(0.0103)
Dallas MSA	2,533.3***	0.0765***
	(495.2)	(0.0112)
Houston MSA	5,695.9***	0.0789***
	(555.7)	(0.0114)
Los Angeles MSA	3,791.9***	0.0348***
	(485.7)	(0.00981)
Miami MSA	-3,434.4***	-0.106***
	(502.4)	(0.0113)

Characteristics	(1) Actual Earning	(2) Log Earning
New York MSA	7,515.6*** (515.1)	0.0731*** (0.00941)
Philadelphia MSA	572.9 (505.9)	0.00135 (0.0101)
San Francisco MSA	17,182.8*** (666.9)	0.214*** (0.0126)
Washington, DC MSA	7,123.2*** (528.0)	0.130*** (0.0112)
Constant	-2,541.9*** (490.8)	8.461*** (0.0141)
Observations	428,241	428,241
R-squared	0.232	0.305

Note. Robust standard errors are presented in parentheses.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix B. Distribution of Occupational Fields

Occupational fields are based on 2010 occupation code classification from the Bureau of Labor Statistics. The detailed occupations in each category can be found here: <https://www.bls.gov/tus/census10ocodes.pdf>. For example, the title “Architecture and engineering occupations” includes jobs such as architects, surveyors, and aerospace engineers. Table B1 shows the distributions of each occupation field for each metropolitan area.

Table B1. Distribution of Occupational Fields by Metropolitan Area

	Atlanta	Boston	Chicago	Dallas	Houston	Los Angeles	Miami	New York	Philadelphia	DC
Architecture and engineering occupations	2%	2%	1%	2%	3%	2%	1%	1%	1%	2%
Arts, design, entertainment, sports, and media occupations	1%	2%	1%	1%	1%	3%	1%	3%	1%	3%
Building and grounds cleaning and maintenance occupations	2%	3%	3%	3%	3%	2%	4%	3%	3%	3%
Business and financial operations occupations	7%	7%	6%	6%	5%	6%	5%	7%	6%	10%
Community and social service occupations	1%	2%	1%	1%	1%	2%	1%	2%	3%	1%
Computer and mathematical occupations	4%	5%	3%	5%	3%	2%	2%	3%	3%	8%
Construction and extraction occupations	3%	3%	3%	4%	6%	2%	3%	3%	2%	4%
Education, training, and library occupations	6%	6%	6%	5%	6%	6%	5%	7%	8%	6%
Farming, fishing, and forestry occupations	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Food preparation and serving-related occupations	9%	8%	8%	9%	9%	9%	10%	8%	9%	8%

	Atlanta	Boston	Chicago	Dallas	Houston	Los Angeles	Miami	New York	Philadelphia	DC
Healthcare practitioners and technical occupations	5%	7%	6%	5%	5%	5%	6%	5%	8%	4%
Healthcare support occupations	2%	2%	3%	2%	2%	2%	3%	5%	4%	2%
Installation, maintenance, and repair occupations	4%	3%	3%	4%	4%	3%	4%	3%	3%	3%
Legal occupations	1%	1%	1%	1%	1%	1%	2%	1%	2%	2%
Life, physical, and social science occupations	1%	2%	1%	0%	1%	1%	0%	1%	1%	2%
Management occupations	7%	9%	8%	4%	4%	5%	4%	6%	5%	8%
Office and administrative support occupations	16%	14%	15%	18%	16%	16%	18%	16%	16%	13%
Personal care and service occupations	2%	4%	3%	3%	3%	7%	2%	4%	5%	3%
Production occupations	5%	3%	7%	5%	6%	6%	4%	3%	3%	2%
Protective service occupations	2%	2%	3%	2%	2%	3%	4%	3%	3%	3%
Sales and related occupations	11%	9%	10%	11%	10%	10%	13%	10%	8%	8%
Transportation and material moving occupations	8%	5%	8%	8%	7%	7%	8%	6%	5%	4%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%