



2019 ANNUAL REPORT

State of Early Education and Care in Boston:

Supply, Demand, Affordability
and Quality

About the Boston Opportunity Agenda

The Boston Opportunity Agenda is a public/private partnership that works to increase dramatically the pace and scale of change in education for all children in Boston. Our focus is on students who experience the least access to successful pathways and to the education necessary for upward economic mobility, civic engagement and lifelong learning for themselves and their families.

About the Boston Birth to Eight Collaborative

Convened by the Boston Opportunity Agenda and the United Way of Massachusetts Bay and Merrimack Valley, the Birth to Eight Collaborative includes parents and more than 200 representatives from early education centers, family-based child care, nonprofit organizations, schools, public health researchers, philanthropy and medical institutions. Together we have identified three core outcomes that drive our work: Outcome 1: All children ages birth to three experience a healthy start and healthy development. Outcome 2: Early education and care providers build curious, confident and involved three- to five-year-old learners. Outcome 3: Students ages five to eight are ready for sustained success.

Acknowledgements

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FOREWORD



Dear friends:

The work of moving our city forward happens with the dedication of people from all walks of life. The vision I set out when I was first elected mayor would be impossible to achieve without the contribution of so many who have lent their skills and expertise to making this vision a reality. Partnerships make those contributions even more powerful. And the Boston Opportunity Agenda is one example of a partnership that is bringing Boston to new heights.

The Boston Opportunity Agenda is a public-private partnership dedicated to improving the lives of Boston's children and youth, with a focus on equity. I believe that if all families have access to upward economic mobility, civic engagement, and lifelong learning, the youngest among us will have a stronger chance to succeed. I am proud that multiple City departments are directly involved in this partnership, working in collaboration with community organizations, anchor institutions, local funders, and, of course, parents and families. After all, we all share the same goals.

There is no better investment than providing our children with access to supportive environments and learning opportunities from an early age. In my administration, we have laid a strong foundation by offering more high-quality pre-kindergarten seats than ever before. We are well on our way toward fulfilling our commitment of ensuring that every 4-year-old in Boston has access to high-quality pre-K. But we know that there is more work to do. This report can serve as a guide for the work ahead.

Everyone has a role to play in ensuring that we provide world-class, high-quality, accessible, affordable, and equitable early care and education to all of Boston's youngest residents. I encourage early educators, parents, advocates, and policy makers to use the data presented here as a starting point for conversations, and more importantly, as a roadmap for action.

Sincerely,

A handwritten signature in blue ink, appearing to read "Martin J. Walsh". The signature is fluid and cursive, with a long horizontal stroke at the end.

Martin J. Walsh
Mayor of Boston

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INTRODUCTION



Over the past three years, the Boston Birth to Eight Collaborative has convened more than 200 individuals and organizations from across the early childhood field—center and family-based providers, pediatricians, public health researchers, hospitals, family engagement organizations, and parents—to ensure all children are ready for sustained success. During the process of creating a citywide plan for young children to achieve this goal, we discovered that there were many questions that could not be answered and supported with the data available: How many infants and toddlers are there in each Boston neighborhood? How many children in Boston’s neighborhoods have access to child care? Is the available child care high quality? Is the child care affordable? Are children screened for developmental delays and connected to resources? Are parents satisfied with their early education and care options? The inaugural *State of Early Education and Care* report is designed to begin answering these questions. It brings together for the first time data from the Boston Public Schools, Boston Public Health Commission, Massachusetts Department of Early Education and Care (EEC), U.S. Census Bureau, City of Boston Census and the United Way DRIVE Initiative. We expect this annual publication to improve in data quality and amplify in impact over time.

This report focuses on supply, demand and gaps in child-care seats (availability, quality and affordability). It also explores disparities based on child and family characteristics, including child/family demographics, and maternal/adult and child health. Interspersed with the data are quotes from the City of Boston Census regarding parents/guardians’ first-hand experiences with child care in the city. This report’s estimates set a baseline understanding to help focus and track investments and policy changes for early childhood.

Our data work is evolving. In many cases, the data needed to answer the questions that initiated our report were unavailable or incomplete. For example, our original intent to report

on the early childhood workforce—education level, training, salary and benefits—was limited by the reliability of such information provided through self-report. EEC is addressing such issues through the new StrongStart system to improve data collection and management, including the information needed to explore workforce issues. Efforts like StrongStart will improve our understanding of the early education and care ecosystem. Moving forward, we will also need to prioritize new and, in some cases, enhanced data collections.

Most importantly, this report is only able to demonstrate *potential* demand for child care in the City of Boston and its neighborhoods. This means we know the gap between the number of children and the number of seats. We do not know what this gap means for parents and how it affects their choices. We also don’t know whether the gap means different things across different neighborhoods. How many parents actually want child care for their children? How many who stay at home would return to the workforce if high quality, affordable care was an option? These are questions that we will continue to pursue over the coming years. As we learn more, our understanding of the gaps in early education and care availability in the City of Boston may change, including how these gaps may impact the city’s economy.

This first *State of Early Education and Care in Boston* aims to provide policy makers, philanthropists, and early education and care practitioners with information about gaps and opportunities around supply and demand of early education and care in the city. It will guide the Boston Opportunity Agenda and Birth to Eight Collaborative’s citywide plan and will help to identify where additional child-care slots are needed, areas for quality improvement, and what other family supports are necessary.

MAIN FINDINGS

The estimates presented here reflect the highest possible gap between a potential demand and current supply, based on the number of seats necessary to provide formal early education and care to every child 0–5 years old in Boston, using 2017 data. This analysis could not consider information about the real number of families who are seeking care for children, since no dataset with this information exists in the city. The actual gap between the number of families who desire formal care and the availability of care is likely smaller than these estimates. We also did not take into account the commuter effect, meaning that some Boston residents may look for care in other cities where they work and residents of other cities may seek care in programs near their workplace. Access gaps were computed based on the difference between the number of children and the number of available seats. Additionally, we assessed the gap in affordability of seats using federal guidelines.

The estimated potential gaps were not particularly driven by race/ethnicity, geographical location or median income. While income plays a role (the lower the median income in a neighborhood, the higher the gaps), when looking at income brackets, all 15 ZIP Code–defined neighborhoods have families experiencing problems with child care. This means that the issues of access and quality of early education and care seats is a city-wide problem in Boston.

- Boston had up to a 35 percent potential child-care access gap for children in the 0- to 5-year-old age group in 2017. The city had approximately 40,948 children five years or younger.⁽¹⁾ We identified 932 licensed providers offering 26,478 seats for that age group.⁽²⁾ The potential gap varied across neighborhoods, ranging from 4.6 percent in Central Boston to 54.5 percent in Charlestown. Among 15 ZIP Code-defined neighborhoods, Back Bay/Beacon Hill was the only one that had a surplus of available slots.

- The potential access gap in 2017 for children in the 0–2 year age group was around 74 percent. This gap drives the overall gap in the 0–5 year age group. All 15 ZIP Code–defined neighborhoods experienced a potential access gap at this age group, varying from 40 percent in Back Bay/Beacon Hill to 89 percent in East Boston.
- Seven out of 15 ZIP Code–defined neighborhoods had a potential access gap for children in the 3–5 age group. This gap ranged from 4.5 percent in the South End to 26 percent in Charlestown. Nonetheless, at the city level a gap for this age group did not exist (6.2% surplus): There are 21,061 seats for a population of 19,828 children 3–5 years old.
- Federal guidelines recommend spending no more than 10 percent of income on child care. By that standard, the average cost of infant care is unaffordable for all neighborhoods in Boston. The impact of the cost is more severe in low- and middle-income areas of the city.

There are several challenges in how we assess and monitor program quality. Most notably, participation in the Quality Rating and Improvement System (QRIS) or other accreditation used as a marker of quality is voluntary for programs not accepting state subsidies. Programs that do not seek a quality accreditation may actually have quality seats. On the other hand, in quality accredited programs not all individual classrooms may necessarily meet the quality standards. For the purposes of this report, quality is defined as seats available from providers that had at least one of the quality indicators: QRIS rating of 3 or 4; accreditation from the National Association for the Education of Young Children (NAEYC); or accreditation from other associations focused

on quality in early education and care. There is more work to be done in defining and assessing quality. The implementation of new QRIS standards and assessment system by EEC in the near future will help, but further policy work should be done on incentives for participation. The findings below should be viewed in this context. Similarly to access gaps, quality gaps were computed based on the difference between number of children and number of quality seats.

- The potential quality gap for children 0–5 years at the city level was estimated at 74 percent. All 15 ZIP Code–defined neighborhoods had a quality gap. We identified 10,606 seats in programs that meet documented benchmarks of quality across Boston, which represented just 40 percent of all 26,478 available seats. Back Bay/ Beacon Hill had the lowest gap (30%) and Roslindale the highest (91%).
- The potential quality gap for children in the 0–2 age group was 93 percent. The lowest potential gap was observed in Fenway/Kenmore (73%) and the highest in Roslindale and West Roxbury (100%).
- The potential quality gap was also high for the 3–5 age group, estimated to be 54 percent. Back Bay/Beacon Hill was the only neighborhood that did not have a quality gap for this age group (- 89%). Among the other 14 ZIP Code–defined neighborhoods, the gap varied from 2 percent in Central Boston to 84 percent in Hyde Park.

There is more work to be done in defining and assessing quality. The implementation of new QRIS standards and assessment system by EEC in the near future will help, but further policy work should be done on incentives for participation.

OVERVIEW OF METHODS AND DEFINITIONS

Before entering kindergarten, young children may be cared for by their own parents/guardians or have nonparental care arrangements. These include being cared for by a relative (relative care) or by someone not related to them (nonrelative care) in a home setting or center (center-based care). Nonrelative care may involve payment: nanny, au-pair, family-based child care, etc. The focus of this report is on nonrelative care provided by licensed educators in family-based and center-based care and preschool teachers in public and non-public schools. We did not look at other types of care due to the lack of available data sources. This is an area for further exploration in subsequent reports.

The majority of our data refers to year 2017. All analyses are presented at the neighborhood level. Data analysis details and limitations with our assumptions are discussed in depth in Appendix I (Methods). Throughout the report we included quotes about child-care challenges faced by Boston's residents with children 5 years and younger.⁽³⁾

The **supply analysis** included seats for children 0–5 years of age in licensed early education and care programs (family-based and center-based care) and seats in schools (public: Boston Public Schools and charter; and non-public: independent and parochial). Seats in family-based care are not broken down by age groups as are seats in center-based programs. Thus, all analyses looking into the two subgroups were adjusted for family-based seats, adding 1/3 of these seats to the total of seats for 0- to 2-year-olds and the other 2/3 of family-based seats to the total of seats for 3- to 5-year-olds.

High quality seats were defined as seats available from providers that had at least one of the quality indicators: QRIS rating of 3 or 4; accreditation from National Association for the Education of Young Children (NAEYC); or accreditation from other associations focused on quality in early education and care. Readers should be aware that given the limitations of the data available to measure these indicators, we may be over- or underestimating quality seats.

Potential demand was computed as the total number of children 0–5 years of age living in Boston, which is an approximation for real demand since not all families may seek a formal child-care arrangement for their children. Results from a 2016 national study on early childhood program participation⁽⁴⁾ indicated that nearly 60 percent of children birth to five were under the regular care of at least one nonparent once a week. Nonetheless, families often report difficulty securing such care. The same study identified primary reasons for that difficulty in the Northeast of the United States: Cost came first (33%), followed by lack of open seats for new children (31%) and quality (25%). For children less than 1 year, lack of open slots was the main reason (36%), followed by cost (31%) and quality (20%).

While we acknowledge that not all parents/guardians necessarily want to use licensed child care and school-based programs for their young children, parents may use other options not by true choice, but due to difficulties with affordability, access and quality.

Findings from Boston's first citywide inquiry about parent's arrangements and challenges for child care indicate that 86 percent of respondents listed "not affordable" as a challenge, while 45 percent said child care was either "too far or too difficult to find."⁽³⁾ Thus, while the analysis presented here could not take into account parents' preferences (such data did not exist at the time of our analysis) and only represents *potential* unmet needs, looking at access and quality gaps (assuming that all families in Boston would choose licensed and school-based slots for their children 0–5 years, if available) offers a baseline scenario to discuss child-care needs and challenges of Boston's families with young children.

We provided some child and family characteristics (demographics and health/developmental indicators) to describe our potential demand. All children have a mix of protective and risk factors in their environments. We highlighted the infant and toddler population in Boston exposed to a few risk factors that may increase their likelihood of entering kindergarten unprepared. These children have the greatest need for high quality child care to give them the best opportunity for starting kindergarten prepared.

Finally, using potential demand, supply and quality information, we calculated **potential access gap** (share of the young population that could not access a seat, if desired) and **quality gap** (share of the young population that could not have a quality seat, if desired). The table below (**TABLE I**) gives an overview of all data sources utilized in this report.

TABLE I
Data Sources of Estimation of Child-Care Supply and Demand

SUPPLY		DEMAND	
Agency	Data Type	Agency	Data Type
Massachusetts Department of Early Education and Care (EEC), 2017	Licensed providers (capacity - supply); QRIS (quality)	Boston Planning and Development Agency (BPDA) - American Community Survey 2013-17	Children and families demographics; population estimates by ZIP Code (demand)
Massachusetts Department of Elementary and Secondary Education (DESE), 2017-18	Public and non-public schools (enrollment - supply)	Boston Public Health Commission - Several Sources (2012–2017)	Maternal/adult and child health characteristics
National Association for the Education of Young Children (NAEYC), 2019	NAEYC accreditation (quality)	Mayor's Office of Women's Advancement - City of Boston's Childcare Census, 2019	Families' current childcare arrangements and challenges
National Association for Family Child Care (NAFCC), 2019	NAFCC accreditation (quality)	United Way of Massachusetts Bay and Merrimack Valley - DRIVE Initiative, 2018	Developmental screening outcomes (ASQ)
Non-Public Schools websites, 2019 (accreditations): Association of Independent Schools in New England (AISNE); New England Association of Schools and Colleges (NEASC); National Association of Independent Schools (NAIS); Commission of Independent Schools (CIS)	AISNE, NEASC, NAIS, and CIS accreditation (quality)		

QRIS = Quality Rating and Improvement System
ASQ = Ages and Stages Questionnaire
DRIVE = Data and Resources Investing in Vital Early Education

CONTEXT



Although this report focuses on the analyses of numerical data to elucidate the state of supply and demand of early education and care in Boston, we want to make clear that the provisions for early care are not simply a matter of economic transactions. What is more difficult to quantify, but is the keystone of this field, are the relationships created with those who love our children; help our children grow, enable parents to work and businesses to have a stable workforce, and ensure a thriving city.⁽⁵⁾

Economic Impact

Whether or not you are a parent, access to high quality education and care affects you. When families can access high quality child care, parents can work consistently. When parents can work consistently, employers have a stable workforce. This structure of supports translates into real economic growth in the United States, an estimated \$99.3 billion coming from two sources: the child-care industry (\$47.2 billion) and the spillover effect in supporting other industries (\$52.1 billion).⁽⁶⁾ Thus, recent surveys assessing the regional impact of a lack of consistent, high quality child care on the workforce found substantial economic implications. As an example, a study in Georgia found \$1.753 billion in losses due to reduced economic activity and \$105.2 million in losses of state income tax revenue.⁽⁷⁾ These fiscal impacts were based on the survey results of parents' challenges. Parents had to quit secondary and postsecondary education, work training programs and/or their jobs. Those who remained in programs often missed training sessions, classes and work days. Parents were unable to move from part-time to full-time work or accept promotions, and were even fired due to unstable child care. While both parents were affected, the impact was harsher on women than on men. Mothers were disproportionately left making work decisions based on the availability and affordability of child-care options, such as taking unpaid leave, not entering or returning to the workforce, and leaving their children in low quality care. Studies in Maryland and Indiana have found similar disruptions, leading to lost

economic impact and tax revenue for each state.^(8; 9; 10; 11) Access to high quality child care for a stable workforce ensures robust economic growth for any city.

Beyond reversing current economic losses, high quality child-care matters for our future. When young children are in high quality programs, they are more likely to succeed in school, graduate, have a job, own a home, maintain relationships, have better health outcomes and ensure a better start for the next generation. Dr. James Heckman, a Nobel Laureate economist at the University of Chicago, has calculated the economic returns to society for investment in children's early development. For every \$1 invested in high quality early childhood programs, society gains \$13 back over time, due to lower dropout rates, less poverty and crime, and better health. Researchers have studied children who had been enrolled in randomized control studies comparing children enrolled in high quality early education programs with similar peers who were not enrolled.⁽¹²⁾ Following these children into middle age, significant differences were found between the groups. For the children who had been enrolled in high quality early childhood programs, there were lower dropout rates and lower rates of poverty, crime, risky behaviors and poor health, including cardiac and metabolic health indicators. Intergenerational impacts were found with the next generation, where the children of participants had higher rates of employment, fewer criminal incidents and school suspensions, and better health.^(12; 13)

Child Protective Factors

How can this be? How can children's early experiences set the trajectory for their lives and our collective future? Based on the latest research, we now understand that our capacities—to think critically, maintain attention, regulate our emotions, employ social skills and strengthen memory to learn—develop in stages, beginning before birth. A child's earliest experiences shape the brain's foundation. As the child grows, a loving,

stable and enriching environment promotes healthy brain development at each stage.

Similarly, less stable relationships and environments with greater risks can shape the brain to be prepared for a life of adversity and unpredictability, which can make it more difficult to learn in a traditional classroom, build healthy relationships, and succeed. Babies are sensitive to stress, and studies have measured elevated stress hormones in 6-month-old infants. Early exposure to chronic stress can disrupt development, making it more difficult to support the complex brain networks needed for attention, memory and self-regulation. Early exposure to chronic stress can also lead to physiological changes in the development of inflammation and metabolic processes, increasing the chances of chronic illnesses.^(14; 15; 16)

High quality early child care matters for all children across the city. But for children in families struggling with poverty and instability, high quality early education and care can mitigate the stressful effects by fostering resilience through strong relationships and the development of social and learning capacities during the critical early years.^(16; 17) Thus, for Boston to remain a prosperous city well into the future, understanding the state of early childhood and care for all of Boston's children is where we begin.

Public Innovation to Date

A step in the right direction has been the advent of Universal Pre-Kindergarten (UPK) in Boston. In 2016, under the leadership of Mayor Martin Walsh, an advisory committee of stakeholders from multiple sectors conducted a needs assessment for 4-year-olds across the city.⁽¹⁸⁾ What they found, and what is supported by our findings, is that quality is the major challenge of pre-K programming, rather than supply. Following this work, Boston has moved to create an infrastructure to support high quality pre-K programming, launching an innovative public-private mixed delivery system, family engagement and continual research to ensure evidence-

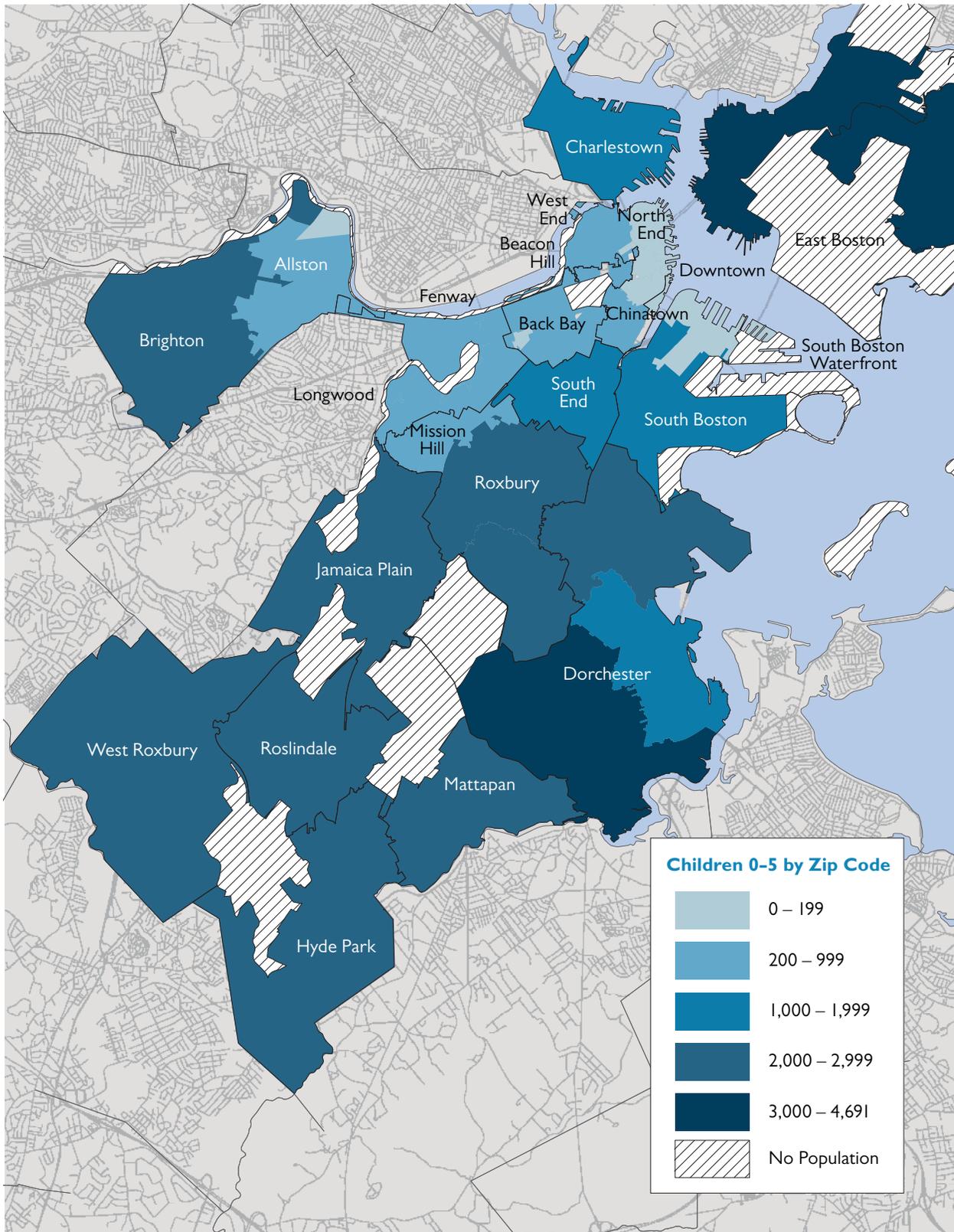
When young children are in high quality programs, they are more likely to succeed in school, have a job, own a home, maintain relationships, have better health outcomes...

based decision-making. The city has invested substantial public resources to support these efforts.

Additionally, the Mayor's Office of Women's Advancement and the Mayor's Economic Mobility Lab launched a pilot program in October aimed at improving the availability of infant and toddler early education and care. The Childcare Entrepreneur Fund pilot targets family-based child care and provides public investment and technical assistance to new or existing family child care owners at risk of closure. The aim is to provide the entrepreneurial skills required for existing businesses to succeed and for new businesses to grow.

These steps are promising and tackle important needs for affordable, high quality pre-K and the supply of care for infants and toddlers. Yet, the findings of this report suggest system-wide investments are needed to improve the early education and care supply and quality infrastructure to ensure access and affordability for all families in need of child care in Boston.

MAP I
Number of Children Ages 0-5 by ZIP Code



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis

DEMAND

M

AP I (page 12) sets the stage for our report, by illustrating the potential need for high quality early education and care across all of Boston’s neighborhoods. As of 2017, the City of Boston had approximately 40,848 children aged 0–5 years old, with approximately half of those being 0–2 years old. In this report, we will consider this the potential demand for high quality early education and care. Dorchester, East Boston and Roxbury have the highest **potential demand** for early

education and care. These neighborhoods are followed by substantial numbers in Mattapan, Hyde Park, Brighton, Jamaica Plain, Roslindale and West Roxbury. See Table A-3 in Appendix 2 for the numerical distribution of children by neighborhood.

While Map I represents the total number of children in the 0–5 age group in Boston, **FIGURE I** compares this total with the children who have only working parents (all parents

FIGURE I
Total Population of Children 0-5 vs. Those with All Parents in the Labor Force, by Neighborhood (Boston, 2017)



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis, 2019; Boston Opportunity Agenda Analysis, 2019.
 NOTE: For all figures, Central Boston is defined on page 42 in the Methods section.

“Very difficult to find any child care. Child-care centers are very expensive and have waitlists. Limited hours also make it difficult with work schedules. Boston is very unaffordable with housing and child care in particular. Many young families end up leaving, which is not good for the long-term economy of the city.”

—City Census respondent, Roslindale

in the labor force), by neighborhood. The true demand is presumed somewhere between the potential demand of the total population of children aged 0–5 years and the subset of that group who don't have a parent at home.

A more accurate estimation of demand is challenging to quantify without knowing parents' preferences and whether they had a true choice in choosing to work or stay home or if their decisions were motivated by limited supply, quality and affordability of child care. The Mayor's Office of Women's Advancement and Mayor's Economic Mobility Lab efforts to include preference and practice questions regarding early education and care in the city census in 2019 is providing valuable information about parents' challenges and frustrations with child care. Preliminary data analysis found that of all respondents, 86 percent said early education and care was not affordable, 31 percent said it was difficult to find, 24 percent said quality was a challenge and 14 percent said a parent currently stays home but wants to work.⁽³⁾ The inclusion of these questions provides essential information regarding how the current early education and care system is actually impacting the daily lives of children, their parents and the city's labor force.

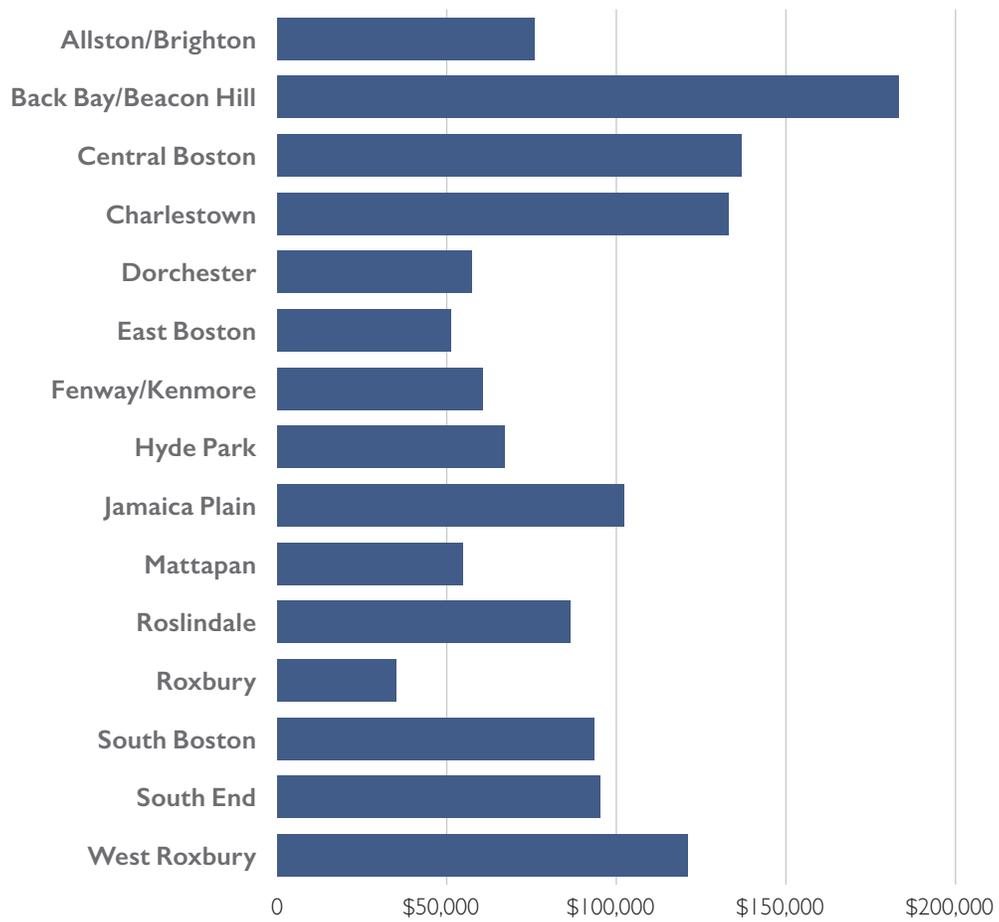
When we refer to the potential demand for early education and care, we are seeking to address the disparate opportunities for working parents and their children. Boston's academic, health and technology institutions excel with distinction, providing a wealth of opportunities to many. But the current economic prosperity is clouded by growing income inequality, a declining middle class and persistent poverty.⁽¹⁹⁾ Although Boston does not have the highest inequality in the U.S., it ranks near the top. As of 2016, household incomes at the 95th

percentile were \$244,239 greater than household incomes at the 20th percentile—or more than 13 times as much. This income disparity translates into real differences in the daily lives of families living in the same city.⁽²⁰⁾ This difference dictates where families can live and whether they can access and afford high quality early education and care, impacting their ability to maintain a stable household, contribute to the workforce and economy, and provide their child with the best learning opportunities.

FIGURE 2 depicts the median annual family income by neighborhood. Although the potential demand is spread across all Boston neighborhoods, the disparities in median family income suggest substantial differences in the child-care options affordable to parents. This disparity impacts a substantial percentage of Boston's children, given that there is a higher potential demand in the neighborhoods with lower median family incomes.

Boston's geographically entrenched inequities necessitate a deeper dive, at the neighborhood level, to understand differences in opportunities for our youngest children. Today, without access to high quality early education and care and subsequent high quality schools with family engagement for all of Boston's children, the neighborhood in which a child is born is a primary indicator of his or her future achievement, economic mobility, quality of life and overall success.^(21; 22)

FIGURE 2
Median Family Income by Neighborhood (Boston, 2017)



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis, 2019.

SUPPLY

A geography of the supply of early education and care options informs us of the difference in opportunities available to families in specific neighborhoods. Options for care can include the formal settings of licensed providers, and informal settings of relatives and unlicensed care providers. Based on available data, we were only able to estimate the number of formal care providers, including center-based and family-based child care options, as well as school enrollment in pre-kindergarten.

Information regarding supply was provided by Massachusetts Department of Early Education and Care (EEC) and sourced from the Massachusetts Department of Elementary and Secondary Education (DESE). EEC is the lead agency for all early education and care services in the Commonwealth. It serves

as the statewide early childhood regulating body, tasked with setting standards for provider professional development, safety, curriculum and care. Additionally, EEC provides online resources for families seeking activities and care for their young children.

Age Group: 0–5 Years

We identified 932 licensed center-based, family-based and school-based providers, with a total capacity of 26,478 seats for children aged birth to five years old in Boston. School-based providers include public and non-public schools, accounting for 38 percent of the preschool and pre-K seats offered. Family-based and center-based care providers account for 62 percent of available seats. **TABLE 2** gives an overview of the distribution of seats for children 0–5 years by provider type.

TABLE 2
Early Education and Care Seats by Provider Type (Boston, 2017-18)

Provider Type	Number of Providers	Number of Seats (%)
CHILDCARE PROVIDERS (0 to 5 years)	822	16,528 (62.4%)
Center-Based	191	11,644 (70.5%)
Head Start	29	2,628 (22.6%)
Non-Head Start	162	9,016 (77.4%)
Family-Based	631	4,884 (29.5%)
SCHOOL PROVIDERS (3 to 5 years)	110	9,950 (37.6%)
Public School	85	8,095 (81.4%)
BPS School	76	7,040 (87%)
Charter School	9	1,055 (13%)
Non-Public School	25	1,855 (18.6%)
Independent School	6	336 (18.1%)
Nonprofit Organization	3	8 (0.4%)
Parochial School	16	1,511 (81.5%)
BOSTON	932	26,478

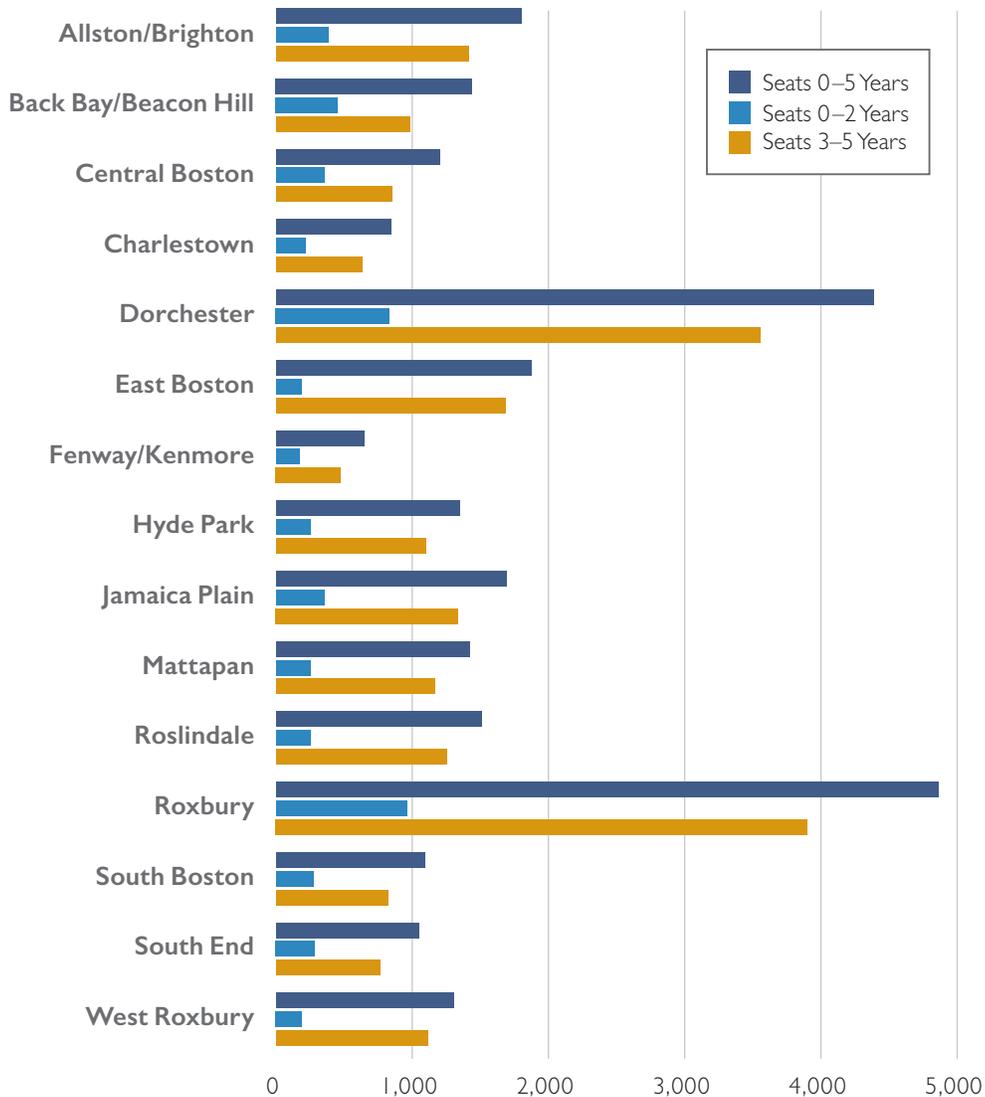
Source: MA Department of Early Education and Care & MA Department of Elementary and Secondary Education, 2019; Boston Opportunity Agenda Analysis.

FIGURE 3 below illustrates the distribution of seats across neighborhoods for children 0–5 years. The distribution of seats is uneven, with the largest shares of seats in Roxbury, Dorchester and East Boston. To better understand variations in supply and whether the differing needs of infants and toddlers—compared with preschool and pre-K age children—are being met, we disaggregated the supply by age group and neighborhood.

Age Groups: 0–2 and 3–5 Years

Disaggregating the total supply of seats by age group and neighborhoods reveals disparities in the availability of seats by age and neighborhood. See *Table A-4 in Appendix 2 for a detailed distribution of seats by age groups and provider types.* Below we present highlights of the findings. As seen in **FIGURE 3**, all neighborhoods consistently have fewer seats for children 0–2 years than for 3–5 years.

FIGURE 3
Distribution of Early Education and Care Seats by Neighborhood and Age Group (Boston, 2017)



Source: MA Department of Early Education and Care & MA Department of Elementary and Secondary Education, 2019; Boston Opportunity Agenda Analysis, 2019.

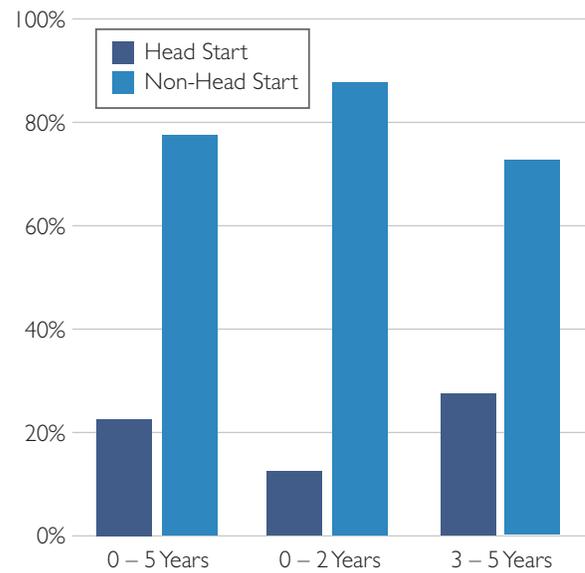
Formal early education and care seats for children 0–2 years are only available through child-care providers, whereas the greater supply of seats for preschool and pre-K includes schools. Although the potential demand was evenly divided between the two age groups, just 20 percent of all seats were available for children 0–2 years of age. Center-based providers offered 70 percent of these seats. Among center-based programs, Early Head Start represented close to 12 percent of these seats.

Formal early education and care seats for children 3–5 years of age are offered by center-based, family-based and school providers. As of 2017, seats available for children 3–5 years of age represented nearly 80 percent of all 0–5 years of age seats. Of these, Head Start seats represented close to 28 percent of all seats offered by center-based providers.

Head Start

Head Start programs provide free early education and care options for income eligible families. This federally funded program offers child care, in addition to nutrition and mental health services. Early Head Start serves children in the 0–2 age group and Head Start serves children in the 3–5 age group.

FIGURE 4
Seats by Head Start Status and Age Group, Center-Based Programs (Boston, 2017)



Source: MA EEC, 2017; Boston Opportunity Agenda Analysis, 2019.

QUALITY

Age Group: 0–5 Years

High quality is a crucial aspect of early education and care programs. Children who attend higher quality early care programs have better cognitive and social outcomes related to kindergarten readiness. Children who had high quality early education and care had higher math and reading performance through adolescence, and higher earnings in adulthood. High quality early care programs can help children from low-income households by providing consistent care and enrichment to gain the knowledge and skills that support cognitive development and school readiness.⁽²³⁾

Early education and care quality can be assessed according to structural elements and process elements. Higher structural quality is indicated by smaller child group sizes and teacher to child ratios, as well as teachers with higher levels of education. High process quality refers to responsive relationships between teachers and children, relationships among children, and children's daily experiences. These features are related, where smaller classroom sizes and teacher to child ratios facilitate enrichment, peer social interactions and stronger relationships for each child.^(24; 25)

In Massachusetts, EEC sets the standards for quality through licensing requirements for ratios, classroom size and levels of teacher education and training. EEC uses the Quality Rating and Improvement System (QRIS) to evaluate the quality of programs.⁽²⁶⁾ The QRIS system is based on achieving progressively higher standards of quality, from level 1 through level 4 (the highest). Additionally, professional organizations, such as the National Association for the Education of Young Children (NAEYC) and the National Association of Family Child Care (NAFCC), set quality standards for receiving and maintaining professional accreditation.^(27; 28) Yet the cost and time required to be licensed by EEC or receive and maintain professional accreditation can be prohibitive.

To address these barriers and improve licensing quality standards, EEC is implementing a new online system, StrongStart, with an amended QRIS system that removes some of these barriers from the licensing process.⁽²⁹⁾ Interim changes are currently in place.

For the purpose of discerning quality for this report, data from EEC is based on the QRIS system as of 2017. High quality seats are defined as seats available from providers with at least one of the quality indicators: a QRIS rating level of 3 or 4; accreditation from NAEYC or other professional association. (See *Appendix 1 – Methods for more details.*)

Based on the definition above, of the total supply available for children 0–5 years, 40 percent were considered high quality seats. Centers provided nearly half of the quality seats (48%), followed by public schools (39%). Of the school-based providers, the Boston Public Schools represented 97 percent of the quality seats. Less than 1 percent of documented quality seats in Boston were located in family-based programs, despite the fact that they offered 18 percent of all 0–5 seats in the city. It is important to note that family-based programs are less likely (due to their organizational structure and relative revenue) to have the means to pursue more cumbersome certifications of quality.

Age Groups: 0–2 and 3–5 Years

We found disparities in quality seats offered by age groups. Of all the quality seats available, only 14 percent were designated for children 0–2 years. Center-based programs offered nearly all of the quality seats (99%) for infants and toddlers. Public schools offered the highest share of quality seats for children 3–5 years (45%), followed by center-based programs (40%). (See *Table A-5 in Appendix 2 for further details on the distribution of quality seats by provider type for the two subgroups.*)

“The waitlists are insane to get your child into a daycare. I was four months pregnant when I started looking and had to put in non-refundable deposits to multiple places in hopes of securing a position... Daycares are two to three times the cost of my mortgage. Both my husband and I work and while we make decent money we still struggle to afford child care. We don’t have the option of family or one of us staying home. It’s hard to fathom paying over \$5K a month (plus we can’t afford that) to have two kids in daycare, so having a second child isn’t even in the cards for us at the moment...”

—City Census respondent, East Boston

GAPS

ACCESS GAP

Age Group: 0–5 Years

In 2017, if all Boston children between the ages of 0–5 had attempted to enroll, 35 percent or 14,370 children would not have been able to access a seat. Of Boston neighborhoods, this gap was greatest in Dorchester, East Boston, West Roxbury and Charlestown, where approximately half of the children would not have had a spot. South Boston and the South End had a child-care gap of 44 and 40 percent, respectively. Jamaica Plain, Mattapan, Hyde Park and Allston/Brighton had a gap of approximately 30 percent and Fenway/Kenmore had a 22 percent gap. Roxbury and Central Boston had the lowest gap of 3.9 and 4.6 percent, respectively. The only neighborhood with a surplus of seats (36%) was Back Bay/Beacon Hill.

Age Groups: 0–2 and 3–5 Years

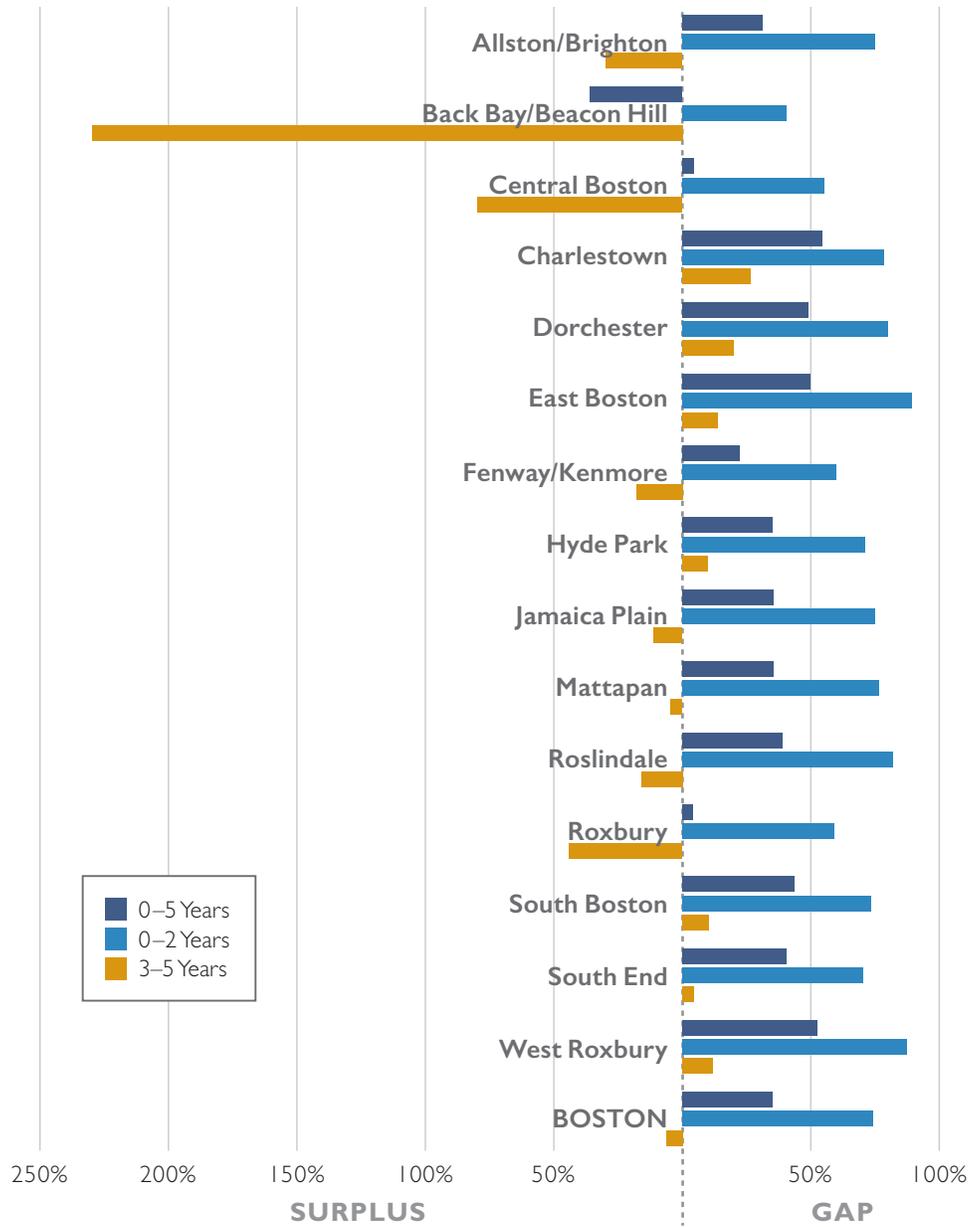
This potential access gap appears to be driven by the 0–2 age group. Looking only at that age group, 74 percent of children would not have a seat in a child-care program if all children attempted to enroll. All 15 neighborhoods had gaps for this

age group. East Boston, West Roxbury, Roslindale, Dorchester, Charlestown and Mattapan had gaps between 77 and 89 percent. Central Boston, Roxbury, Fenway/Kenmore, South End, Hyde Park, South Boston, Allston/Brighton and Jamaica Plain had gaps ranging from 55 to 75 percent. Back Bay/Beacon Hill had the lowest gap of 40.3 percent.

For the 3–5 year age group, seven of the 15 neighborhoods across the city had a potential access gap ranging from 4.5 to 26 percent (South End, Hyde Park, South Boston, East Boston, Dorchester and Charlestown). Despite some neighborhood level gaps, this age group had a 6.2 percent surplus for seats for all 3- to 5-year-olds across Boston.

There is a need to focus the citywide discussion on children in the 0–2 age group. **FIGURE 5** shows the distribution of the access gap across neighborhoods and by age groups. Back Bay and Central Boston, among other neighborhoods, may offer more seats than there are resident children due to factors such as non-resident parents bringing their children to child-care centers near their workplace. But the affordability of these seats is unknown.

FIGURE 5
Early Education and Care Access Gaps by Neighborhood and Age Group (Boston, 2017)



Source: MA EEC, DESE, 2019; ACS 2013-17, BPDA Research Division Analysis, 2019; Boston Opportunity Agenda Analysis, 2019.

Considering that the first two years of a child’s life are a critical time for the developing brain, the substantial unmet need for licensed formal care at this age leaves the majority of infants and toddlers in Boston vulnerable to the resources available to their parents. With higher incomes, parents may be able to choose not to work, or hire a nanny or au pair. But most parents without relatives to help, where working is a financial necessity, are left to find unlicensed care and/or to cobble together inconsistent care from multiple people.

QUALITY GAP

Although accessing care at all is a challenge, we found a greater gap with the availability of high quality care. Our findings are similar to the findings of the UPK study, but not perfectly aligned, and expand these findings despite the methodological differences. That study did not find a Boston-wide gap for supply of care or pre-K opportunities for 4-year-olds but did recommend a landscape analysis to better understand

neighborhood-level distribution of supply that did not meet local needs. The UPK study did find a gap in the availability of high-quality seats for 4-year-olds across the city.⁽¹⁸⁾

Age Group: 0-5 Years

The overall potential quality gap for 0–5 years was 74 percent in 2017, meaning that only 10,606 children of the 40,848 children in Boston had access to a quality seat, assuming all children attempted to enroll in formal care. We found a quality gap across all Boston neighborhoods for children under 5 years old. Roslindale, West Roxbury and Hyde Park had gaps around 90 percent; South Boston, South End, Allston/Brighton, Charlestown, Dorchester and East Boston’s gaps ranged from 69 to 88 percent. Central Boston, Fenway/Kenmore and Jamaica Plain experienced gaps between 52 and 68 percent. Roxbury and Back Bay/Beacon Hill had the lowest gaps: 30 and 42 percent, respectively.

Age Groups: 0-2 and 3-5 Years

We computed potential quality gaps by subtracting the number of high quality seats from the total population of children in the 0–5 age group (potential demand). Similar to the access gap,

the potential quality gap was mainly driven by a lack of quality seats for children in the 0–2 year age group. Boston does not have high quality seats for potentially 93 percent of infants and toddlers residing in the city. All neighborhoods had a quality gap for this age group.

At 54 percent, over half of 3- to 5-year-olds in Boston do not have high quality early education and care seats available. Only Back Bay/Beacon Hill had sufficient high quality seats for this age group. See **FIGURE 6** (next page) for a detailed distribution of these gaps across neighborhoods, by age groups.

We also looked at the potential quality gap in relation to the number of seats currently available (potential supply). The magnitude of the potential quality gap for the potential supply was reduced for the 0–5 age group and the 0–2 age group, while slightly increased for the 3–5 age group. Nonetheless, the potential quality gap as a function of potential supply remained higher than the potential access gap. See **TABLE 3** (below) for a comparison of quality gaps as a function of demand and as a function of supply in relation to the access gap. These findings corroborate the concern about the availability of high quality seats in early education and care programs across the City of Boston.

TABLE 3
Potential Quality Gaps as a Function of Demand & Supply in Relation to Access Gap in Early Education and Care by Age Group (Boston, 2017)

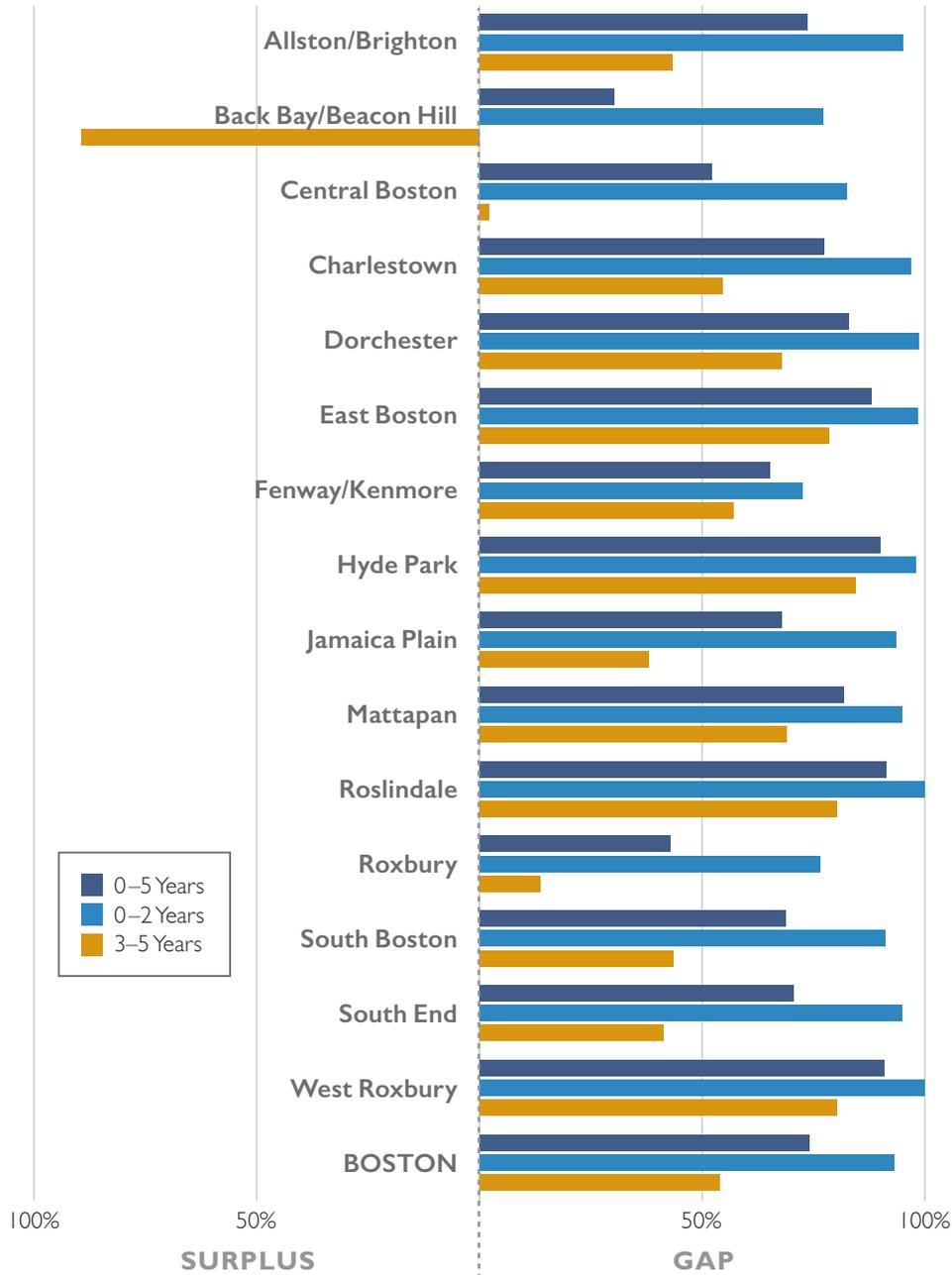
Age Groups	Total Population (Potential Demand)	Total Seats Available (Potential Supply)	Quality Seats Identified	Potential Access Gap (Supply/Demand) ¹	Potential Demand Quality Gap (Quality Seats/Demand) ²	Potential Supply Quality Gap (Quality Seats/Supply) ³
0 - 5 Years	40,848	26,478	10,606	35.2%	74.0%	59.9%
0 - 2 Years	21,020	5,417	1,478	74.2%	93.0%	72.7%
3 - 5 Years	19,828	21,061	9,128	-6.2%	54.0%	56.7%

Source: ACS 2013-17, BPDA Research Division analysis (2019); MA EEC, MA DESE, 2017, Boston Opportunity Agenda Analysis (2019).

1. The Potential Access Gap was computed subtracting the number of seats (supply) from the population (potential demand) and, then dividing it by potential demand.
2. The Demand Quality Gap was computed subtracting the number of quality seats from the potential demand and, then dividing it by potential demand. These are the estimates used in the report.
3. The Supply Quality Gap was computed subtracting the number of quality seats from the potential supply and, then dividing it by potential supply.

FIGURE 6

Share of Early Education and Care Quality Seats by Neighborhood and Age Group (Boston, 2017)



Source: MA EEC, NAEYC, and Non-public schools websites, 2019; ACS 2013-17, BPDA Research Division Analysis, 2019; Boston Opportunity Agenda Analysis, 2019. Quality was defined as having at least a QRIS of 3 or 4 or Accreditation from NAEYC or any other association that assess quality in school programs offering early education and care.

High quality is the most important component of care in early childhood because the elements that constitute quality have been shown to improve cognitive, social and emotional outcomes, increasing the chances of kindergarten readiness. High quality care is particularly necessary to mitigate the effects of poverty, adversity and trauma. For working parents, high

quality means confidence in leaving their child in another's care, knowing it will be consistent and safe. Therefore, when considering the gaps, the gap in the availability in high quality seats is what matters for driving a better workforce and school readiness.

“I started looking for child care when I was four months pregnant. Due to my job, I was eligible for the city daycare center, but it was too expensive. We wound up on a waitlist... but I had to pay a non-refundable \$300 deposit just to get on the list. They didn’t wind up having an opening until my son was almost 11 months old. At that point he was settled in at his current center, so we chose not to move him, which meant losing the \$300. The only opening I could find that would allow me to return to work after my three-month leave was... [out of the city], but is incredibly stressful for me in the evenings. I have to take the Orange Line to the bus and then get in my car and drive to the center. The center closes at 6 and even leaving the office at 4:30 is tricky due to my 45–60 minute T/bus trip and then traffic. Any delays on the train or bus could severely impact my ability to be on time and wind up costing me money and/or result in a 51A being filed with DCF. Unfortunately, my boss is COMPLETELY unsympathetic to the daycare schedule/commuting issues. Something has to change.”

—City Census respondent, Roslindale

AFFORDABILITY GAP

Massachusetts is one of the most expensive states for child care in the country, ranking only behind Washington, D.C. Within Massachusetts, Boston has the highest rates for child care. Paying for one year of infant care is more than the cost of a year of public college in the state. The annual in-state tuition for the University of Massachusetts at Boston is \$13,435, whereas the average cost of infant care is \$19,877. Infant care costs on average \$1,700 per month and does not take into account the quality of care. The cost of infant care can rise to as much as \$2,800 per month, or more than \$33,000 a year in centers providing limited teacher to child ratios and small classroom sizes. The annual cost of care drops at each age. By the time a

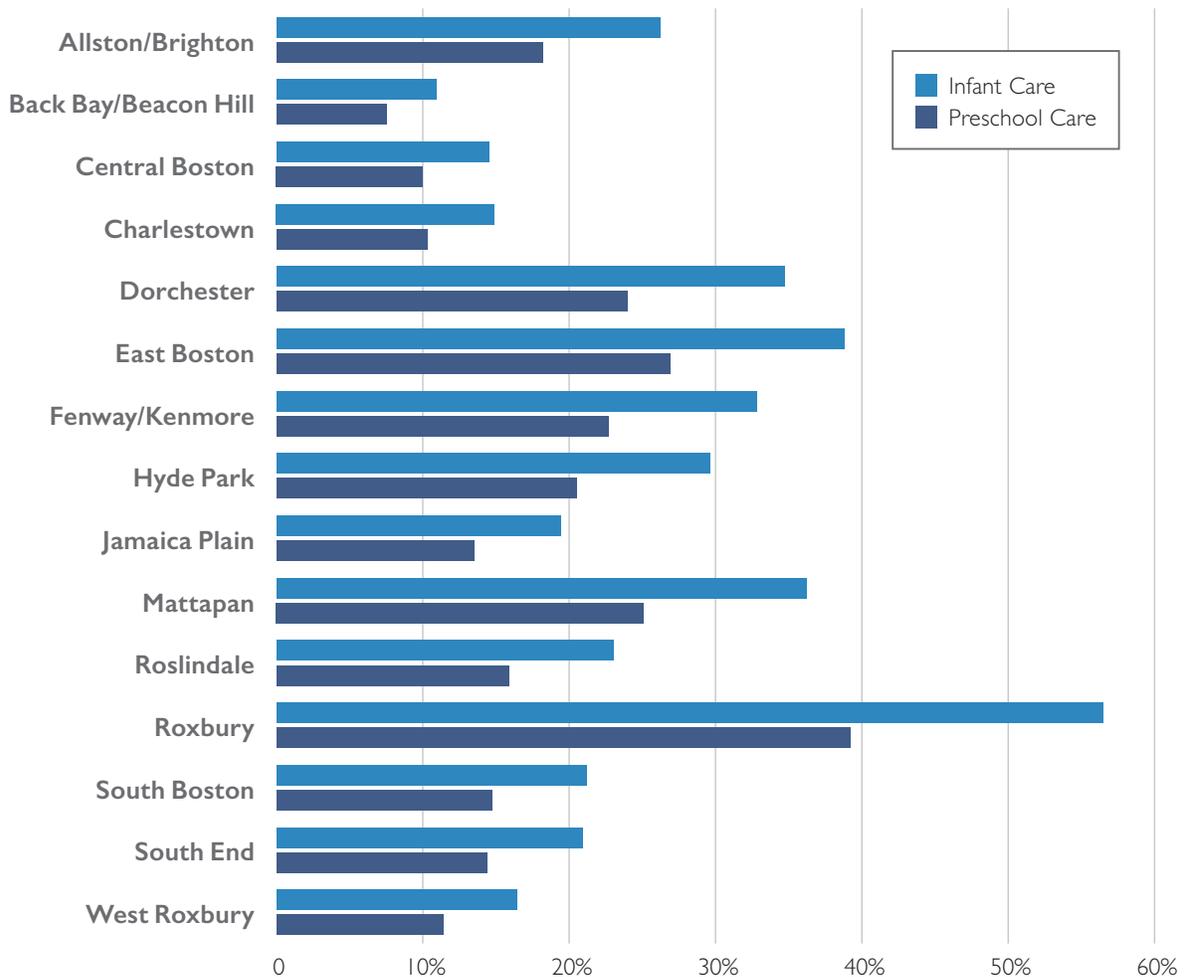
child is in preschool, the average annual cost of care is \$13,771, or nearly \$1,200 per month.⁽³⁰⁾

How does this play out for ordinary families? The median income for the City of Boston is \$69,616. Therefore, the average cost of infant care would account for 28.6 percent of the median income, while preschool care would be 19.8 percent of the median income (see **FIGURE 7**). Based on these averages, the cost of child care for one infant or preschooler for a family in Boston is prohibitive. For Boston families with multiple children, the total cost of child care would equal nearly 50 percent of their annual income.

“Infant daycare is extraordinarily expensive. We pay nearly \$23K annually for care of our 1-year-old daughter, which is half of my net income. And I have a good municipal job that pays well. It is unfathomable how low-income households manage to secure safe, quality care for their children. The child-care crisis perpetuates poverty by 1) limiting ability of parents to increase their earning potential and 2) funneling low-income children to substandard care when they could have access to quality early childhood education.”

—City Census respondent, Jamaica Plain

FIGURE 7
Average Cost of Care as a Percentage of Median Family Income by Neighborhood (Boston, 2017)



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis; Child Care Aware of America; Boston Opportunity Agenda Analysis, 2019.

For all neighborhoods in Boston, the average cost of infant care is unaffordable. The impact of the cost, however, is more severe in low- and middle-income areas of the city. The percentage of income spent on child care in Back Bay/Beacon Hill is just over 10 percent but is over 55 percent of the median family income in Roxbury and nearly 40 percent in East Boston. Preschool is affordable for Back Bay/Beacon Hill, Central Boston and Charlestown, but increases to nearly 40 percent of the median income for Roxbury. In Fenway/Kenmore, infant care makes up 30 percent of median family income and preschool over 20 percent.

Households with single parents are especially vulnerable to limited access and affordability. In most cases, single parents

must work and must find child care. In the neighborhoods with higher potential demand, including Roxbury and Mattapan, nearly half of the households are headed by a single parent, with the majority female headed. Hyde Park, Dorchester and East Boston have between 30 and 40 percent single-parent households. In Hyde Park and Dorchester, a quarter of these are female headed, but in East Boston the majority are single male headed households.⁽¹⁾ See **FIGURE 8**. Households led by single parents typically have a smaller income; therefore the cost of child care is a larger percentage of the total household income.

In Boston, the share of single mothers has been growing over the last three decades and is one of the highest in the nation, at 45 percent.⁽³¹⁾ Single mothers bear the burden of supporting

FIGURE 8
Share of Male and Female Single Parent Headed Households with Children 0-5 Years, by Neighborhood (Boston, 2017)



Source: U.S. Census Bureau, 2013–2017 American Community Survey (B09002), BPDA Research Division Analysis; Boston Opportunity Agenda Analysis, 2019.

“Finding affordable part-time child care is very hard. We were lucky to find a great at-home daycare. But many places we looked were only full time, and I would have been losing money to go back to work. It is also much harder and more expensive to pay for two kids.... I have a master’s degree, and currently bring home \$250.00 every two weeks after paying child care. It’s expensive, and without family to help it can be challenging to afford.”

—City Census respondent, Dorchester

“It was very expensive and difficult to find infant care when they were babies. My maternity leaves were unpaid and limited to 12 weeks. I needed to extend for a week due to baby’s medical need and was terminated from my job. Now, our 4th grader has aged out of the school’s after-school program. Both parents work full time and we do not have family in the area. Very stressful.”

—City Census respondent, Hyde Park

and running a household while also raising a family. The majority are employed, with a median wage of \$17,021. Half of the single mothers in Boston have a high school degree or less, and 9 percent are enrolled in higher degree programs. The cumulative stressors place them and their children at risk of negative health and social sequelae. Nearly 24 percent have been told they have depression, while 23 percent have been told they have high blood pressure by a health professional. Single mothers are also more likely to have diabetes and asthma. Nearly 40 percent do not own a car, making it difficult to transport young children to distant child-care options. In Boston, 44 percent of single mothers live in poverty. These clusters of risks are especially salient in early childhood, when poverty, low maternal education, food and housing insecurity, and maternal depression constitute an environment of adversity, potentially undermining early development. For these children, access to high quality, affordable early education and care is especially critical.

The inequity across Boston’s neighborhoods dictates varying abilities to afford child care. Figure 7 (page 25) illustrates

the percentage of median income needed for infant care or preschool.

Economic inequities exist within neighborhoods as well. The neighborhood median income gives us a proximate estimate of which neighborhoods may have greater challenges for affording care, but can mask needs.

The Department of Health and Human Services (DHHS) sets a standard regarding the affordability of child care, where the annual cost of child care should not exceed 10 percent of household annual income.⁽³²⁾ But it found low-income families who pay 10 percent of their income for child care have to forgo necessities, while upper-income families who pay 10 percent may have to set priorities, but don’t have to forgo food or safe housing. DHHS recognized the relative lack of affordability when it set 7 percent as the affordability threshold for Child Care and Development Fund (CCDF) subsidy recipients in 2016.⁽⁵²⁾ Considering the wide income disparities in Boston, we chose to use the 10 percent threshold to understand the potential variation in affordability across the city.

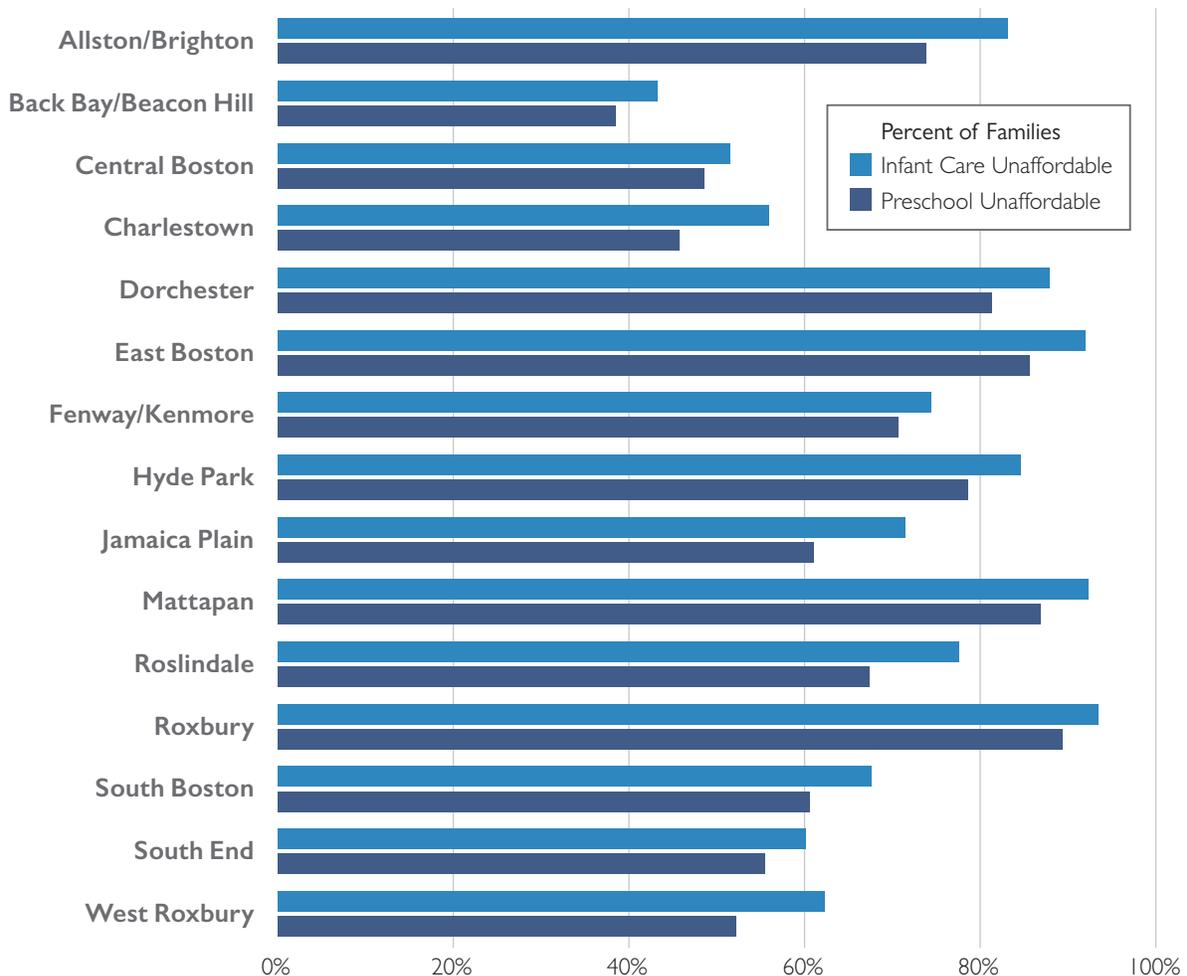
“We spend about 50 percent of our income on rent and daycare. We want to stay in Boston, but if we have a second child, the cost of care goes up to \$3,000 a month for two kids in daycare.”

—City Census respondent, South End

To afford market rate infant care, a family’s annual income would have to be at least \$198,770. The census income bracket closest to this income was a family income of \$150,000–199,999, where for families making \$150,000, infant care would be 13 percent of the income. Thus, in each neighborhood,

we underestimate the number of families who can afford infant care. **FIGURE 9** shows the total number of families below this census income bracket in each neighborhood.

FIGURE 9
Share of Families That Cannot Afford Child Care in Each Neighborhood (Boston, 2017)



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis; Boston Opportunity Agenda Analysis, 2019.

“Before my kids were eligible for K1, finding child care that worked for parents with demanding jobs (surgeon and lawyer) was very difficult. When we had two kids in child care we paid more than one of our entire salaries to cover care that would allow the lawyer in our family to be in the office 8 to 5. The cost of high quality, licensed child care in Boston is outrageous.”

—City Census respondent, Jamaica Plain

SUBSIDIES

One of the ways the state has worked to address the impact of affordability and income inequality on child care is through the provision of vouchers and contracts for early education and care. Subsidies are critical for helping families access child care and supporting child-care providers. Families can fall under multiple categories to receive subsidies, including families receiving Temporary Assistance for Needy Families, those involved with Department of Children and Families, children with special needs, and families meeting the income eligible criteria. The first three groups are automatically enrolled in the subsidy system. The remaining state investment is available for income-eligible families. Income-eligible families are those earning less than 50 percent of the state median income for that family size. There are not enough subsidies remaining, after vulnerable families are enrolled, to meet the needs of income-eligible families in Boston.⁽³³⁾

TABLE 4 displays an estimation of families with children under the age of 5 years who live in households earning less than 50 percent of the state median income (SMI) for the corresponding family size and whose adult householder works more than 30 hours a week. The Census Bureau issues the estimates by five geographic areas.

This is likely a conservative estimate since it does not include families with special needs with incomes between 50 and 85 percent of SMI; families whose adults work 20 to 30 hours per week and may be eligible for part-time care; or families whose adults are enrolled in school. It is also possible this estimate includes children who may not actually be eligible due to being in a family in which there is a non-working adult other than the householder or in a family with assets over \$2,500.

TABLE 4
Children under Age 5 Possibly Eligible for Child-Care Vouchers, by Geography

Allston-Brighton-Fenway	509
Back Bay, Beacon Hill, Charlestown, East Boston, Central & South End	2,348
Dorchester & South Boston	1,319
Mattapan & Roxbury	2,454
Hyde Park, Jamaica Plain, Roslindale & West Roxbury	1,309
Boston	7,939

Source: U.S. Census Bureau, 2013–2017 American Community Survey, IPUMS, BPDA Research Division Analysis.

This estimate suggests nearly 8,000 children are in need of vouchers monthly based on income eligibility. This need is chronically unmet. **FIGURE 10** illustrates the waitlist as of December 2017. Overall waitlists are highest in Dorchester, Hyde Park and Roxbury. Additionally, a greater number of families with infants and young toddlers are on the waitlist, as seen in Figure 10.

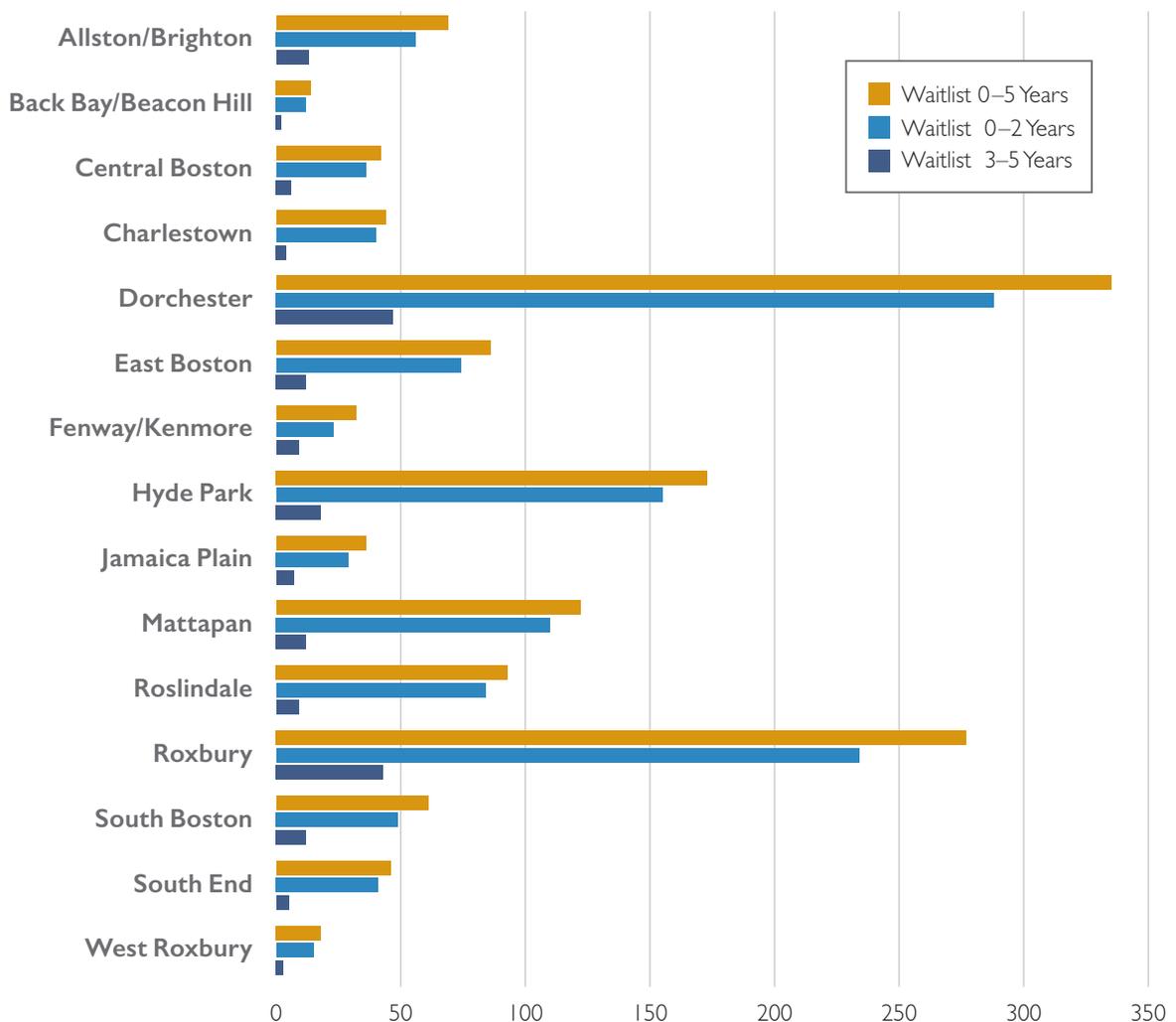
EEC DATA ON SUBSIDIES

EEC distributed subsidies (contracts and vouchers) for approximately 73,699 children throughout 2017 (excluding before/after school and summer programs). This represents an average of 6,142 monthly subsidies.

Roxbury and Dorchester had the highest share of children receiving subsidies (25.7 and 23%, respectively), while West Roxbury and Fenway/Kenmore had the fewest (0.9 and .06%, respectively). **FIGURE 11** shows the distribution of subsidies and costs across neighborhoods.

The state investment in early education and care plays an important role in ensuring that many at-risk families are able to access child care. However, the investment is not large enough to meet the needs of all currently eligible families. Additionally, families fear the “cliff effect,” where additional income from a higher paying job or promotion may make them ineligible for early child-care subsidies, because the

FIGURE 10
Number of Income Eligible Children on Subsidies’ Waitlist by Neighborhood and Age Group (Boston, December 2017)



Data Source: MA Department of Early Education and Care, Dec. 2017; Boston Opportunity Agenda Analysis, 2019.

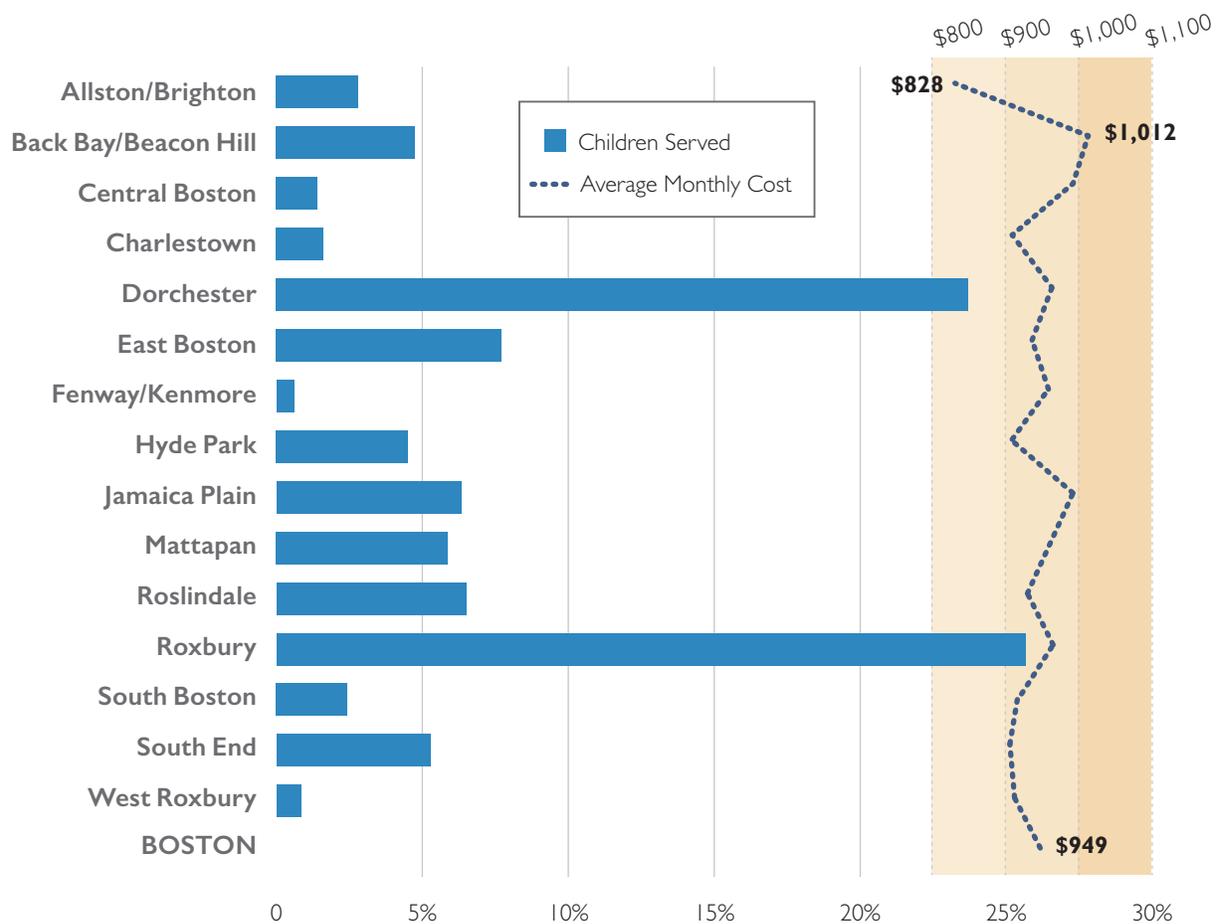
“Child care is a disaster even for the ‘middle class.’ It’s unsustainable. We have no savings, no credit and all my friends are in the same [situation]. Something must be done—some sort of regulation (rent-control) or more investment into city-managed/sponsored child care.”

—City Census respondent, East Boston

additional income would not be enough to afford child care either. Considering the long waitlists for accessing child care and acquiring child-care subsidies, families may forgo higher pay to ensure the essential needs for their family are met.⁽³⁴⁾ Finally, there are still many families who bear

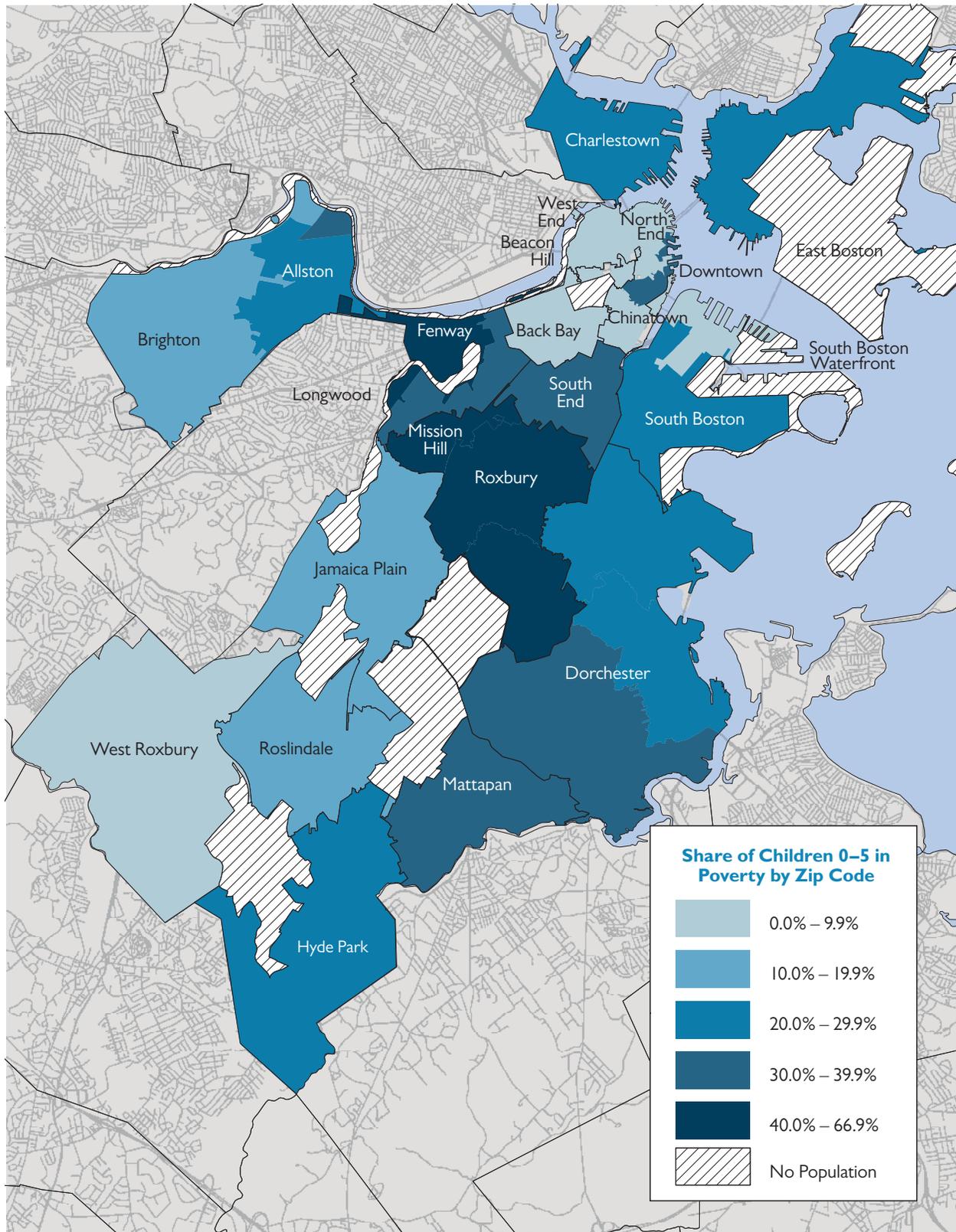
an oversized economic burden for child care but will never qualify based on income. Any policy shifts to address this challenge beyond additional funding need to be carefully thought through for potential unintended consequences.

FIGURE II
Share of Subsidies Distributed (Vouchers & Contracts) and Reimbursement Rates for Children 0-5 Years (Boston, 2017)



Source: MA Department of Early Education and Care, 2017; Boston Opportunity Agenda Analysis, 2019.

MAP 2
Number of Children Ages 0-5 Living in Poverty by ZIP Code



Source: U.S. Census Bureau, 2013-2017 American Community Survey, BPDA Research Division Analysis

VULNERABLE POPULATIONS AND THE GREATEST NEED FOR ACCESS TO HIGH QUALITY CHILD-CARE SEATS



his report would not be complete without a description of Boston's most vulnerable populations and how they are impacted by the availability of high quality early education and care in each Boston neighborhood. We explain in each sub-section the importance of the indicators for childhood development and why access to high quality child care is especially crucial for the children experiencing any of these problems.

“The cost of daycare in the infant room was 90 percent of my paycheck, so we’ll never be able to have another kid.”

—City Census respondent, Roslindale

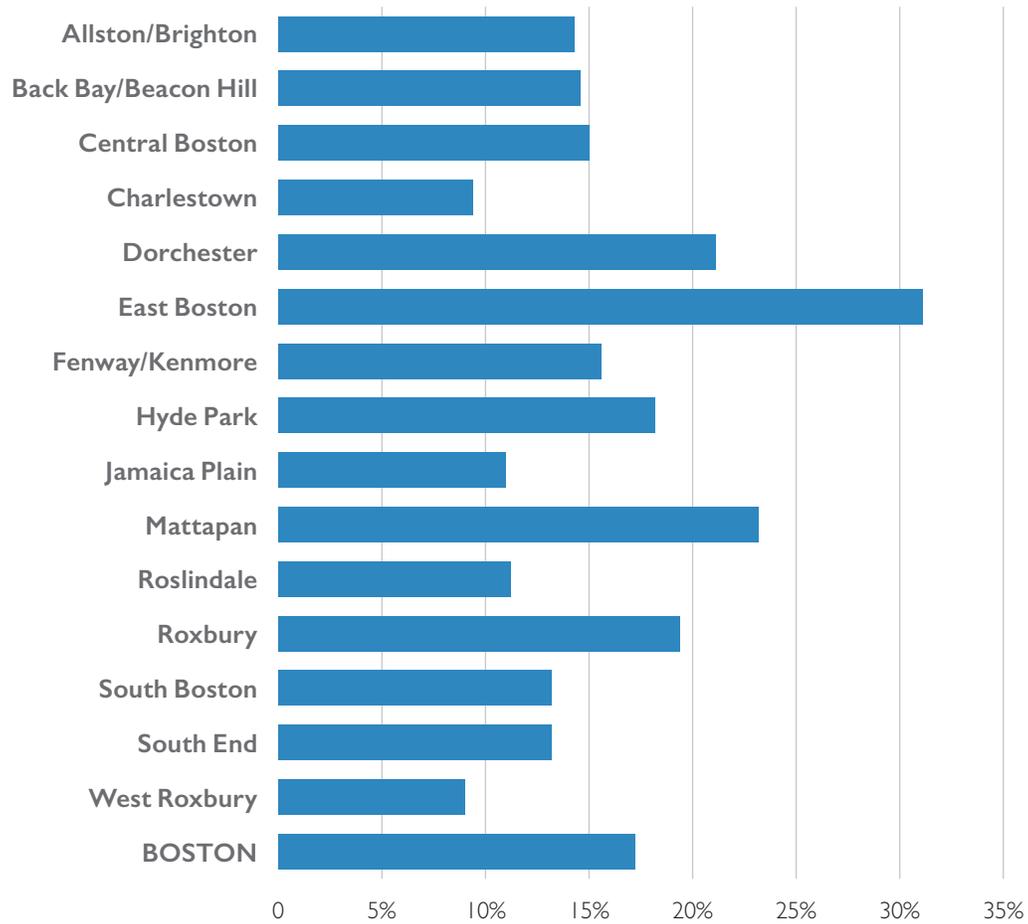
Children Living in Poverty

As of 2017, an estimated 27 percent of children 0–5 years lived in poverty in Boston.⁽³⁵⁾ See **MAP 2** for this distribution across neighborhoods in Boston.

Research has found that children raised in poverty may have worse cognitive, language, health and educational outcomes.⁽³⁶⁾ The earlier a child is exposed to poverty and the duration of exposure are associated with the impact on development. Children exposed to poverty in early childhood, without mitigating environments such as high quality education and care, are less likely to complete schooling than children exposed in later years. Children living below the poverty line are at greater risk of having the worst outcomes.⁽³⁷⁾

Families living in poverty are also less likely to consistently be able to afford food. In Boston, Twenty-eight percent (95% Confidence Interval: 25.0%-31.0%) of adults with young children reported the food they purchased did not last, and they could not afford to buy more; 11.9 percent (95% CI: 9.6%-14.2%) of adults with young children reported they were hungry but did not have money to buy food.⁽⁴⁵⁾ These children are at risk for behavior problems and their mothers are more likely to suffer from depression and anxiety.⁽³⁸⁾

FIGURE 12
Share of Women with Inadequate Prenatal Care (Kotelchuck Index)
by Neighborhood (August 2016)



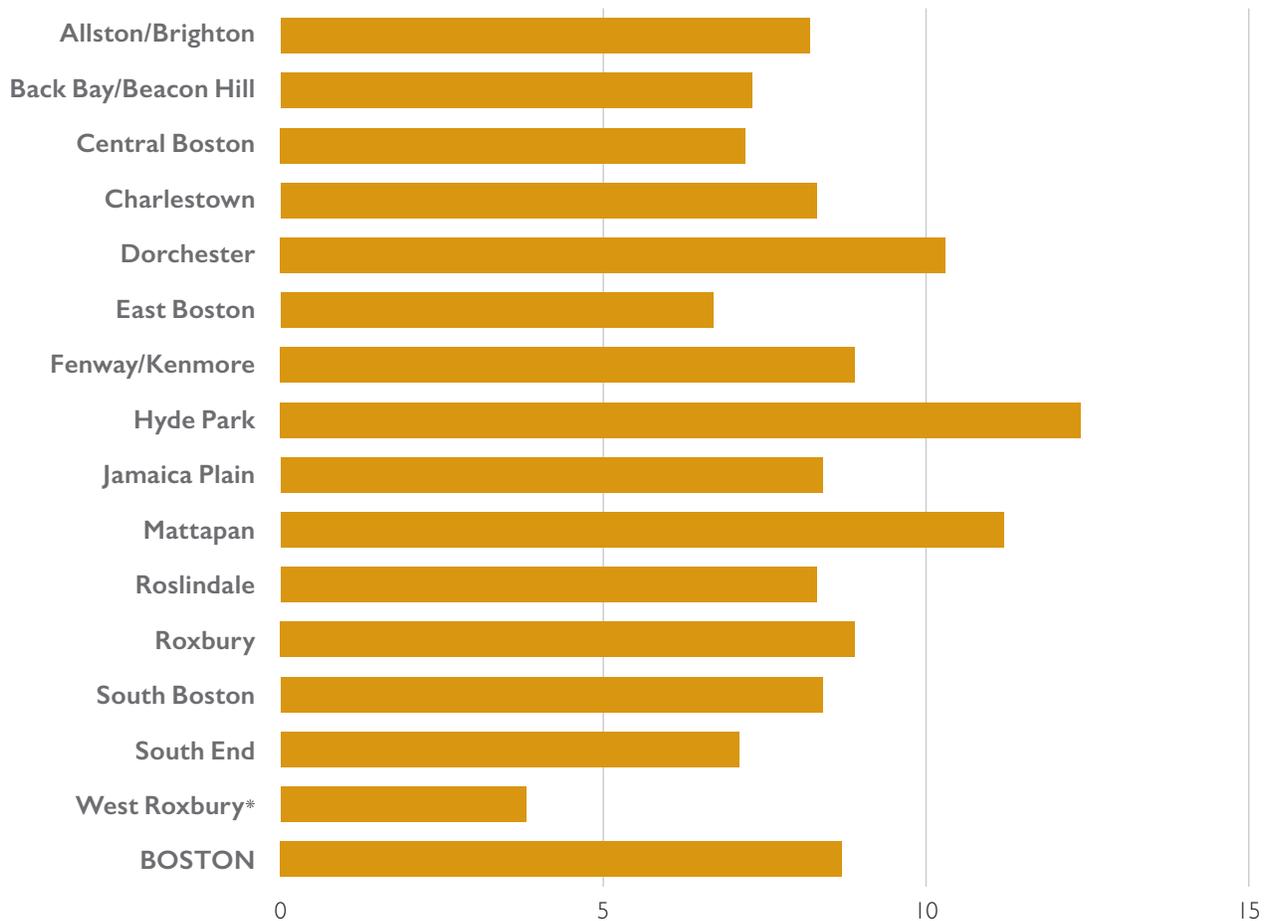
Source: Boston resident live births, Massachusetts Department of Public Health
 Data Analysis: Research and Evaluation Office, Boston Public Health Commission

Children who experience prenatal problems are more likely to present cognitive, attention and learning problems later in life.

Prenatal Care and Very Low Birth Weight and Low Birth Weight

Adequate prenatal care reduces the risk of poor birth outcomes, including very low/low birth weight. Children who experience prenatal problems are more likely to present cognitive, attention and learning problems later in life.⁽³⁹⁾ **FIGURE 12** represents the percentage of pregnant women, by neighborhood, who received inadequate prenatal care, using the Adequacy of Prenatal Care Utilization Index. From the four categories of this index, we are discussing just

FIGURE 13
Share of Low and Very Low Birth Weight by Neighborhood (August 2016)



Source: Boston resident live births, Massachusetts Department of Public Health
 Data Analysis: Research and Evaluation Office, Boston Public Health Commission
 *Data is based on 20 or fewer cases and should be interpreted with caution.

one: Inadequate (received less than 50 percent of expected prenatal visits). See the *Methods Section (Appendix 1)* for detailed description about the index and its categories. At the city level, 17.2 percent of pregnant women were identified as having inadequate prenatal care. Dorchester, East Boston and Mattapan were among the neighborhoods with the highest frequency of inadequate prenatal care utilization.

Children born with low birth weight (LBW, less than 2,500 grams) and very low birth weight (VLBW, less than 1,500 grams) are at higher risk to present adverse childhood

outcomes, including health and school performance.⁽⁴⁰⁾ These children can strongly benefit from participation in high quality pre-school programs, with one advantage being reduced likelihood of school remediation. **FIGURE 13** shows the distribution of LBW across Boston's neighborhoods.

Developmental Screenings

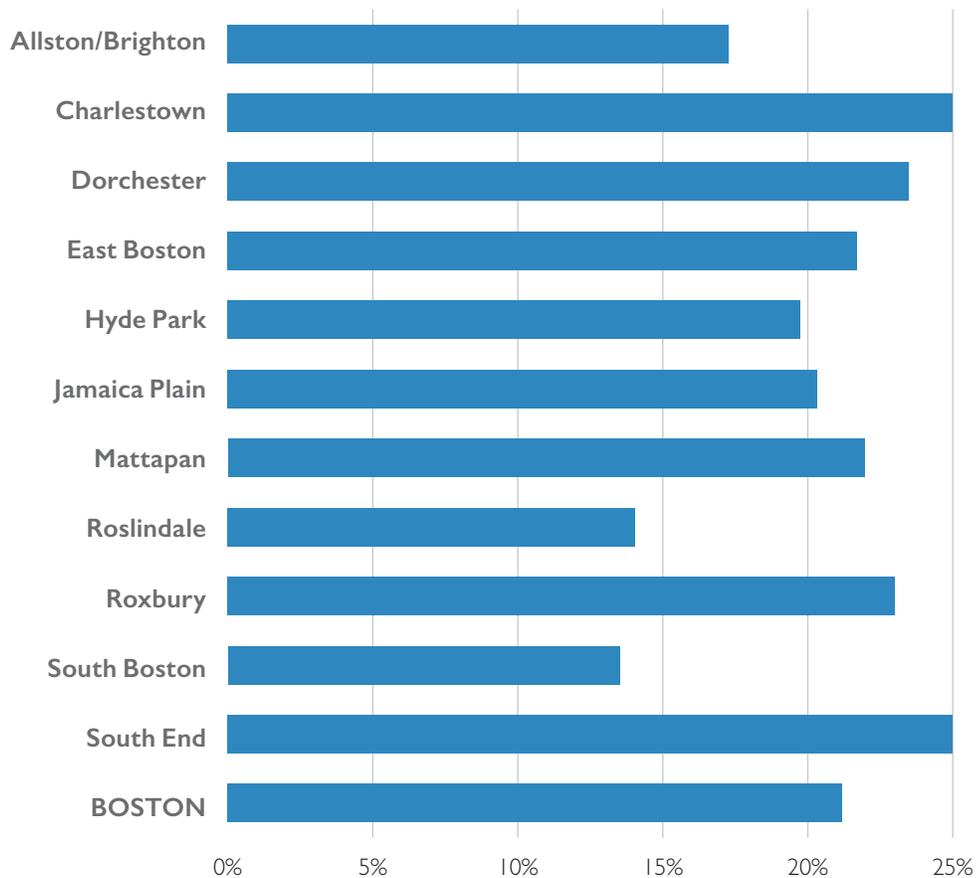
When developmental delays, learning disorders, behavior and socioemotional problems are identified early, children can be treated by early intervention specialists, reducing the likelihood of avoidable academic problems. Screening children during the first five years of life is crucial to ensure they receive adequate services, if needed, and enter kindergarten at their full potential to learn and thrive.

FIGURE 14 shows the results for the Ages and Stages Questionnaire (ASQ) screening done by the United Way DRIVE project in FY 2018 (see *Methods Section in Appendix I for details*). The final screening outcome has three categories: On Track; Potential Concern; and Strong Concern. Children scoring in the Strong Concern category should be referred

for early intervention assessment. The “Fine Motor” performance of kids in several neighborhoods drives the final score composite (see **FIGURE 15** on ASQ subscales results). As seen in both figures 14 and 15, four neighborhoods (Back Bay/Beacon Hill, Central Boston, Fenway/Kenmore, and West Roxbury) had data omitted due to insufficient sample size. Screening results not only identify children who need referrals to early intervention assessment, but also give valuable information for parents and educators about areas of development that may need more intervention.

These Boston statistics tell us there are many families and children already at risk for poor school achievement. These statistics show us our future costs and assets that will inform our community’s well-being, workforce and economy. This insight into our future enables us to set

FIGURE 14
Share of Children 0–5 Years Who Had the Outcome of “Strong Concern” at the ASQ (Boston, 2018)



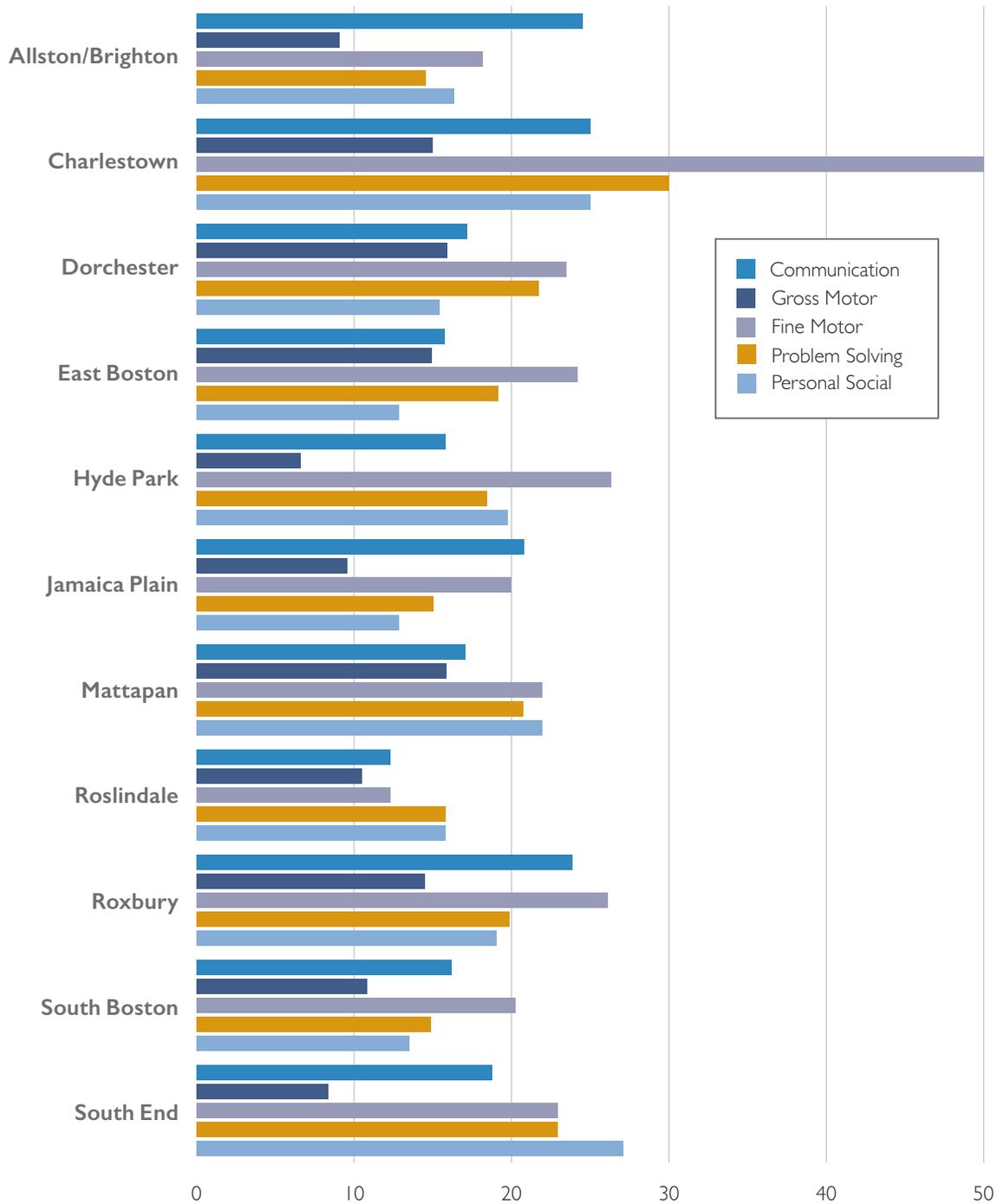
Source: United Way of MA - FY 18 DRIVE; Boston Opportunity Agenda Analysis.

* Values were suppressed for Back Bay/Beacon Hill, Central Boston, Fenway/Kenmore, and West Roxbury due to insufficient sample size.
ASQ = Ages and Stages Questionnaire

a better course. High quality early education and care can benefit children by providing a stable and enriching environment and helping parents work to maintain a stable

household and provide food. Such programs can improve literacy and numeracy performance, even for vulnerable children, just by providing a nurturing environment.⁽⁴¹⁾

FIGURE 15
Share of Children 0-5 Years Who Had the Outcome of “Need for Monitoring” or “Need for Further Assessment” on Subscales of the ASQ (Boston, 2018)



Source: United Way of MA - FY 18 DRIVE; Boston Opportunity Agenda Analysis.

* Values were suppressed for Back Bay/Beacon Hill, Central Boston, Fenway/Kenmore, and West Roxbury due to insufficient sample

ASQ = Ages and Stages Questionnaire

NEXT STEPS AND RECOMMENDATIONS

The Boston Opportunity Agenda and the Birth to Eight Collaborative are committed to continuing to improve our knowledge of the early childhood landscape in Boston so that we can better meet the needs of young children and families. To this end, the first annual *State of Early Education and Care in Boston* report aims to answer basic questions regarding supply, demand, quality and affordability. Our goal is for this report to inform priority-setting for state and city agencies who fund, support and monitor the early education and care infrastructure. This report also seeks to highlight additional sectors impacted by child care, including employers and businesses, education, health and the city's future economy.⁽⁵¹⁾

Data is one part of the story. A cross-sector collaboration was necessary to understand what data was needed, to collect it and to determine its implications. Such collaborations will continue to be necessary, including with policy makers, philanthropy and business, to create the conditions required to improve access, quality and affordability. Most importantly, we seek for this report to push for action. With that in mind, we make the following recommendations.

- 1. Develop an early childhood data ecosystem. Data integration across sectors will facilitate a shared citywide knowledge base to inform practice and policy, as well parents' decision-making.**

Standardize data collections, sociodemographic variables and neighborhood definitions to allow for analysis of information across sectors.

Children's school readiness depends on their home and neighborhood contexts, the accessibility and quality of their early education and care provider, and their access to a health-care provider, as well as individual factors. The methods for collecting data on these, as well as the data's quality, accessibility and usability vary significantly across city agencies and service providers in Boston. As this report has

shown, we gathered some insights from the data currently available, but faced many limitations due to the usability of the data. To help children and families, individual agencies and service providers need to engage in strategic and systematic data collection to answer key questions about the state of early education and care on a recurring basis.

To this end, the Boston Opportunity Agenda and our data partners are working to refine data regarding the early education and care demand estimates at the neighborhood level, narrowed to single age groups (e.g., infants, 3-year-olds, etc.).

Additionally, the Mayor's Office of Women's Advancement and Economic Mobility Lab are collecting preference data through the City Census, which will provide a better sense of parent demand. It is imperative that the census receive a more representative set of responses to inform demand by neighborhood. Work will need to be done by early education and care providers to ensure the necessary outreach to families occurs.

Establish a citywide early childhood data governance infrastructure to set policies for sharing data, ensuring standards for quality, monitoring how data is used and maintaining security.

State and local agencies, community-based organizations, health-care providers, research organizations and colleges and universities should be able to collaborate and share their data to build synergistic partnerships that amplify their effectiveness. These partnerships must be pursued and developed in ways that provide data security and respect the data privacy of children and families. The general public, especially families, need to have access to some of this data to gain basic understanding about young children, child-care programs and related services. In order to serve children and families in an efficient and effective way, the City of Boston must be able to identify challenges and opportunities, and this must be based on robust data.

Most importantly, we seek for this report to push for action.

The start of a shared data infrastructure was needed to put together this report. The Boston Opportunity Agenda, with the support of the City of Boston, formed a data committee to oversee every step in the creation of this report. Stakeholders across multiple sectors in Boston related to early education and care sit on this committee. Over the last year and a half, through discussion and debate based on their collective expertise, they have identified relevant data, data sources, data quality and how best to analyze and report findings. Over the next year, this committee will continue to engage more deeply on issues of early childhood data governance.

2. Increase the supply of early education and care seats to provide immediate and long-term benefits to children’s development and academic success, support parents to remain in the workforce, and prevent employers from economic losses.

Scale up investments in the infrastructure supporting the existing supply of child-care providers.

Early education and care is a business. Those who own early education and child-care centers and family-based entities often enter the field based on their expertise and experience with young children, but may not have the knowledge, skills and capacity to sustain the administrative needs of a small business.⁽⁴²⁾ Providing expanded access to training and technical assistance to increase the effectiveness of their business model can help sustain current providers.

Two such nascent efforts are Shared Services, a partnership through the United Way of Massachusetts Bay and Merrimack Valley, and a pilot Childcare Entrepreneur Fund launched by the Mayor’s Office of Women’s Advancement in partnership with the Economic Mobility Lab. Shared Services was implemented in 2017, and provides financing, education and resources to help strengthen the workforce, improve quality and maximize available resources. Shared Services

members participate in group purchasing, training and technical assistance and a community of practice. Ultimately the model relies on membership dues and is self-financing. In Boston, initial startup costs have been funded by Boston Children’s Hospital and private philanthropy. Expanding the Shared Services membership to 300 early education and care providers—center and family based—would ensure the availability of ongoing support to providers while expanding the supply and quality of early education and care.

The Mayor’s Office of Women’s Advancement launched a pilot Childcare Entrepreneur Fund in October 2019. The fund targets businesses at different stages of development. It will provide public investment and technical assistance to new or existing family-based child-care owners at risk of closure. The aim is to support them in acquiring the business skills that they need to stay open and grow. Support for existing businesses will help maintain supply and supporting new businesses will help grow supply.

Invest in entrepreneurship and new care facility startups to scale the supply of child care in Boston.

Boston is a hub of entrepreneurship in biotechnology, education, health and tech. These fields have cultivated networks for funding, mentorship, innovation and peer support. Following this model, incentivize the start-up of new facilities by providing similar supports for early education and child care. The startup costs associated with a new child-care facility can be prohibitive for those who have worked in the field and may not have the financial resources for the up-front costs. Target new child-care ownership as an entrepreneurial effort by providing training, investment, peer support and mentorship.

As an example, the Institute for Early Education Leadership and Innovation at UMass Boston (www.umb.edu/earlyedinstitute) offers an entrepreneurship-focused curriculum for early educators and child-care business owners from diverse backgrounds. The program leverages

partnerships in policy, practice and research to share knowledge and an alumnae network for mentorship.

Incentivize innovation in cost-effective models for high quality early education and care, targeting the 0–2 year age group.

Promote innovation in the field, such as through architecture and design that enhance early childhood development, as well as pedagogical innovation in curricula. Infant and toddler care requires lower teacher to student ratios and smaller class sizes, which increases the fixed costs due to the need for more classrooms and teachers per classroom. Understanding that the ages of 0–2 are a critical time in development, but also expensive, explore new models for providing care to this age group without sacrificing ratios, small groups and quality relationships.

- 3. Ensure all licensed center-based and family-based facilities are high quality so all of Boston’s children can access the best environment for their development, particularly providing high quality early education and care to mitigate the effects of adversity for vulnerable children.**

Incentivize participation in Massachusetts StrongStart and research the efficacy of the program as it rolls out.

EEC is in the process of releasing the StrongStart program, designed to support professional development, training and coaching in higher quality standards and the credentialing process. While this resource is promising, it is still unclear whether financial, time-based, technological and administrative barriers will prevent providers from accessing this enhanced program. As the StrongStart program is implemented, assessing whether providers are using it and whether and why it is beneficial will help stakeholders understand the value of the program.

Develop incentives for participation in the Quality Rating Improvement System.

A major challenge in accessing quality is the large number of organizations that opt out of participating in the Commonwealth’s Quality Rating Improvement System (QRIS). In order to have a better understanding of the available quality in Boston for all children birth to five,

but particularly for infants and toddlers, more early education and care providers need to complete QRIS.

EEC has stated that the StrongStart program will be integrated with incentivizing the use of the QRIS system. Since this program has not yet been fully implemented, this recommendation is based on the challenges with the QRIS system to date. As a start, EEC needs to streamline and simplify the process for participation in QRIS. Perceived and real bureaucratic hurdles keep providers with limited time, funds and infrastructure from completing the process beyond Levels 1 and 2. Further, EEC should develop an incentive system for providers who do not accept subsidies and are therefore not required to participate in QRIS. This will not only improve our understanding of quality in Boston but will also expand the number of providers that are eligible to accept subsidies. The revised QRIS system that EEC is due to release over the next year provides an opportunity to engage in new thinking about administrative burden and incentives. We strongly recommend two categories of incentive. The first to increase participation by the 30 percent of early education and care providers who don’t currently engage in QRIS, and the second to provide support for programs as they move up the levels of quality.

- 4. Make high quality early education and care affordable for all families across Boston’s neighborhoods. Prioritize affordability for low-income families, including single-parent households and children living in poverty.**

Advocate for increased state and federal resources.

As seen through the data presented in this report, families across socioeconomic levels have difficulty affording child care. The number of families who qualify for subsidies outpaces the availability of vouchers and contracts. Additionally, a large number of families do not qualify under the current income levels for a subsidy but still cannot afford care at the current rates. Given the impact of quality early education and care on child outcomes and on our state’s workforce, Massachusetts must continue to grow its investment in early education and care. Further investment at the state level will enable us to meet the needs of Boston families. The FY21 state budget would be the best place to begin this advocacy. At the same time, Massachusetts and its nonprofit partners must continue

to advocate for the expansion of federal investments in early childhood, including the Community Development Block Grant, Head Start and other systems-building investments like the recent Preschool Development Grant.

5. Cultivate mutually beneficial partnerships between care providers and businesses to subsidize care seats for employees' children, ensuring consistent care options for their employees and diversifying the revenue streams for child-care facilities.

Build business partnerships with licensed child-care providers to ensure a specific number of seats are reserved for their employees.

Creating partnerships with business would help child-care providers know they can depend on consistent revenue streams. A number of early education and care providers in Boston are experiencing difficulty filling classrooms and managing costs. Providers serving primarily low-income families need assistance in cultivating a mix of full-pay and subsidy families. Businesses looking for ways to impact the early education and care landscape should work to build a pipeline of employees who need child care to providers who would benefit from an increased percentage of full-pay families. This could include innovations such as formally committing to provide a fixed number of full-pay children from among their employee base, increased employee benefits for parents and guardians that procure child care from selected providers, or provision of on-site space for child care where both subsidized and full-pay families may engage. This would help businesses recruit and maintain employees. The Longwood Medical Area Family Childcare Network launched in 2013 and led by Nina Dickerman can serve as a potential model. *(For more information visit <https://www.masco.org/news/sp-new-child-care-option-lma>.)*

Position business and early education and care partnerships as models for corporate social responsibility.

Not only would these measures help stabilize the early education and care business model, it may also diversify the clientele of early education and care programs. The externalities of these partnerships would be far-reaching. Currently children have few opportunities to interact and

build relationships across economic strata. The separate concentrations of need and privilege set up opportunity gaps that continue into and beyond the K–12 system. Children learn from one another. A more diverse set of early education and care experiences will contribute to closing these gaps.

APPENDIX 1:
METHODS

This first *State of Early Education and Care in Boston* report focuses on supply, demand and gaps in child-care seats (availability, quality and affordability). It also explores disparities based on child and family characteristics, including

demographics and maternal/adult and child health. Additionally, it considers preliminary information on parents/guardians' first-hand experiences with child care in the city. No single source exists to answer all of the questions we posed. The Birth to

TABLE A-1
Boston's ZIP Codes and Approximate Neighborhoods

ZIP Codes	Approximate 22 Neighborhoods	Approximate 15 Neighborhoods*
02134 & 02163	Allston	Allston/Brighton
02135	Brighton	Allston/Brighton
02108	Beacon Hill	Back Bay/Beacon Hill
02116 & 02199	Back Bay	Back Bay/Beacon Hill
02109 & 02110	Downtown	Central Boston
02111	Chinatown	Central Boston
02113	North End	Central Boston
02114	Beacon Hill/West End	Central Boston
02129	Charlestown	Charlestown
02122	Dorchester	Dorchester
02124	Dorchester	Dorchester
02125	Dorchester	Dorchester
02128	East Boston	East Boston
02115	Longwood/Fenway	Fenway/Kenmore
02215	Fenway/Kenmore	Fenway/Kenmore
02136	Hyde Park	Hyde Park
02130	Jamaica Plain	Jamaica Plain
02126	Mattapan	Mattapan
02131	Roslindale	Roslindale
02119	Roxbury	Roxbury
02120	Roxbury	Roxbury
02121	Roxbury	Roxbury
02127	South Boston	South Boston
02210	South Boston Waterfront	South Boston
02118	South End	South End
02132	West Roxbury	West Roxbury

* Most of the data is discussed using this 15 Neighborhoods classification.

Eight Data Committee of the Boston Opportunity Agenda suggested several possible data sources that were explored.

Child care needs differ by geographical location within a city and we made it a priority to present data accordingly in this report. We are presenting data by ZIP Code–defined neighborhoods. An important challenge in this process was the definition of neighborhoods in Boston. There is no official definition used across City agencies to determine how ZIP Codes should be assigned to a given neighborhood. For future reports, we plan to work more closely with City agencies at the time of data request to align the criteria of ZIP Code–defined neighborhoods.

DEFINITION OF NEIGHBORHOODS

We aggregated ZIP Codes into 15 neighborhoods. **TABLE A-1** shows correspondences of ZIP Codes to neighborhoods we created based on the ZIP Code–level data we had. Eight neighborhoods have just one ZIP Code. Seven neighborhoods, however, include two to three ZIP Codes. The aggregation of these ZIP Codes into neighborhoods does not reflect any judgment or preference, but an analytical decision. For instance, we have created a Central Boston neighborhood using ZIP Codes 02109, 02110 (Downtown), 02111 (Chinatown), 02113 (North End) and 02114 (Beacon Hill/West End). Some data sources we used had small sample sizes, another factor that led us to report on fewer neighborhoods. Table A-1 also includes a column with the aggregation into 22 ZIP Code–defined neighborhoods, in case this additional information helps stakeholders to better understand the findings. We acknowledge that the definition of neighborhoods goes beyond administrative conventions and relates to the daily life experiences of residents. Nonetheless, to best analyze and to draw the conclusions presented here, we had to adopt a convention that may not align with all stakeholder preferences. We present most of the data using 29 ZIP Codes with residential population aggregated in 15 ZIP Code–defined neighborhoods.

DEFINITION OF EARLY EDUCATION AND CARE PROGRAMS

We included in our analysis programs that offer a combination of education and care for children 0 to 5 years, licensed by the Massachusetts EEC (center-based and family-based child care) or exempt from a license (preschool run by public schools, parochial and private schools). See **TABLE A-2** for a detailed subdivision of the two larger categories we discuss throughout the report (child-care and school providers).

TABLE A-2
Early Education and Care Seats by Provider Type (Boston, 2017-18)

Provider Type	Categories
CHILDCARE	Center-based
	Non-Head Start
	Head Start
	Family-based
SCHOOL	Public
	Charter
	BPS
	Non-Public
	Independent
	Parochial
	Nonprofit¹

¹ Three organizations were categorized as nonprofit as they do not fit as public, independent or parochial schools. These offered curriculum-based activities for children with special needs. They were listed as schools with children enrolled in pre-K or kindergarten at the Massachusetts Department of Elementary and Secondary Education website.

BPS = Boston Public Schools

DEMAND BACKGROUND

The estimate of demand for early education and care was based on assessing the potential demand for care, or the number of children in the population for whom parents could seek care. This estimate assumed an existing slot, or seat, for every child, 0–5 years old, in Boston. This assumption is similar to how elementary schools ensure seats based on the number of students per grade. Additional factors impacting demand include parental preferences for care and families seeking care outside their neighborhood but closer to their workplace. These latter considerations could not be assessed by the current data available.

Results from a 2016 national study on Early Childhood Program Participation indicated that nearly 60 percent of children birth to five were under at least one nonparental regular care arrangement once a week.⁽⁴⁾ The same study identified primary reasons for difficulty finding care in the Northeast of the U.S.: Cost came first (33%), followed by lack of open seats for new children (31%) and quality (25%). Looking only at children less than 1 year, lack of open seats was the main reason (36%), followed by cost (31%) and quality (20%).

While we acknowledge that not all parents/guardians necessarily want to use licensed and school-based programs for their children, parents' choices may be constrained by difficulties with affordability, access and quality. Especially for infants, access seems to be an important driver of family decisions when selecting early education and care arrangements. Thus, while the analysis presented here could not take into account parent's preferences, because such data did not exist at the time of our analysis, looking at access and quality gaps (assuming that all families in Boston would choose licensed and school based seats for their 0- to 5-year-old children if available) offers a baseline scenario to discuss the needs of Boston residents with young children.

DEFINITION OF POTENTIAL DEMAND

For the purposes of this report, we are only assuming that the potential demand for child care is based on the total number of children 0–5 years by place of residence (neighborhoods). Our rationale follows the Center for American Progress acknowledgement that while other factors exist that influence the choice of child-care arrangements: *"The absence of licensed child care in a community often means it is not an accessible option for parents. Shedding light on who lives near licensed child*

care can serve as a catalyst for a broader conversation about making affordable, quality child care a reality for all families."⁽⁴³⁾ Our proxy for demand comes from the 2013–2017 5-year American Community Survey estimate of children birth to age five living in households. Children in foster care are counted in the household population. Homeless children living in a shelter, motel or on the street may be missed by the survey.

We provided some children and family's indicators to characterize our potential demand and to highlight subsets of the young population in Boston that are at higher risk to enter kindergarten unprepared. These children have the greatest need to access quality child care in order to start formal schooling with equal chances to succeed in school and beyond as the rest of their age cohort. These data were estimated by the Boston Planning and Development Agency (BPDA) using 2013–2017 ACS data (children/family demographics), the Boston Public Health Commission (maternal/adult and child health characteristics), the United Way of Massachusetts Bay and Merrimack Valley DRIVE Initiative (developmental screening outcomes), and the Mayor's Office of Women's Advancement (family's current arrangements and challenges related to child care).

CHILDREN/FAMILY DEMOGRAPHICS

BPDA Research Division used ACS 2013–2017⁽¹⁾ to compute estimates by Boston's 29 ZIP Codes with residential population, which we aggregated into 15 neighborhoods. These estimates included: Total Population in Households, Children 0–5 years (ACS Table B09001); Race and Ethnicity, Children 0–4 years (ACS Table B01001); Family Type, Children 0–5 years (ACS Table B09002); and Poverty Status, Children 0–5 years (ACS Table B17001).

AFFORDABILITY/SUBSIDIES

We looked at the number of families within each census income bracket in each neighborhood. To afford infant care, a family's annual income would have to be at least \$198,770. The closest census family income bracket was a family income of \$150,000–199,999, where for families making \$150,000, infant care would be 13 percent of the income. Thus, in each neighborhood, we underestimate the number of families who can afford infant care.

BPDA also provided information, using ACS 2013–2017, on median family income and estimation of children under

age 5 potentially eligible for child-care vouchers, based on income criteria. We utilized this information to discuss affordability of child care in the city. The Massachusetts Department of Early Education and Care (EEC) provided waitlist data, as well as information on the number of subsidies and their average values for the city of Boston.

MATERNAL/ADULT AND CHILD HEALTH CHARACTERISTICS

Along with access to adequate and high quality child care, the early education literature has identified several factors that impact a child's ability to thrive in school and beyond. Health is one of such factors, starting even before a child is born. Poor health and adverse environmental factors have been associated with poor academic, health and vocational outcomes throughout life.⁽¹¹⁾

To measure health, we selected indicators available from the Boston Public Health Commission (BPHC) at the neighborhood level. Data analyzed by BPHC come from different sources. We included in this report estimates for the following indicators, computed by BPHC's Research and Evaluation Office: 1) food security, 2) percentage of mothers who have access to adequate prenatal care (Kotelchuck Index) and 3) percentage of infants who are low birth weight and very low birth weight.^(44; 45) Data for the last two indicators come from live birth records provided by the Massachusetts Department of Public Health.

DESCRIPTION OF INDICATORS

1. Food security data came from the Boston Behavioral Risk Factor Surveillance System (BBRFSS), a system of telephone health surveys of adults—ages 18 and over and living in non-institutional household settings—that collects information on health risk behaviors, preventive health practices and health-care access primarily related to chronic disease and injury. The BBRFSS data used in this report is a combination of data from the years 2013, 2015 and 2017. This survey is conducted biannually. Two questions generated the indicators used in this report:
 - “The food that we bought just didn't last, and we didn't have money to get more.” Was that often, sometimes, or never true for you or your household in the last 12 months?

- “We were hungry but didn't eat because we couldn't afford enough food.” Was that often, sometimes, or never true for you or your household in the last 12 months?

2. The Kotelchuck Index—or Adequacy of Prenatal Care Utilization (APNCU) Index—uses two elements to create its final categories: initiation of prenatal care and number of visits between when care began and the delivery date. It categorizes the ratio of observed visits for the period to expected prenatal visits into four categories: Inadequate (received less than 50% of expected visits), Intermediate (50%-79%), Adequate (80%-109%), Adequate Plus (110% or more). The underlying assumption is that the earlier prenatal care begins the better for birth outcomes. Women who have inadequate care are at greater risk of having poorer birth outcomes, which may affect their child's development.⁽⁴⁶⁾ We displayed findings for the Inadequate category only.
3. Percentage of infants who are low birth weight and very low birth weight represents the percentage of Boston infants weighing less than 5 pounds, 8 ounces.

DEVELOPMENTAL SCREENING OUTCOMES

If a community is committed to ensuring that all of its children have a path to succeed at school and beyond, developmental screenings should be universally available to identify children who need support.

United Way of Massachusetts Bay and Merrimack Valley's early education initiative focuses on developmental screening for young children using the Ages and Stages Questionnaire (ASQ) and Ages and Stages Questionnaire: Social Emotional (ASQ:SE) through partnerships with child-care centers, community agencies, school departments and state agencies. The Data and Resources Investing in Vital Early Education (DRIVE) initiative⁽⁴⁷⁾ has been conducting developmental screenings since 2014 in Boston; no universal screening for children younger than 5 years old exists in Massachusetts.

ASQ was designed to be used by early educators and health professionals to assess five areas of development for ages 1 month to 5½ years (Communication, Gross Motor, Fine Motor, Problem Solving, Personal Social).⁽⁴⁸⁾ For each one of these areas, there are three possible categories: Typical Development; Need for Monitoring; and Need

for Further Assessment. The final screening outcome has three categories: On Track; Potential Concern; and Strong Concern. Children scoring in the Strong Concern category should be referred for early intervention assessment.

We used in this report a sample of 1,676 children (1 month to 5 years) of FY2018 DRIVE data. All data came from ASQ-3 (developmental screening; no data could be included for the ASQ:SE, socioemotional screening) and was aggregated into the 15 ZIP Code–defined neighborhoods. Due to small numbers, four neighborhoods had values omitted: Back Bay/Beacon Hill, Central Boston, Fenway/Kenmore, and West Roxbury. Selected indicators were: percentage of children who scored Need for Monitoring and Need for Further Assessment in each one of the developmental subscales, and percentage of children who scored Strong Concern for the ASQ screening final outcome. Given the small sample, we chose to present data by neighborhoods for children 0–5 years, not conducting subgroup analysis for 0–2 years and 3–5 years.

FAMILY'S CURRENT CHILD-CARE ARRANGEMENTS AND CHALLENGES IN THE CITY OF BOSTON

Finally, we utilized qualitative data from the first child-care survey conducted at the city level by the Mayor's Office of Women's Advancement (MOWA). The Language, Disability and Childcare Survey was an insert in the 2019 City of Boston's Annual Resident Listing. The first few questions, addressed to any resident, asked about languages spoken at home and whether any household member had a disability. The last questions were related to child care. Participants with children 5 years old or younger were asked questions about child care arrangements and challenges for each child listed. The sample of interest—respondents with children between the ages of 0 and 5 years who answered a child-care question—consisted of 2,616 families and 3,336 children. For more details about the methodology and results, refer to MOWA's final report.⁽³⁾ We used in the current report qualitative data from the open-ended question: "What other difficulties do you experience with child care?" Quotes from respondents are displayed throughout the current report to illustrate real challenges experienced by families in all Boston's neighborhoods.

SUPPLY

We focused the current analysis on nonparental, formal care arrangements provided by licensed educators (family-based and center-based care) and preschool teachers in public and non-public schools. In calculating the potential supply of child care (family-based and center-based) for the City of Boston, we used data from the Massachusetts Department of Early Education and Care (EEC) on licensed capacity⁽⁴⁷⁾ for child-care seats in 2017, for both center- and family-based providers. EEC, or any other source, does not have the number of children actually enrolled in a child-care program, but rather the total licensed capacity.

Data on school enrollment during school year 2017–2018 came from the Massachusetts Department of Elementary and Secondary Education (DESE). Programs that only offered before- and after-school care or summer programming were excluded from the analysis. We also excluded ZIP Codes that are partially in Boston, but mostly in other cities. We did not find a reliable source of data for family, friend and neighbor care in the city.

DEFINITION OF SUPPLY

We estimated three supply categories:

1. Birth to 5 years (Total): We added licensed seats for children birth to 5 years (child-care capacity in family-based and center-based programs) and school enrollment (in public and non-public schools) for children in pre-K and kindergarten (3–5 years) to estimate a proxy for supply of seats.
2. 0–2 years (Infant/Toddlers): Analysis for this subgroup included center-based and family-based child care, the two types of providers that offer licensed seats for children in this age group. We allocated one third of family-based child-care seats to 0–2 supply (see *below for rationale*).
3. 3–5 years (Preschoolers): Analysis for subgroup 3–5 years included center-based child-care providers and schools and two thirds of family-based child-care seats (see *below*).

For center-based capacity, EEC uses a breakdown by age categories and we created two subgroups (0–2 and 3–5 years). Programs can have nine age groups: infants (birth to 15 months), toddlers (15 to 33 months), mixed group of infants and toddlers (birth to 33 months), preschoolers (33 months to kindergarten), mixed group of toddlers and preschoolers (15 months to kindergarten), kindergartners (5 years), mixed group of preschoolers and school-age children (33 months to 8 years), mixed group of kindergartners and school-age children (5 to 8 years), and school-age children groups (5 to 14 years).⁽⁴⁹⁾ To be conservative, we removed from our computation the last three groups that included school-age children. The two mixed groups together, however, represented 4.7 percent of total seats, after excluding school-aged groups. This means we are slightly underestimating the number of seats for children 3 to 5 years old. Seats for children 0–2 were computed using the categories infants, toddlers, and mixed group of infant and toddlers. Seats for ages 3 to 5 were calculated from the categories preschoolers, mixed group of toddlers and preschoolers, and kindergartners.

For family-based providers, however, EEC only has the total licensed capacity because the breakdown by age may vary given the regulation on how family-based providers can fill their seats by age. Accordingly, to include family-based providers (and avoid overestimating the supply-demand gap by utilizing only center-based seats), we tested three scenarios, assuming the following:

- 1) Half of the seats in a family-based program was occupied by children 0–2 years and the other half by 3–5 years;
- 2) One third of the seats in a family-based program was occupied by children 0–2 years and two thirds by 3–5 years; and
- 3) One quarter of the seats in a family-based program was occupied by children 0–2 years and three quarters by 3–5 years. See *Table 5 in Appendix 2 for a comparison of estimates achieved in each one of the above scenarios.*

We selected the one third–two thirds adjustment because it is neither too conservative (which would lead to underestimation), nor too radical (overestimation of the gap). The selected adjustment assumes one infant and one walking toddler at maximum capacity of six; or two infants and one walking toddler at maximum capacity of 10. See EEC’s regulations for programs’ allowable ratios.⁽⁴⁹⁾

For school enrollment, data were available for pre-kindergarten and kindergarten classes. We assumed the first group to be mostly comprised of 3- to 4-year-olds and the second of 5-year-olds.

QUALITY OF SUPPLY

Studies have shown that to have a net positive impact on children’s readiness for kindergarten and life, child care must be of high quality, especially for children coming from disadvantaged backgrounds. Three main factors are at the core of the child-care problem: affordability, availability and quality.⁽⁵⁰⁾ As any parent/guardian of a child knows, high quality care is expensive. The 2016 national study on Early Childhood Program Participation identified cost as the primary reason for difficulty finding care in the Northeast of the United States, followed by lack of open slots for new children (availability) and quality.⁽⁴⁾ Understanding where Boston early education and care programs stand in terms of quality is essential to work toward more equality of outcomes for its young children.

We looked into supply by quality of programs using a few indicators. The first one came from the Massachusetts Quality Rating and Improvement System (QRIS), which is assigned for programs by the Massachusetts Department of EEC.⁽²⁶⁾ QRIS levels range from 1 to 4 (one being the lowest and 4 the highest quality level). Participation in the QRIS program is not mandatory, except for providers that receive subsidies. Levels 1 and 2 are based on the provider’s responses whereas levels 3 and 4 require a technical visit from EEC. Therefore, there is an absence of information about the quality of programs that choose not to participate, but validated quality information is available for programs that achieved level 3 and 4 in the QRIS. A second indicator of quality is the National Association for the Education of Young Children (NAEYC) accreditation, using data provided by the association.⁽²⁷⁾ Participation in NAEYC is also voluntary, but programs pay to participate. Other early education and care quality accreditations pursued by a smaller number of providers in Boston were identified when assessing quality of programs using existing data. See *Table A-7 in Appendix 2 for a complete list of these accreditations.*

DEFINITION OF QUALITY SEATS

As we were restricted by the data available for quality indicators, quality seats were defined here as seats available from providers that had at least one of the quality indicators we identified for the supply: A QRIS rating of 3 or 4; accreditation from NAEYC or any other association (NAFCC, AISNE, NEASC, NAIS, or CIS).

Some limitations are associated with the choice we made. The QRIS system does not include all programs and there are likely many more high-quality programs that are not classified as 3 or 4. In addition, these ratings are perpetual and programs that are rated 3 or 4 may or may not continue to be of high quality years later. We have identified the seats for which quality has been documented, but do not have information on the quality of programs that have not engaged in any of these systems because many programs serving our 0- to 5-year-old children do not participate in QRIS or NAEYC accreditation.

POTENTIAL SUPPLY-DEMAND GAP

We used the population of children (potential demand), number of licensed and school-based seats (potential supply), and number of quality seats to estimate two gap categories, each broken down by the three supply categories (Birth to 5 years = Total; 0–2 years = Infant/Toddlers; and 3–5 years = Pre-schoolers):

1. Access gap: This gap was computed by subtracting the total number of licensed and school-based seats available in a neighborhood from the estimated population of children in each age group.

2. Quality gap: We subtracted the number of *quality* seats available in a neighborhood from the estimated population of children in each age group.

For both potential access and quality gaps, we acknowledge these may be overestimations of the true gaps. Both are based on the assumption that all families would seek formal child care, which is unlikely. However, we cannot account for families' preferences and decided to estimate potential demand, as previously done elsewhere.⁽⁴³⁾

Our definition of quality differs from the one used by the Mayor's Advisory Committee on Universal Pre-K (UPK).⁽¹⁸⁾ The UPK landscape analysis used QRIS, NAEYC and the proportion of teachers with B.A.s, besides other indicators. Our estimates of the quality gap are, therefore, different from the initial UPK report. We planned to utilize education level of educators. However, the proportion of educators with B.A.s was not reliably available in the data source we utilized due to high frequency of missing information. Finally, the UPK study was able to conduct some primary data collection, whereas we relied solely on existing data. Using primary data is the ideal of any analysis. However, primary data collection is unrealistic as our goal is to yearly track the same indicators related to early childhood issues in the City of Boston.

Although our data may overestimate the size of the quality gap, it still indicates the neighborhoods and ages where the quality gap is of greater concern. Our findings suggest that as a city, we need robust systems and sources of data to measure and monitor quality in early education and care programs.

APPENDIX 2:
EXTRA TABLES

TABLE A-3
Population of Children 0 – 5 by Neighborhood and Age Group (Boston, 2017)

NEIGHBORHOOD	POPULATION 0 – 5		POPULATION 0 – 2		POPULATION 3 – 5	
	Count	Share of Population	Count	Share of Sub-Population	Count	Share of Sub-Population
Allston/Brighton	2,619	6.4%	1,527	7.3%	1,092	5.5%
Back Bay/Beacon Hill	1,059	2.6%	760	3.6%	299	1.5%
Central Boston	1,260	3.1%	787	3.7%	473	2.4%
Charlestown	1,856	4.5%	999	4.8%	857	4.3%
Dorchester	8,594	21.0%	4,162	19.8%	4,432	22.2%
East Boston	3,741	9.2%	1,789	8.5%	1,952	9.8%
Fenway/Kenmore	833	2.0%	430	2.0%	503	2.5%
Hyde Park	2,079	5.1%	859	4.1%	1,220	6.1%
Jamaica Plain	2,615	6.4%	1,410	6.7%	1,205	6.0%
Mattapan	2,204	5.4%	1,086	5.2%	1,118	5.6%
Roslindale	2,475	6.1%	1,392	6.6%	1,083	5.4%
Roxbury	5,056	12.4%	2,347	11.2%	2,709	13.6%
South Boston	1,944	4.8%	1,026	4.9%	918	4.6%
South End	1,764	4.3%	964	4.6%	800	4.0%
West Roxbury	2,749	6.7%	1,482	7.1%	1,267	6.4%
Boston	40,848		21,020		19,928	

Source: U.S. Census Bureau, 2013-2017 American Community Survey (B09001), BPDA Research Division Analysis.

TABLE A-4
Early Childhood Seats by Provider Type and Age Group (Boston, 2017)

Provider Type	Number of Providers	Number of Seats (%) 0 – 2 years	Number of Seats (%) 3 – 5 years
Childcare Providers	822	5,417 (100%)	11,111 (52.8%)
Center-Based	191	3,789 (69.9%)	7,855 (70.7%)
Head Start	29	468 (12.4%)	2,160 (27.5%)
Non-Head Start	162	3,321 (87.6%)	5,695 (72.5%)
Family-Based	631	1,628 (30.1%)	3,256 (29.3%)
School Providers	110	N/A	9,950 (47.2%)
Public School	85	N/A	8,095 (81.4%)
BPS School	76	N/A	7,040 (87%)
Charter School	9	N/A	1,055 (13%)
Non-Public School	25	N/A	1,855 (18.6%)
Independent School	6	N/A	336 (18.1%)
Nonprofit Org	3	N/A	8 (0.4%)
Parochial School	16	N/A	1,511 (81.5%)
BOSTON	932	5,417	21,061

Source: MA EEC, 2019; Boston Opportunity Agenda Analysis, 2019.

TABLE A-5
Supply-Demand Gaps Scenarios Adjusted by Family-Based Seats (Boston, 2017)

SCENARIOS	SUPPLY-DEMAND GAPS	
	0 – 2 Years	3 – 5 Years
Center-based only seats ¹	82.00%	10.50%
Adjusted seats with family-based (1/4 of seats) ²	76.20%	-8.30%
Adjusted seats with family-based (1/3 of seats) ³	74.20%	-6.20%
Adjusted seats with family-based (1/2 of seats) ⁴	70.40%	-2.10%

Source: MA EEC, 2019; Boston Opportunity Agenda Analysis, 2019.

¹ Seats 0-2 & 3-5 years do not include family-based seats

² Seats 0-2 years include 1/4 and 3-5 years include 3/4 of the family-based seats

³ Seats 0-2 years include 1/3 and 3-5 years include 2/3 of the family-based seats. All analysis utilized this adjustment.

⁴ Seats 0-2 years include 1/2 and 3-5 years include 1/2 of the family-based seats

TABLE A-6

Breakdown of Documented Quality Seats by Provider Type and Age Group (Boston, 2017)

Provider Type	Number of Providers	Number of Seats (%) 0 – 2 years	Number of Seats (%) 3 – 5 years
Childcare Providers	71	1,478 (100%)	3,678 (52.8%)
Center-Based	65	1,459 (98.7%)	3,639 (98.9%)
Head Start	20	333 (22.8%)	1,714 (47.1%)
Non-Head Start	45	1,126 (77.2%)	1,925 (52.9%)
Family-Based	6	19 (1.3%)	39 (1.1%)
School Providers	58	N/A	5,450 (47.2%)
Public School	44	N/A	4,150 (76.1%)
BPS School	43	N/A	4,027 (97%)
Charter School	1	N/A	123 (3%)
Non-Public School	14	N/A	1,300 (23.9%)
Independent School	4	N/A	307 (23.6%)
Parochial School	10	N/A	993 (76.4%)
BOSTON	129	1,478	9,128

Source: MA EEC, NAEYC, and Non-public schools websites, 2019; Boston Opportunity Agenda Analysis, 2019.
BPS = Boston Public Schools

TABLE A-7

Quality Indicators Available for Providers in Boston

Accreditation type	Rating
CHILDCARE PROGRAMS	
Massachusetts Quality Rating and Improvement System (QRIS): center- and family-based providers	1 (lowest), 2, 3, and 4
National Association for Family Child Care (NAFCC): specific for family-based providers	Accredited or not. Accreditation needs to be renewed regularly
CHILDCARE AND SCHOOL PROGRAMS	
National Association for the Education of Young Children (NAEYC)	Accredited or not. Accreditation needs to be renewed regularly
SCHOOL PROGRAMS	
Association of Independent Schools in New England (AISNE)	Accredited or not. Accreditation needs to be renewed regularly
New England Association of Schools and Colleges (NEASC)	Accredited or not. Accreditation needs to be renewed regularly
National Association of Independent Schools (NAIS)	Accredited or not. Accreditation needs to be renewed regularly
Commission of Independent Schools (CIS)	Accredited or not. Accreditation needs to be renewed regularly

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