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The Purchasing Power of Working-Age Adults With Disabilities in Boston and Other Top Metropolitan Areas

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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 amount of disposable and discretionary income held by people with disabilities and the implications for economic growth for the 10 largest metropolitan areas. This examination provides a more nuanced view of how Boston compares to similar sized metropolitan areas across the United States. Specifically, we found:

- The amount of disposable income (total income after taxes) represented by people with disabilities varies by MSA, driven mostly by population size. Boston has a relatively smaller market size with $7 billion aggregated disposable income, due to its smaller population size than larger MSAs such as New York and Los Angeles. However, in the context of the local economy of Boston, the sum of disposable income possessed by the disability community in Boston exceeds the annual budget for the City of Boston which is $3.1 billion. This has important implications for economic growth in Boston, as spending will depend on accessible and inclusive places, products and services.
- People with disabilities in the Boston area have the highest rates of attainment of a bachelor's degree after Washington, D.C. Efforts to employ and serve disability market should thus reflect the high level of educational attainment achieved by this local community.
- Among people with disabilities who have discretionary income (income after taxes and essential items and services, including housing and food), Boston has the highest average salary both before and after taxes. However, Boston also has high tax rates and expenditure levels, which lead to relatively lower aggregated amounts of discretionary income as compared to other MSAs.

Disposable and discretionary incomes vary among people with different types of disabilities. People with ambulatory disabilities have the highest amount of disposable income in all MSAs. People with hearing and ambulatory disabilities, respectively, have the highest amount of discretionary income in all MSAs. Notably, people with self-care disabilities have the lowest levels of both disposable and discretionary income.

As we approach the pinnacle of consumer spending, it is imperative for the public and private sectors to address inclusion and accessibility. For example, people with ambulatory disabilities have the highest amount of disposable income in Boston, so improving accessibility of our transportation infrastructure would strengthen spending with local businesses. And to attract a diverse customer base, businesses should consider hiring employees with disabilities as part of their seasonal hiring initiatives. The disability community yields substantial purchasing power, and the economy of metropolitan cities can grow by deliberately engaging this sector.

Introduction

In the marketplace, people with disabilities—and their families, friends, and advocates—wield considerable spending power. This underrecognized market sector offers tremendous potential to the business community. Our recent study (Yin, Shaewitz, Overton, & Smith, 2018) found that in the United States, people with disabilities have nearly half a trillion dollars in disposable income—the after-tax dollars for basic necessities such as housing, food, and clothing. The same study also found that people with disabilities have about $21 billion in discretionary income available after taxes and basic necessities to spend on other goods and services—more than the African American and Hispanic markets combined. Even though people with disabilities generally have less disposable and discretionary income than people without disabilities, the size of this population is significant. The Centers for Disease Control and Prevention (CDC) recently reported that 25.5 percent of the US population has a disability (CDC, 2019). This is a population with sizeable resources to purchase high-quality services and products, ranging from general financial services and homes, cars, and furniture to accessible technology, long-term care services, and other disability-related products and services.

Although the United States has been a leader in policies that establish the rights of people with disabilities, the business community is still learning about the potential to design, develop, and market products and services to this significant portion of the population. Market research that helps identify potential consumers by disability type and other demographic data will help businesses better understand how to serve them. For example, market size varies significantly across states and by disability type, which may lead businesses to develop targeted advertising and specialized products for specific consumer groups (Yin et al., 2018).

In the current study, we took this idea a step further to examine the population of people with disabilities at the city level, by comparing the 10 largest metropolitan statistical areas (MSAs) in terms of population size in the United States. An examination of the population at this micro level can help local and regional businesses to identify how they may include people with disabilities throughout their planning from design and development to employment. We begin with an examination of demographics in these MSAs followed by an analysis to quantify the amount of disposable and discretionary income held by people with disabilities and the implications for economic growth for those 10 largest MSAs. The results of this study will provide important information for businesses in Boston and other metropolitan areas to better understand the variability and potential of this market. People with disabilities are an important part of the talent pool, bringing different perspectives and creativity to the workplace. They are also valuable customers who, with their family members, expand the market and economic success of companies that are paying attention to them.

The Disability Market

Who are people with disabilities?

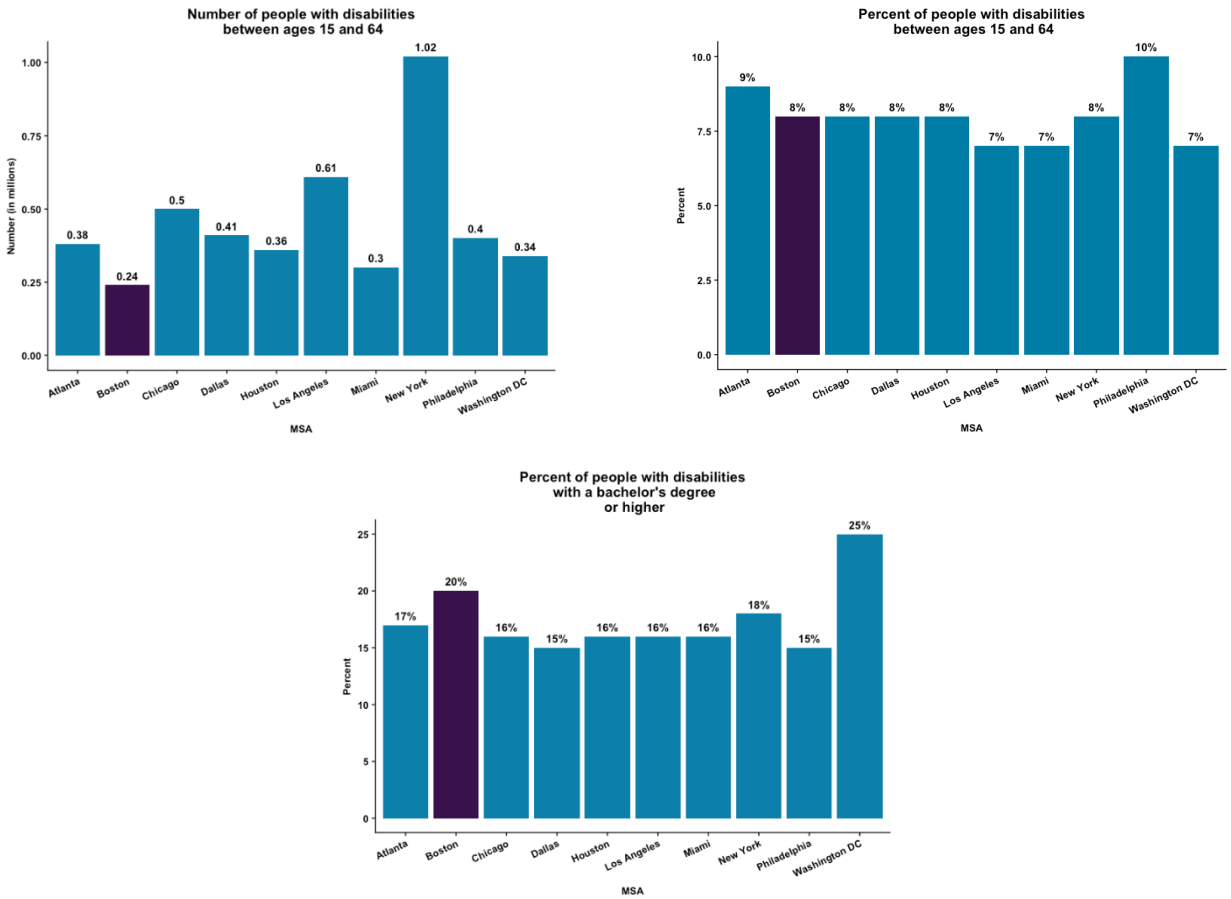
Every person reading this paper knows someone—a family member, friend, coworker, neighbor—who has a disability. Approximately 26% or one in four Americans has a disability (CDC, 2019), and the number rises to 40% for people over age 75. For businesses, this finding means that more than one quarter of the customers they serve has a disability, whether or not those disabilities are apparent.

There is no one type of person who has a disability. The population of people with disabilities includes all races, genders, and sexual orientations. People with disabilities live in rural, urban, and suburban settings. They work across all industry sectors and serve in the military. People with disabilities span all age groups, including millennials and younger Americans, also known as the "ADA generation"—those who were born after the establishment of the Americans with Disabilities Act (ADA). The ADA generation has gone to school with mainstreamed kids with disabilities, they work with people with disabilities, and they expect that all public venues and virtual resources will be accessible to and inclusive of everyone. How prepared are leaders in large metropolitan areas to meet these expectations?

Disability Population in the Top 10 MSAs in the United States

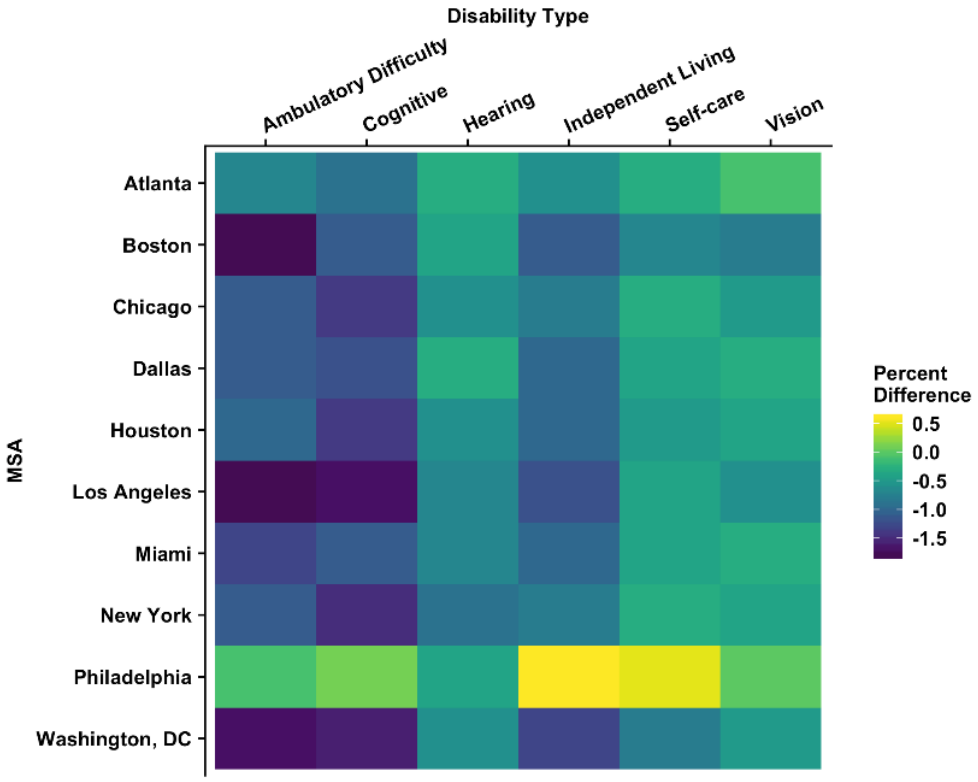
The top 10 MSAs include Atlanta, Boston, Chicago, Dallas, Houston, Los Angeles, Miami, New York, Philadelphia, and Washington, DC. As shown in Figure 1, no metropolitan area stands out across areas of disability prevalence and educational attainment for people with disabilities. For example, New York has the largest *number* of working-age adults with disabilities, but Philadelphia has the highest *percentage* of working-age people with disabilities, followed by Atlanta. In contrast, Boston has the lowest number and percentage of working-age adults with disabilities. Washington, DC, has the highest percentage of people with disabilities who have a bachelor's degree or higher, followed by Boston and then New York. As noted in a previous study (Yin et al., 2014), the earnings gap between people with and without disabilities increases with higher levels of educational attainment, which impacts their market potential.

Figure 1. Disability Prevalence in Top Metropolitan Statistical Areas



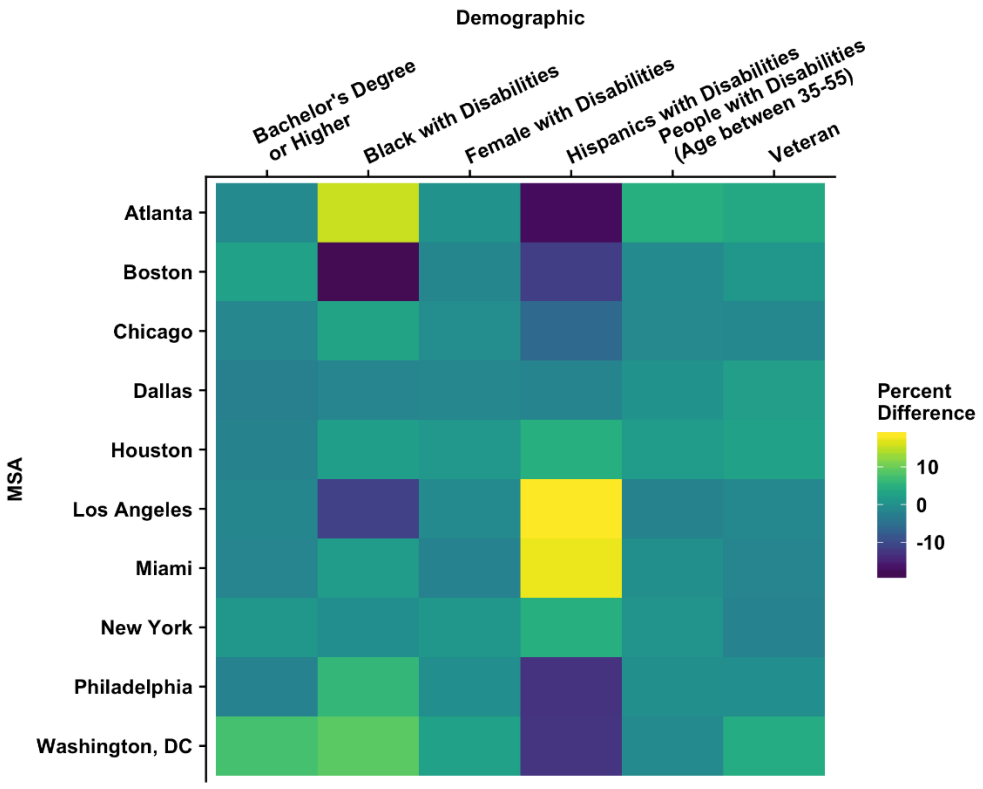
Overall, the 10 MSAs in our sample had lower percentages of people with disabilities than the U.S. average except for Philadelphia (see Figure 2). Relative to the US average, this heat map shows the percent difference of working age adults with disabilities by disability type and by MSA. The highest percentage values have a "hot" color (yellow), while the lower percent values are given a "cold" color (dark purple). Figure 2 shows that Boston has 1.5% fewer individuals with ambulatory disabilities than the U.S. average while Philadelphia has 0.5% more individuals with independent living disabilities than U.S. average. Overall, the map shows that Boston, Los Angeles, and Washington, DC, have lower percentages of working-age adults with ambulatory impairments than the U.S. average. In contrast, the percentages of working-age people with disabilities overall, particularly people with cognitive, independent living, and self-care disabilities, is higher in Philadelphia than the national average.

Figure 2. Heat Map of Difference Between Various Types of Disabilities in Top 10 MSAs and U.S. Average



Other demographic data help us to better understand people with disabilities in these cities. The heat map in Figure 3 provides demographic differences between MSAs and U.S. average for working-age adults. These demographics include educational attainment, gender, race/ethnicity, age, and veteran status. For working-age adults with disabilities, Boston was second only to Washington, DC, for the percentage of people with a bachelor's degree or higher. In addition, Boston has lower percentages of Black residents with disabilities than the U.S. average, while Atlanta has lower percentages of Hispanic residents with disabilities (followed by Boston, Philadelphia, and Washington, DC) than the U.S. average. In contrast, Los Angeles and Miami have larger percentages of Hispanic residents with disabilities and Atlanta has higher percentages of Black residents with disabilities than the U.S. average. These demographic differences reflect the populations that live in these MSAs and have implications for consumer goods and services in those areas.

Figure 3. Demographic Differences Between MSAs and the U.S. Average



Note. This figure shows MSA statistics minus the U.S. average.

Examining the population within these MSAs is the first step helping business and other community leaders understand who the people with disabilities in their areas are, and what types of services and products they may need based on their disability type and other demographic characteristics. The next step requires that we examine this population based on income, employment, and spending to learn more about their purchasing power.

How to Measure Purchasing Power

Market researchers and businesses often estimate the disposable and discretionary income of a group to assess market size, growth, and population characteristics. To understand the purchasing power of the market segment of consumers with disabilities as a whole, we need to know how much money they have available after taxes and after their basic day-to-day needs are met.

Disposable income is the amount of money available to a household for both saving and spending after taxes. This value is the net income after taxes or the take-home pay that an individual can choose to spend or save. For example, people may use their disposable income to pay bills, the rent or mortgage, and other essential living costs. They also can use this money to build their savings. (In some cases, asset limits may pose an additional barrier to savings because of policies affecting those receiving supplemental supports.)

Discretionary income is the amount of money remaining after the deduction of taxes, other mandatory charges, and expenditures on necessary items. It is the money that people spend on nonessential goods or services. This spending goes beyond basic needs (adequate food, housing, health care, assistive devices,

and clothing) to include a variety of luxury items that may include dining out, travel, entertainment, and other nonessential products or services.

In this study, we examined the disposable and discretionary income of people with disabilities compared with those without disabilities within the top 10 MSAs in the United States. These data are presented to better understand the spending abilities of people with disabilities and to identify the potential market for business and industry.

Data and Method

To calculate disposable and discretionary income, we used data from the 2017 American Community Survey (ACS), a national survey conducted annually by the U.S. Census Bureau, to provide demographic, economic, and housing data on a nationally representative sample of U.S. residents. ACS is frequently used in research and policy design as it helps researchers, state and community leaders, and businesses understand the changes taking place in their states and communities. It is the premier source for detailed population and housing information about our nation. Every year, the Census Bureau contacts over 3.5 million households across the country to participate in the ACS. Beginning in 2008, ACS developed and deployed six disability measures categorized by an individual's functional and activity limitations. We used this data to calculate disposable and discretionary income by disability type and by state.

We followed the method created by the U.S. Census Bureau and the Consumer Research Center of the Conference Board (Linden, Gordon, and Coder, 1989) and calculated disposable and discretionary income using equations (1) and (2). We used 2017 Consumer Expenditure Survey (CE) administered by the U.S. Bureau of Labor Statistics (BLS) to find out how much people spend in each MSA. A more detailed discussion of the construction of the analytical sample and calculation step is presented in Appendix A.

$$Disposable\ income = Total\ income - Federal\ and\ state\ income\ taxes \quad (1)$$

$$Discretionary\ income = Disposable\ income - (1 + 30\%) \times Average\ expenditure \quad (2)$$

Key Findings

Findings from the data analysis provided answers to the size of the disability market in terms of the disposable and discretionary income of people with disabilities (see Table 1) in large MSAs and how those incomes vary by disability type and other demographic data.

How much disposable income do people with disabilities represent?

Nationally, people with disabilities have more than $504 billion in disposable income (see Table 1). However, the amount of disposable income represented by people with disabilities varies by MSA, driven mostly by population size. For example, Boston has a relatively smaller market size in terms of aggregated disposable income, around $7 billion, due to its smaller population size than larger MSAs such as New York ($30.1 billion) and Los Angeles ($15.7 billion). Washington, DC, which shows the highest levels of educational attainment of bachelor's degree or higher, also shows the highest average salary before taxes at $40,915, with an aggregate disposable income of $11.8 billion for people with disabilities.

Table 1. Summary Disposable Income Statistics

	Atlanta	Boston	Chicago	Dallas	Houston	Los Angeles	Miami	New York	Philadelphia	Washington, DC	United States
People With Disabilities											
Mean income before tax	$29,145	$ 33,259	$28,801	$ 30,119	$ 31,044	$ 28,282	$ 24,083	$ 33,715	$ 27,806	$40,915	$26,906
Mean income after tax (disposable income)	$25,541	$ 28,824	$25,189	$27,628	$28,414	$25,671	$ 22,497	$29,364	$24,640	$34,995	$22,857
Aggregate (billion)	**$ 9.7**	**$6.9**	**$12.6**	**$11.3**	**$10.2**	**$15.7**	**$6.8**	**$30.1**	**$10.0**	**$11.8**	**$504**
People With Disabilities and Discretionary Income											
Proportion with discretionary income	3.8%	3.0%	3.9%	4.1%	4.1%	2.8%	2.7%	4.7%	2.7%	4.8%	3.3%
Mean income before tax	$182,591	$206,021	$155,275	$153,529	$182,327	$178,899	$167,570	$202,488	$185,052	$197,600	$183,631
Total tax	$41,195	$58,237	$41,125	$ 33,058	$41,121	$53,728	$36,989	$59,222	$50,786	$59,963	$47,734
Mean income after tax (disposable income)	$141,396	$147,784	$114,150	$120,471	$141,206	$125,171	$130,581	$143,266	$134,266	$137,637	$135,897
30% more than average expenditure	$ 80,925	$96,611	$78,757	$82,169	$87,495	$87,062	$77,931	$88,117	$85,067	$103,897	$76,285
Discretionary income	$60,471	$51,173	$35,393	$38,302	$53,711	$38,109	$52,650	$55,149	$49,199	$ 33,740	$59,611
Aggregate (billion)	**$0.9**	**$0.4**	**$0.7**	**$0.6**	**$0.8**	**$0.7**	**$0.4**	**$2.6**	**$0.5**	**$0.5**	**$36.5**

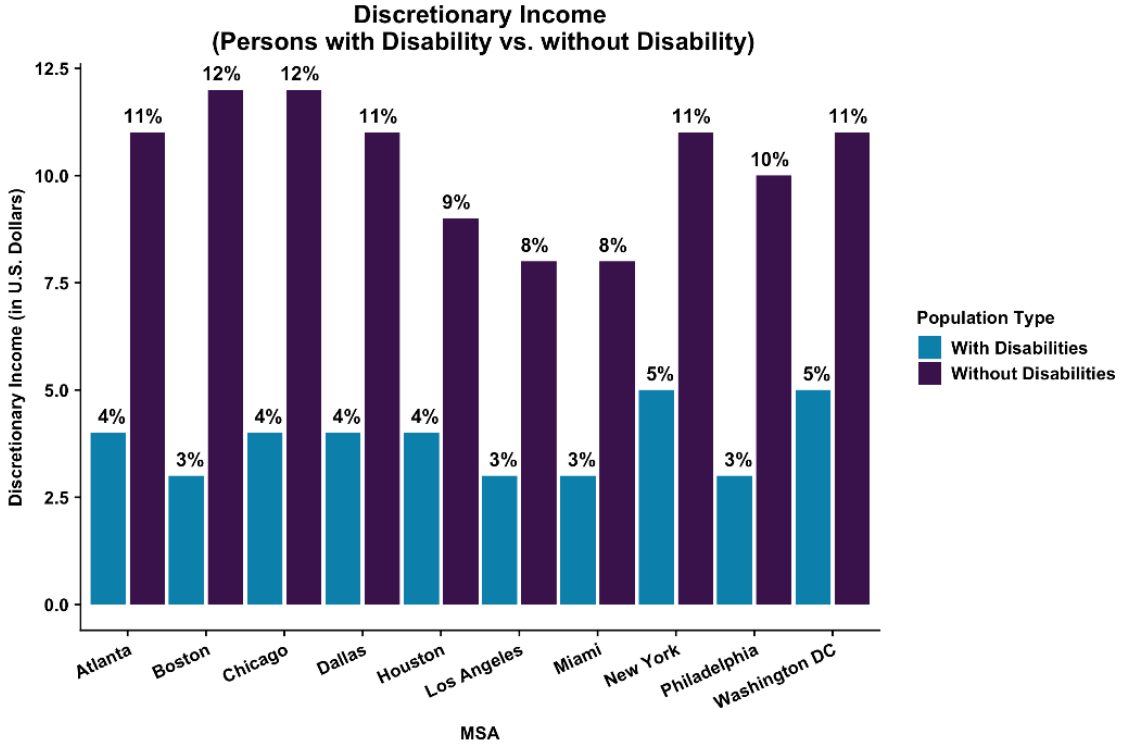
Note. Calculations are based on data retrieved from the U.S. Census Bureau's 2017 ACS and technical methodology discussed in detail in the Appendix A.

How much discretionary income do people with disabilities represent?

Our examination of discretionary income among people with disabilities offers a nuanced view of each MSA and requires consideration of each region independently as well as in comparison. For example, among people with disabilities who have discretionary income, Boston has the highest average salary both before and after taxes (see Table 1). However, compared with other MSAs, Boston has a lower percentage overall of people with disabilities who have discretionary income. On the other hand, Washington, DC, has the highest percentage overall of people with disabilities with discretionary income. Like Boston, people with disabilities in Washington, DC, have relatively high average salaries, but Washington, DC, has the lowest average discretionary income. In other words, Washington, DC, residents with disabilities are more likely to have discretionary income, but that income is on average lower than other MSAs, despite the overall higher salaries. Both Boston and Washington, DC, have high tax rates and expenditure levels, which reflect the high cost of living in those areas and which lead to low aggregated amounts of discretionary income—$0.4 billion for Boston and $0.6 billion for Washington, DC.

Another way to look at the data is to compare the percentages of people with and without disabilities with discretionary income by MSA, as shown in Figure 4. Boston has the highest percentage of people *without* disabilities who have discretionary income, yet one of the lowest percentages of people *with* disabilities who have discretionary income. For other MSAs, the gaps are smaller yet remain significant for the employment, earnings, and financial security of residents with disabilities. There is not a single MSA that has closed the income gap between people with and without disabilities.

Figure 4. Percentage of Working-Age People With and Without Disabilities With Discretionary Income in Top MSAs



How does disposable and discretionary income vary by disability type?

Disposable and discretionary income gaps vary by disability type, with some populations having greater disposable income and others having greater discretionary income. Across MSAs, we found that people with ambulatory disabilities have the highest amount of disposable income, followed by people with cognitive disabilities (see Figure 5).

However, this pattern is slightly different for discretionary income as shown in Figure 6. People with hearing and ambulatory disabilities, respectively, have the highest amount of discretionary income. Notably, people with self-care disabilities have the lowest levels of both disposable and discretionary income.

Figure 5. Market Size in Terms of Aggregated Disposable Income by Disability Type and MSA

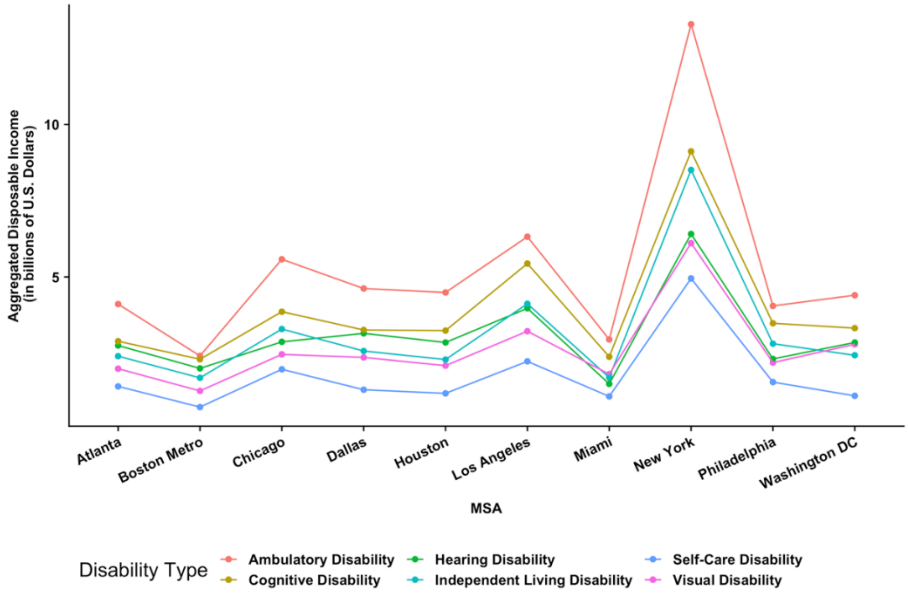
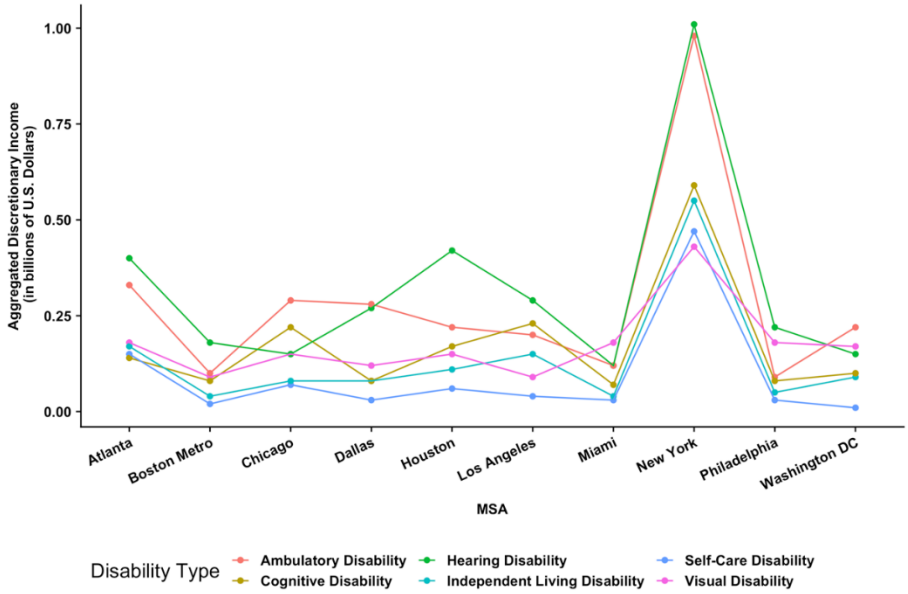


Figure 6. Market Size in Terms of Aggregated Discretionary Income by Disability Type and MSA



Boston's Disability Market

People with disabilities in Boston have low rates of employment and wages compared with their nondisabled peers. In fact, Boston has the highest gaps in employment and wages in the country compared to similar sized metropolitan areas (Yin et al., 2020, in press).

Nonetheless, people with disabilities in Boston have nearly $7 billion in disposable income. By comparison, the Boston city budget is $3.1 billion, which is less than half of the disposable income held by people with disabilities (City of Boston Finance Commission, 2018). This dollar value equates to the spending of people with disabilities in and around Boston to create savings and checking accounts, pay for a car or bus pass or taxi fare, purchase groceries and clothes, and acquire other basic necessities. Much of this spending occurs in-person—at the bank, the grocery store, or the mall. These physical locations and in-person services must be accessible to consumers with a variety of disabilities, including people with ambulatory difficulties, people with visual or hearing impairments, and people with cognitive difficulties. Transportation to and from stores, banks, and doctors' offices must be accessible to people with mobility and sensory difficulties as well. When spending occurs online, e-tail vendors must create accessible websites so that people with disabilities can easily find and purchase what they want.

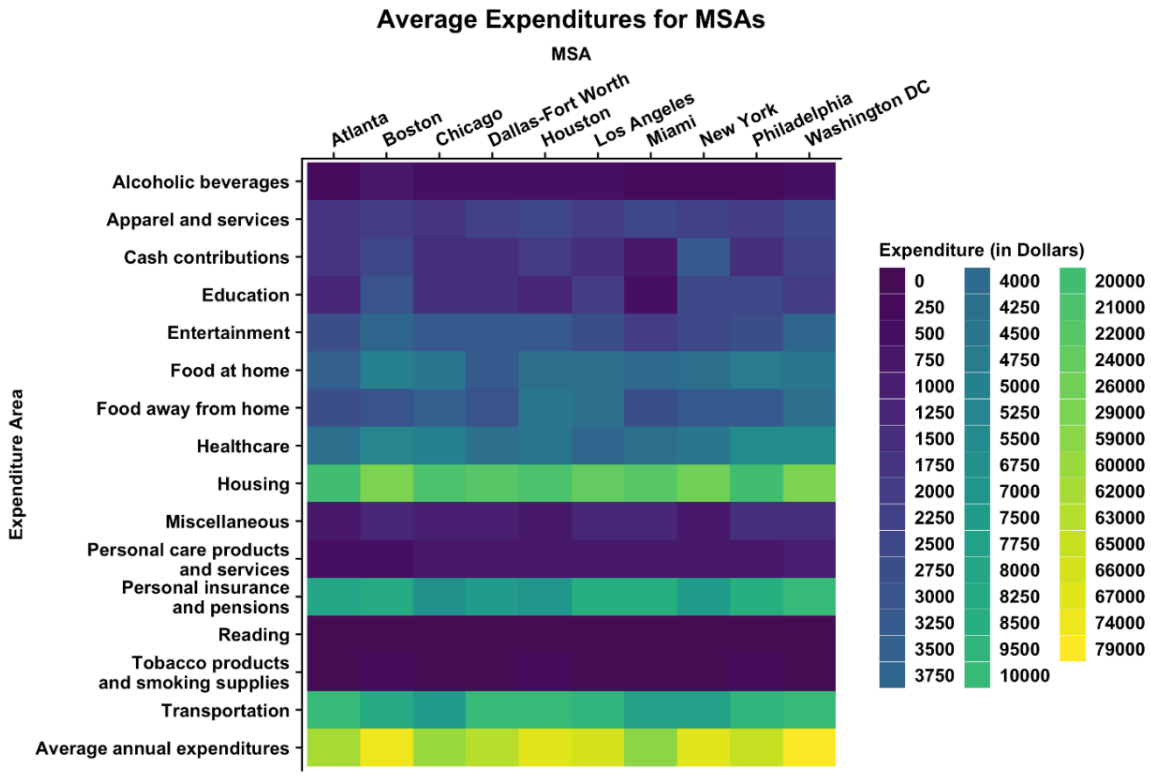
In addition, people with disabilities in Boston have about $400 million in discretionary income to pay for goods and services beyond their basic necessities. They travel by car, rail, or plane; they eat at restaurants, bars, and public venues; they attend sporting events, movies, theme parks, and concerts; and they vote, visit the doctor, and attend community events. This spending is particularly valuable in a state like Massachusetts where domestic and international traveler spending in 2017 generated $3.6 billion in tax revenue for federal, state, and local governments (Massachusetts Office of Travel and Tourism, 2018). These travelers include people with disabilities who travel within the state and international travelers with disabilities who visit Boston for its rich history and culture. Thoughtful and inclusive customer service and accessible travel and tourism are just a couple of ways that Boston area businesses can build their market loyalty among people with disabilities, their family members, and the general public.

Other characteristics of people with disabilities in Boston include the educational differences and cost of living that affect residents and require closer attention from area businesses. For example, the population of working-age people with disabilities (ages 15–64) in Boston is more likely to have a bachelor's degree or higher than other MSAs and the U.S. average, except Washington, DC. Boston also has lower percentages of people with disabilities and higher average incomes than some MSAs and the U.S average. Yet, the discretionary income for these residents is the lowest compared with other large MSAs and the U.S. average, which may be due to factors including unemployment or underemployment of people with disabilities, the high cost of living in Boston relative to most other cities, and the higher expenditures as described below. Boston businesses will want to consider the impact of hiring and promoting employees with disabilities, and how the lack of input and involvement of these employees at all levels of management and leadership may impact economic success and market share.

Also, Boston (in addition to New York City and Washington, DC) has one of the highest tax and expenditure levels compared with other MSAs as shown in Figure 7. The heat map shows expenditure differences between MSAs and the U.S. average by key expenditure areas. In Boston, we find that people spend more of their income on housing, purchasing food for home cooking, education, and entertainment than in New York and Washington, DC. Although we cannot plot expenditure patterns for people with and without disabilities

due to data limitations, these spending patterns are important for businesses when designing their competitive strategies. Expenditures are defined as what people spend across all areas, while cost of living is defined as the amount of money needed to sustain a certain standard of living by affording basic expenses such as housing, food, taxes, and healthcare. For example, the average expenditure level is higher in Boston than New York, yet the cost of living in New York is about 15% higher than Boson in 2019.

Figure 7. Expenditure Differences Between MSAs and the U.S. Average by Expenditure Areas



Note. This figure shows MSA statistics minus the U.S. average.

What is next for Boston and other MSAs?

Boston is the focus of this paper due to its economic, cultural, educational, and historical significance. However, all MSAs combined present a powerful disability market that offers potential to businesses that provide needed services and to improve those services through inclusive business practices. Universal design in products and physical spaces, for instance, can help to support accessibility, which broadens the market of people with disabilities and those without by providing access to all. For example, improving transportation accessibility will foster spending in local businesses, and ensuring virtual accessibility will increase opportunities to shop locally online.

The data presented in this paper provide a strong case for inclusive hiring practices as well. People with disabilities represent a robust customer base, and customer loyalty will increase with the perception that the employer prioritizes all aspects of diversity both in their employees and in their products and services. Boston and other local economies will thrive when the public and private sectors recognize and harness the purchasing power and influence of the disability community.

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Appendix A. Detailed Data and Method

To calculate disposable and discretionary income, we used data from the 2017 American Community Survey (ACS), a national survey conducted annually by the U.S. Census Bureau to provide demographic, economic, and housing data on a nationally representative sample of U.S. residents. Using ACS disability definitions, we concentrated on six types of disabilities categorized by an individual's functional and activity limitations,[1] and we calculated disposable and discretionary income by disability type and by state.

1. **Cognitive difficulty—**Individuals with cognitive difficulties (such as learning, remembering, concentrating, or making decisions) because of a physical, mental, or emotional condition.
2. **Ambulatory difficulty—**Individuals with a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying.
3. **Vision difficulty—**Individuals with a long-lasting condition of blindness, deafness, or a severe vision impairment.
4. **Hearing difficulty—**Individuals who are deaf or who have a long-lasting condition of hearing impairment.
5. **Independent living difficulty—**Individuals with difficulty doing errands alone, such as visiting a doctor's office or shopping because of a physical, mental, or emotional problem.
6. **Self-care difficulty—**Individuals with any physical or mental health condition that has lasted at least 6 months and makes it difficult for them to take care of their own personal needs, such as bathing, dressing, or getting around inside the home. This excludes such temporary health conditions as broken bones or pregnancies.

We also limited our sample to individuals between the ages of 15 and 64 to focus on the working-age population for two reasons:

1. Disability policies have shifted from a primary focus on income support to policies that encourage labor-market participation. As more individuals with disabilities transition into employment, we desire to understand the size of this growing market and its increased spending power.
2. Individuals age 65 and older have different expenditure patterns from those in their prime working age. Those ages 65 and above have been shown to have an expenditure that is significantly lower than those younger than ages 65 (Yin et al., 2018).

We followed the method created by the U.S. Census Bureau and the Consumer Research Center of the Conference Board (Linden et al., 1989) and calculated the *disposable* and *discretionary income* using formulas (1) and (2).

$$Disposable\ income = Total\ income - Federal\ and\ state\ income\ taxes \quad (1)$$

$$Discretionary\ income = Disposable\ income - (1 + 30\%) \times Average\ expenditure \quad (2)$$

[1] The current ACS covers six disability types (and their Public Use Microdata Sample 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 [any one] of the six disability types are considered to have a disability" (U.S. Census Bureau, 2017, para. 12).

1. Using the ACS variable for total income, we first estimated the average income for each disability group at the state and national levels.
2. Second, we calculated federal and state income taxes using the 2017 income tax schedule[2] for each disability group at the state and national levels. We deducted both the federal and state tax from the average income amount to define as the average disposable income.
3. Then, we used data reported on the Bureau of Labor Statistics' Consumer Expenditure Survey to determine average expenditures by each MSA in 2016–17.[3] Next, we escalated this average expenditure by 30%, since a person needs to have disposable income at least 30% higher than average expenditures to be considered to have discretionary income.
4. After calculating the value—*(1 + 30%) × Average expenditure*—we estimated the federal and state taxes that would be owed for this amount because a person needs an income greater than *(1 + 30%) × Average expenditure* after taxes. Therefore, a person was tagged as having discretionary income if their income was greater than *(1 + 30%) × Average expenditure* plus taxes.

For example, the average annual income for working-age adults with disabilities in Boston in 2017 was $33,259. The estimated total tax for this income was $4,434. Hence, the average disposable income of working-age adults with disabilities is $28,824. Next, to determine who has discretionary income, we started with the average annual expenditure in Boston, which was $74,316, and we calculated the value *(1 + 30%) × Average expenditure* [$74,316 + (1.3 × $74,316) = $96,611] as an initial step to determine who has discretionary income. Then, we estimated the federal and state taxes owed for the value $96,611, which was $21,994. Hence, any person in Boston who has an income greater than $118,605 (that is, $96,611 + $21,994) is considered to have a discretionary income.

To calculate aggregated disposable income by MSA and disability type, we multiplied the average disposable income by the number of working adults who have that disability type. To calculate aggregated discretionary income, we first calculated the discretionary income amount for those who have discretionary income. The discretionary income amount was defined as the difference between the mean income for those who have discretionary income minus the estimate federal and state taxes minus the value *(1 + 30%) × Average expenditure* for that MSA. For example, for Boston, having a discretionary income is defined as having an income greater $118,605. For those with a disability in Boston, the prevalence of discretionary income is 3%. Within this 3%, the mean income in 2017 was $206,020. After reducing the estimated owed taxes on $206,020 and $96,611, the amount of discretionary income left would be $51,173. Finally, the aggregated discretionary income is calculated by multiplying the total number of working-age adults by the prevalence of the disability type by the prevalence of those with discretionary income by the discretionary income amount.

[2] We estimated the average federal and state income taxes using rates for single individuals obtained from http://taxfoundation.org/data. We included both standard and personal exemptions, where applicable, to calculate state income taxes.
[3] MSA area tables that report the average expenditure by MSA level are provided by the Bureau of Labor Statistics. Tables for various MSAs are available at https://www.bls.gov/cex/tables.htm#MSA.

Appendix B. MSA Tables

Table B1. Percentage of People With a Disability, by MSA and Disability Type

MSA	Percentage With Disabilities	Vision	Hearing	Self-Care	Ambulatory Difficulty	Cognitive	Independent Living
Atlanta	8.80%	1.90%	1.70%	1.50%	4.10%	3.70%	3.10%
Boston	7.90%	1.20%	1.50%	1.10%	3.00%	3.50%	2.70%
Chicago	7.80%	1.50%	1.30%	1.50%	3.60%	3.20%	2.90%
Dallas	8.00%	1.60%	1.60%	1.40%	3.60%	3.40%	2.70%
Houston	7.70%	1.60%	1.40%	1.30%	3.80%	3.30%	2.70%
Los Angeles	6.70%	1.30%	1.20%	1.40%	3.00%	2.90%	2.50%
Miami	7.40%	1.60%	1.20%	1.40%	3.50%	3.50%	2.70%
New York	7.50%	1.50%	1.10%	1.50%	3.60%	3.10%	2.90%
Philadelphia	9.90%	1.90%	1.60%	2.30%	4.70%	4.80%	4.30%
Washington, DC	7.30%	1.50%	1.40%	1.00%	3.00%	3.00%	2.40%
United States	**10.30%**	**1.90%**	**1.90%**	**1.80%**	**4.80%**	**4.60%**	**3.70%**

Table B2. Aggregated Disposable Income in Billions, by Disability Status and MSA

MSA	Without Disability	With Disability	Vision	Hearing	Self-Care	Ambulatory Difficulty	Cognitive	Independent Living
Atlanta	$170.43	$9.73	$1.99	$ 2.75	$1.41	$4.11	$2.89	$2.40
Boston	$150.29	$6.94	$1.26	$2.00	$0.73	$2.41	$2.30	$1.69
Chicago	$270.49	$12.59	$2.46	$2.87	$1.97	$5.58	$3.86	$3.29
Dallas	$216.89	$11.27	$2.36	$3.15	$1.30	$4.62	$3.26	$2.57
Houston	$203.75	$10.20	$2.09	$2.85	$1.18	$4.49	$3.24	$2.29
Los Angeles	$378.72	$15.67	$3.22	$3.97	$2.23	$6.32	$5.44	$4.12
Miami	$155.31	$6.83	$1.81	$1.49	$1.08	$2.95	$2.38	$1.70
New York	$640.65	$30.15	$6.11	$6.41	$4.95	$13.29	$9.12	$8.51
Philadelphia	$173.21	$9.97	$2.19	$2.31	$1.55	$4.05	$3.48	$2.81
Washington, DC	$229.89	$11.83	$2.79	$2.85	$1.10	$4.40	$3.32	$2.43
United States	**$7,683.02**	**$504.18**	**$99.44**	**$132.88**	**$67.28**	**$209.67**	**$169.41**	**$127.26**

Table B3. Percentage of People With Discretionary Income, by MSA and Disability Type

MSA	Percentage Without Disabilities	Percentage With Disabilities	Vision	Hearing	Self-Care	Ambulatory Difficulty	Cognitive	Independent Living
Atlanta	10.7%	3.8%	3.8%	8.8%	1.8%	2.6%	1.4%	1.0%
Boston	12.0%	3.0%	3.8%	7.0%	1.5%	2.7%	1.9%	1.4%
Chicago	11.6%	3.9%	4.1%	8.3%	2.6%	3.1%	1.6%	1.5%
Dallas	10.5%	4.1%	5.9%	8.0%	1.2%	3.2%	1.5%	1.2%
Houston	8.9%	4.1%	4.2%	8.5%	1.4%	3.1%	2.2%	1.4%
Los Angeles	8.4%	2.8%	2.2%	6.0%	0.6%	2.1%	2.0%	1.0%
Miami	8.1%	2.7%	3.5%	4.7%	2.1%	2.2%	1.2%	1.1%
New York	11.5%	4.7%	4.6%	9.9%	3.1%	4.0%	2.7%	2.4%
Philadelphia	10.4%	2.7%	3.7%	6.0%	0.8%	1.6%	1.2%	0.6%
Washington, DC	10.7%	4.8%	6.5%	8.4%	1.3%	4.1%	1.9%	1.6%
United States	**9.8%**	**3.3%**	**3.5%**	**6.8%**	**1.5%**	**2.4%**	**1.5%**	**1.2%**

Table B4. Aggregated Discretionary Income in Billions, by Disability Status and MSA

MSA	Without Disability	With Disability	Vision	Hearing	Self-Care	Ambulatory Difficulty	Cognitive	Independent Living
Atlanta	$23.60	$0.87	$0.18	$0.40	$0.15	$0.33	$0.14	$0.17
Boston	$19.02	$0.37	$0.09	$0.18	$0.02	$0.10	$0.08	$0.04
Chicago	$36.29	$0.69	$0.15	$0.15	$0.07	$0.29	$0.22	$0.08
Dallas	$26.65	$0.65	$0.12	$0.27	$0.03	$0.28	$0.08	$0.08
Houston	$25.79	$0.79	$0.15	$0.42	$0.06	$0.22	$0.17	$0.11
Los Angeles	$39.19	$0.66	$0.09	$0.29	$0.04	$0.20	$0.23	$0.15
Miami	$19.64	$0.43	$0.18	$0.12	$0.03	$0.12	$0.07	$0.04
New York	$91.83	$2.63	$0.43	$1.01	$0.47	$0.98	$0.59	$0.55
Philadelphia	$21.16	$0.54	$0.18	$0.22	$0.03	$0.09	$0.08	$0.05
Washington, DC	$21.23	$0.55	$0.17	$0.15	$0.01	$0.22	$0.10	$0.09
United States	**$1,139.41**	**$36.46**	**$7.24**	**$15.52**	**$3.54**	**$11.96**	**$7.80**	**$5.42**