

**Rappaport Institute for Greater Boston Working Paper**

**An Economic Analysis of the Child Care and Early Education Market in Massachusetts**

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## I. Introduction

Given the overwhelming evidence that early childhood development affects later outcomes and that achievement gaps are already substantial by age five, it is puzzling that our society does not invest in early childhood education to at least the same extent as it invests in K-12 education. In Massachusetts, public support for early education amounts to approximately \$3,700 per child,<sup>1</sup> while public support for K-12 education amounts to approximately \$20,000 per child.

Moreover, there is good reason to expect that without significantly more public financing, the market will continue to provide fewer than the socially optimal number of early education slots, the slots that exist will, on average, be lower than optimal quality, and early education workers will be paid less than they would in a system that delivers optimal care.

In Massachusetts, policymakers are engaged on this problem. The Governor and Legislature both have championed greater investments in early education and care, providing state funds to substitute for expiring pandemic-era federal funds, and increasing support in other ways. Overall, per child inflation-adjusted spending has increased by approximately 58 percent over the past five years. The Governor also recently issued an executive order establishing an inter-agency task force to advise on the development of a whole-of-government approach to increasing access to affordable high-quality child care. In March, 2024 the state senate passed a broad bill laying out a multi-year strategy for system reform and expansion (Early Ed Act, 2024). A coalition of advocates have sketched out one comprehensive approach that would cost several billion dollars and ensure that no family pays more than 7 percent of its income for child care (Albelda, Clayton-Matthews, et al, 2023).

As the state considers how best to take additional steps to increase access to affordable high-quality child care, several important questions are at the forefront:

1. How can a more comprehensive system be structured that builds on the existing provider base, rather than disrupting it?
2. How can additional dollars be added to the system to raise quality and expand slots while crowding out as little current financing as possible – so that the total incremental fiscal cost of the expansion is no higher than necessary?

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<sup>11</sup> As discussed below, there is approximately \$1.4 billion in federal, state, and local spending on infants, toddlers, and preschoolers, and there are approximately 379,500 children in that age range. 52 percent of young children are in formal care, so this \$3700 in spending per child amounts to approximately \$7400 per child receiving care.

3. How to have incremental steps on the way to a comprehensive system be consistent with the vision for the ultimate comprehensive system so that little backtracking is necessary?

This report aims to advance the policy discussion by providing new analysis of Massachusetts child care data along with a clear presentation of some of the key tradeoffs that need to be confronted. It begins by discussing the economic rationales for greater public investment in early education and care (EEC) and by describing the current state of the EEC market in Massachusetts. It then delves more deeply into four issues:

1. The need to carefully sequence policies that increase quality, expand supply, and increase demand so that new supply is in place in time to meet the increased demand that will occur as affordability challenges are addressed and so that we avoid the adverse outcomes that other jurisdictions have experienced from placing children in low-quality care.
2. How best to introduce new state dollars into the system so as to support higher quality care, greater access and affordability for families, and higher wages for early educators.
3. Alternatives for reducing the risk to providers of adding new capacity.
4. The tradeoffs among different approaches to income-based subsidies for families.

The analysis in this report is limited to the education and care of infants, toddlers, and preschoolers – children who are too young to be eligible for kindergarten. In this report, I sometimes refer to this age range collectively as “young children.” There are also important EEC policies and public sector investments related to after-school and out-of-school-time programming for older children, and research suggests that these programs for elementary school age children are important for both children’s educational success and family economic mobility. These programs deserve a separate report because many of the family affordability, access, and workforce challenges described here are relevant for that part of the EEC sector as well.

## II. The Economic Rationale for Public Investment in Early Education

In designing policy, it is important to be precise about the market failures or equity objectives that motivate potential government action, so that the policy response can be carefully crafted to ameliorate the market failures and accomplish the equity goals.

In the case of early education and care there are three main reasons why the market left to its own devices will result in both too little care being provided and the care that is provided being of less than optimal quality (on average). These three reasons explain why we find ourselves in the situation we are in – with families struggling to obtain and afford care and providers struggling to recruit and retain the staff necessary to deliver high quality care.

First, the market, without intervention, will not provide opportunity for all. Without help, lower-income families will not be able to afford care, and children in those families will not have the level of early education and care that society wants every child to have. In the language of economics, the collective desire for every child to have high quality early education can be motivated by fairness, merit good, or altruism arguments and also by positive externality arguments (e.g., we all benefit when our coworkers are more productive and our neighbors are less likely to commit crimes). But more simply, if we agree that every child deserves a good start to life and that early education and care is necessary for that good start, then the fact that high-quality care costs at least \$20,000 to \$30,000 annually, depending on the child's age, implies that it is not even remotely possible that families with incomes of \$30,000, \$40,000, \$50,000 or even higher are going to be able to afford care, and government subsidies will be needed in order to provide access for all.

Second, the inability to borrow against future earnings means that even families who are not low income in a lifetime sense may end up spending too little on early education and care. Young children cannot go to the bank and take out a loan to finance their own high-quality early education, even if their future selves would happily repay the loan. Young middle-class parents may struggle to come up with the resources to pay for their child's early education and care even if their 60-year-old selves will wish they could have transferred money back to their 30-year-old selves to pay for more or better care. Economists refer to this inability to borrow against future income as “liquidity constraints.” By taxing those with the ability to pay (disproportionately those who are later in life and at peak income levels) and subsidizing early education and care for the young, government can relieve these liquidity constraints.

Third, given the unpredictability of enrollment, providers face substantial uninsurable risk of unfilled slots that discourages them from adding capacity. There are two features of the existing early education industry that exacerbate this problem. First, most child-care

providers are small, with half having five classrooms or fewer, and most operating at only a single site. So it is hard for providers to smooth enrollment risk on their own in the way, for example, that a K-12 school district can.<sup>2</sup> Second, minimum staffing regulations discourage incremental expansion, since one additional child can result in a slightly over-enrolled classroom that must split into two under-enrolled classrooms. If providers are paid only for filled slots and payments are only slightly above marginal costs<sup>3</sup>, providers have an incentive to restrict capacity and make sure there is a waitlist so that all slots are always filled. It would be hard for a private company to offer enrollment insurance for both adverse selection (only the providers facing the greatest likelihood of under enrollment would voluntarily purchase insurance) and moral hazard (once insured, a provider might not work as hard to recruit families) reasons. So there is a need for government action to insure providers against enrollment risk or otherwise incentivize them to expand capacity.<sup>4,5</sup>

Specifying the market failures that result in under provision of early education can help us understand the situation we are in and design policy remedies, but knowing we are spending too little on care does not get us far in figuring out what the optimal level of spending is. Should we be spending \$20,000 per child? \$30,000 per child? \$40,000 per child? Should we be paying child-care workers \$25 per hour? \$30 per hour? \$35 per hour? Unfortunately, research on the returns to additional investments in early education is not

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<sup>2</sup> While there are tradeoffs associated with large corporate child care chains, the ability to diversify enrollment risk across sites is a benefit of those structures.

<sup>3</sup> Sometimes payments, particularly for slots funded by public subsidies, are below marginal costs.

<sup>4</sup> While these three market failures are the most relevant ones for planning the next steps in Massachusetts, there are other market failures relevant for child care policy. For example, it is difficult for parents to observe the quality of different child care providers, which can motivate a government function of quality inspections and licensing. See Poterba (1996), Leibowitz (1996), Blank (1999), and Blau and Currie (2008) for further discussion of the economic rationale for a government role in early education and care.

<sup>5</sup> Poterba (1996) notes that the economic rationales for government action are mostly the same for K-12 education and early education. Thus, it is a bit of a puzzle why the public sector in the U.S. provides universal K-12 education, but not universal early education and care. One possible explanation is that the 1800s push for universal public education was predicated around providing a common educational experience for all children in order to have a functioning democracy (Mann, 1839), whereas parental preferences for early education and care are so varied that it is hard to imagine a one-size fits all model. Historians note that parents were often permitted to leave infants at one-room schoolhouses, sometimes resulting in tragic accidents. Thus, early advocates for universal education limited school to older children to avoid safety risks (Covert, 2020). When kindergartens first came to the U.S. from Germany, they typically provided care to 3–5-year-olds. But when kindergartens were introduced into public schools, budget concerns led to them being limited to 5-year-olds (Zheutlin, 2023; Whitebook et al, 2022). In addition, there was social opposition to policies that would make it easier for women to work, both from conservatives who favored traditional family structures and from progressives who wanted to protect women from “arduous, low-paid jobs” (Michel, 2011).

precise enough to tell us exactly what level of early education spending is optimal, much less how the optimal level of spending differs across children in different circumstances.<sup>6</sup>

But we do know enough to map out a path for the next decade in Massachusetts. As I will discuss further below, there is sufficient evidence of unmet parental demand for child care and of quality issues arising from insufficient investment in the EEC workforce to justify a set of additional investments that are on the far edge of what is likely to be politically feasible. Thus, the risks of overshooting and doing spending that has marginal costs greater than marginal benefits is low. Then, as we gain more experience offering high-quality child care at scale, the research base will expand and provide guidance about how much further to go.

The main reason we need to improve child care and early education in Massachusetts is to give every child a good start in life.<sup>7</sup> But there are additional benefits that come from making it easier for parents, particularly mothers, to do paid work.

First, expansions in the availability of child care will reduce gender disparities in the labor market. In her 2023 Nobel Prize address, Claudia Goldin observes that the male-female differences in education and early-life work experience that historically produced most of the gender gap in earnings have largely disappeared and in some cases reversed. But there is still a large “motherhood penalty” because there are wage premiums for jobs in which workers are willing to work long and unpredictable hours. Because women still take on a disproportionate share of care-giving responsibilities, particularly once children are born, they are less likely to be employed in the higher-paying jobs with less schedule flexibility (Goldin, 2024). More women could choose these higher-paid jobs if there were greater child care availability.

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<sup>6</sup> See Gordon, Herbst, and Tekin (2020) for an attempt to assess the parental demand for different levels of child care quality.

<sup>7</sup> There is a fairly strong consensus in the research literature that there are large returns to investment in high quality early education (e.g., Gray-Lobe, Pathak, and Walters, 2023; Garcia, Heckman, et al 2020; Currie and Thomas, 1995). There are also plenty of careful papers that calculate benefits-cost ratios of 3 to 1 or more (e.g., Karoly, 2016; Ludwig, 2008). But there are also reasons to be cautious about extrapolating directly from this literature. First, some recent evaluations of state-wide and province-wide expansions have found disappointing or even wrong-signed effects on child outcomes (Baker, Gruber, Milligan, 2019; Durkin, Lipsey, Farran, and Wiesen, 2022). Second, studies find that most of the cognitive benefits of early education fade out within a couple of years of a child entering kindergarten (Puma et al, 2010; Feller et al, 2016; Weiland, Unterman, Shapiro, 2021), suggesting either that pre-school helps children learn earlier but that children without pre-school catch up quickly or that the elementary schools the children enrolled in were unable to teach in a way that built on the benefits the children received from high quality pre-school. A more recent literature finds short-term test score fade out but also longer-term benefits to pre-school that emerge after high school (Deming, 2009). This literature argues that even if pre-school does not have cognitive benefits, it may have non-cognitive benefits, for example by producing adults who have more perseverance or are able to interact more successfully with others.

Second, expansions in the availability of child care will increase employment and the size of the Massachusetts economy. As more parents, particularly women, enter the labor force and parents already in the labor force increase their hours and productivity, market income per capita will rise.

Predicting the size of the increases in employment and income that will occur in Massachusetts from an expansion in child care availability is challenging both because the empirical literature provides a wide range of estimates of the key elasticities and because the impacts will depend on the specific child care policies that are enacted.<sup>8</sup> In Massachusetts, 71 percent of mothers of young children are employed (defined as working at least one hour for pay in the previous week), including 56 percent who work 30 hours per week or more (see Figure 1). These rates are higher than nationwide averages, primarily because Massachusetts women have higher than average levels of education. Economists have tried to assess the potential for better child care to increase female labor market participation by looking at the increase in female employment that occurs when a mother's youngest child reaches kindergarten or first grade (Gelbach, 2002). The top left panel of Figure 1 shows that there is a 5-percentage-point increase in female employment in Massachusetts that occurs as the age of the youngest child in the family increases from 3 to 7. The bottom panel shows that there is no similar jump for males. The increase in maternal employment that occurs as children enter K-12 education is sometimes seen as an upper bound on the increase in female employment that might occur if affordable high quality early education and care were more universally available; some parents will still prefer to stay home to care for their children at younger ages even if affordable care is available. But it is not really an upper bound. If more care were available, we might see higher employment not only when children are younger but also when they are older because the earlier labor supply experience might carry over into higher employment in later years. Indeed, the recent research on the labor supply effects of New Haven's universal pre-K program found large earnings increases for mothers that were concentrated in the years after pre-K (Humphries et al, 2024). Moreover, if affordable child care were widely available, it might change fundamental decisions like career choices in a way that increases female employment and earnings. Finally, workers might not just be more likely to be in the labor force but also more productive if they and their colleagues were not stressed out about child care and missing work because of child care emergencies.

Quebec experienced an eight percentage point increase in employment by mothers with at least one child between the ages of 1 and 5 (from 61 percent to 69 percent) after the provincial government reduced the cost of child care to \$5 per day starting in 1997

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<sup>8</sup> See Appendix A of Borowsky et al (2022) for an excellent review of this literature.

(Lefebvre and Merrigan, 2008; Baker, Gruber, Milligan, 2008).<sup>9</sup> Canada's more recent expansion of child care, with half of provinces now delivering child care for \$10 a day or less, has coincided with a four percentage point increase in labor market participation among mothers with young children from 76 percent up to 80 percent (Sudds, 2024). Borowsky et al (2022) simulate the impacts of a national U.S. child care expansion that limits family payments to no more than 7 percent of income and estimate that mothers' employment would increase by six percentage points.

Massachusetts, because it is starting from a high base of female employment and because it may not enact a reform as ambitious as those in Quebec and Canada, might be expected to experience a somewhat lower increase in the labor market participation of women with young children, perhaps 2-3 percentage points (approximately 3-4 percent). Since women with young children make up approximately six percent of the work force, the overall increase in Massachusetts employment might be 0.2%. If productivity gains and dynamic effects were large enough to double the direct increase in employment, then we might see overall annual income increased by 0.4%.<sup>10</sup> Most of these gains would accrue as wages to the newly employed women, and, in a proper welfare analysis, would need to be netted against these workers' increased cost of effort. We might also see gains to other workers from having more productive colleagues, losses to other workers from having more competition in the labor market, and an increase in producer surplus. Massachusetts gross state product is approximately \$640 billion per year, so a 0.4 percent increase in income would be approximately \$2.6 billion per year. State revenue typically rises in proportion to state income. Massachusetts state tax revenue in 2024 was \$41 billion. A 0.4 percent increase in income would bring in an extra \$160 million a year in state revenue that could

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<sup>9</sup> Lefebvre, Merrigan and Roy-Desrosiers (2012) find evidence that supply constraints on child care slots limited the initial impact of the subsidies on female labor supply and estimate a 12 percentage point increase in labor participation among mothers of 1-4 years olds eight years after the reform.

<sup>10</sup> In this analysis I have assumed that a one percent increase in employment leads to a one percent increase in output and incomes. Implicitly, I am assuming that capital is sufficiently elastic in the medium term to prevent a sustained decline in female wages from the extra labor supply and that the average wages for the incremental women who enter the labor force will be similar to the state-wide average. Fortin, Godbout, and St. Cerny (2013) make similar assumptions.



partially offset the cost of the child care expansion. If the higher incomes reduce the use of means-tested state benefits, the state revenue offset could be somewhat larger.<sup>11,12,13</sup>

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<sup>11</sup> Taking into account the additional employment in the child care sector could raise these income and revenue numbers by 5 to 10 percent.

<sup>12</sup> Fortin, Godbout, and St. Cerny (2013) find that the 1997 Quebec expansion in child care subsidies had a net positive impact on the provincial budget, more than paying for itself. Because they assume much greater labor supply effects (a 12 percent increase for mothers with young children), they estimate a 1.7 percent increase in provincial income, more than 4 times what I calculate here. In addition, state tax rates and state means tested transfers are higher in Quebec so the revenue gained per dollar of additional earnings is higher than it would be in Massachusetts.

<sup>13</sup> Massachusetts Taxpayer Foundation (2022) comes up with strikingly similar estimates, despite using a completely different methodology that relies of extrapolating from national surveys of economic losses from inadequate child care. Specifically, MTF finds that Massachusetts loses \$2.7 billion a year, disaggregated into \$1.7 billion in lost wages for individuals and families, \$812 in employer costs , and \$188 in lower tax revenues.

### III. The Current State of Early Education and Care in Massachusetts

Prior to the pandemic-era Commonwealth Cares for Children (C3) program, data on the state of early education in Massachusetts were limited. The Commonwealth's Department of Early Education and Care licensing process provided comprehensive information on the licensed capacity of providers regulated by the agency, but data on many other aspects of the system, including enrollment and educator wages, were sparse. Today, with 91 percent of licensed providers participating in the C3 program and reporting data regularly, we have a much better understanding of the state of early education and care in Massachusetts.

#### *Enrollment*

In recent years, there have been approximately 69,000 births per year in Massachusetts.<sup>14</sup> Thus, on September 1 of each year, when most 5-year-olds begin kindergarten, there are approximately 345,000 children in the state younger than 5 who need early education and/or care, and this number rises throughout the year to approximately 414,000 children at the end of August as additional births occur before the next cohort of five year olds leaves care for kindergarten.

In February 2024, half-way through this annual cycle, there were an estimated 379,500 children in Massachusetts who were too young for kindergarten, and 199,000 of them (52.4 percent) were enrolled in formal child care, where formal is defined as a licensed child care center, a licensed family-based provider, or a school-based pre-k program. The top panel of Table 1 shows that the enrollment rate rises with age. In February 2024, 24 percent of infants, 40 percent of toddlers, and 71 percent of preschoolers were in formal care.<sup>15</sup> The bottom panel of Table 1 further breaks down the enrollment rate by single years of age.

While there are more licensed family-based providers than child care centers serving infants, toddlers, and preschoolers in Massachusetts (5400 vs. 2200), the average enrollment of a child care center is 60 children compared to 6 children for family-based providers, so centers enroll four times as many children as family-based providers.

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<sup>14</sup> The population of young children tracks closely the number of births, because the net of out-migration and in-migration is small. The data informing this statement precede the recent wave of refugee immigration. Births have been steadily declining since 1990, except for a bigger dip during the pandemic, and are down about 10 percent from twenty years ago (Figure 2)

<sup>15</sup> For the purposes of regulating classroom staffing ratios, the state subdivides young children into infants (ages 0 to 15 months), toddlers (ages 15 months to 33 months), and preschoolers (ages 33 months and above).

We do not have comprehensive data on the child care and early learning activities of Massachusetts children who are not in formal care. But two recent surveys, the 2021 City of Boston Child Care Survey and the 2018 Harvard Early Learning Study find that the most common type of informal care is parental care. In addition, significant numbers of families rely on relatives or on nannies/babysitters in their home. Approximately 5 percent use unlicensed non-relative care.

### *Unmet Demand*

In charting a path forward for early education and care in Massachusetts, we need an assessment of unmet demand. How many more families would use formal child care if care were available, affordable, and high quality? What kind of provider would they choose? Performing this assessment is challenging, both because we do not have data on child care preferences from a representative sample of Massachusetts families and because it is hard to interpret preferences expressed in surveys since they depend in a complicated way on price, hours and location availability, and, in some cases, on strategies designed to gain acceptance into a family's preferred school for kindergarten. To fill in some of the knowledge gaps, the Rappaport Institute for Greater Boston is currently fielding a survey on this topic, with results expected in late October 2024.

The best evidence that there is significant unmet demand in Massachusetts comes again from the Harvard Early Learning Study and from the City of Boston Child Care Survey.<sup>16</sup> Figure 3 reproduces a figure from Jones, Lesaux, et al (2020). It shows that enrollment in formal care among parents of 3 and 4 years olds follows a u-shaped pattern with income. In families with incomes below \$30,000, 61 percent of children are enrolled in formal care. The percentage is nearly identical for parents with incomes above \$125,000. But enrollment is only 45 percent for families with incomes between \$30,000 and \$125,000. Affordability appears to be driving this pattern. Low-income families can afford care if they receive a state subsidy. High-income families can afford care because they have sufficient incomes. But the families in the middle use less child care because they cannot afford it.<sup>17</sup>

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<sup>16</sup> In theory, data on waitlists of various kinds could be a useful measure of unmet demand. But the waitlist data that exist appear to be of mixed quality. The state's new financial assistance portal should improve these data going forward.

<sup>17</sup> Not all of this pattern is the result of affordability. Families that choose to have a parent stay home with their child will mechanically end up with less income because of that choice. Therefore, it is likely that some of the u-shaped pattern results from families that were higher income before their child was born choosing to have one parent leave the labor market. This would cause these families to show up in the data as middle income and not using formal child care. It would be interesting to look at these enrollment patterns based on income in the year prior to when the family's first child was born or based on only the income of the higher-

This figure suggests that a minimum target for additional child care capacity should be enough additional capacity to allow middle income households to enroll at similar rates as low and high-income households do. This would require an increase in system-wide licensed capacity along with subsidies to make the care affordable. Under the assumption that there would be some additional demand for care at all income levels if higher quality care were more available and more affordable, it seems likely that the additional needed capacity is at least 20 percent (i.e, increasing the percentage of children in care from 52 percent to 62 percent), an amount that will take funding, concerted effort, and several years to bring on line. Based on the Canadian experience of trying to add capacity in a heavily-subsidized system, achieving a 20-percent increase in capacity over 5 years would be a very ambitious target.<sup>18</sup>

The City of Boston Child Care survey found that two-thirds of parents who were staying home with their children said that they would have preferred to be using paid child care. Interestingly, among parents with preschoolers, one third of those using center-based care said they would rather be using school-based care. It is unclear whether this is because school-based care is perceived to be of higher quality, because it is free, or because families understand that pre-K enrollment is a route to their desired elementary school. School-based care often provides only six hours of care, though some facilities supplement this with before and after school programs. There have been anecdotes about communities adding school-based slots without before and after school programs and discovering that enrollment in these programs was low because parents require more than six hours of care in order to be employed full time. Thus, entangling exactly what is driving parental preferences for different types of child care arrangements can be difficult.

We also lack comprehensive data on what parents of infants want. Massachusetts has taken large strides in increasing the availability of paid parental leave. Further steps to support and extend paid parental leave could be a more cost-effective way to support parents with infants than adding infant slots in child care centers, though the state likely needs more infant slots as well. In a world in which more parents are staying home with their infants for longer, the state should also invest in more part-day slots, parent-infant drop-in programs, and other resources that reduce the isolation of full-time parental care givers and give such caregivers a few hours off per day to attend to their own needs.

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earner in the household. Both approaches would clarify the relationship between economic resources and utilization of formal child care.

<sup>18</sup> Canada seems to be aiming to increase enrollment in formal care to somewhere between 60 and 67 percent. Europe has established very specific targets. In 2002, the European Council set targets for member countries to enroll at least 90 percent of 3-4 year olds in child care facilities and at least 33 percent of children under 3 (European Parliament, 2013),

## *The Cost of Delivering Care*

Delivering early education and care is expensive because the staffing ratios required to deliver care are much higher than for K-12 education, and parents who are employed full time typically need more than 8 hours of care per day in order to do their jobs and commute to and from centers for pick up and drop off. Classrooms are most commonly staffed with two teachers, and programs usually operate for 10 hours a day. For centers, Massachusetts requires a 2:7 educator-to-child ratio for infants, a 2:9 ratio for toddlers, and a 2:20 ratio for preschoolers. Because centers are open more than 8 hours a day and staff need breaks and take leave, centers usually aim to employ between 2.5 and 2.75 FTEs per classroom (CELFE, 2023).

As part of its policymaking and rate-setting process, the Massachusetts Department of Early Education and Care commissioned the Center for Early Learning Funding and Equity (CELFE) to build models of what it costs to deliver care for both center-based and family-based providers. The models carefully consider each component of costs, including educator salaries and benefits, space, utilities, food, supplies, insurance, and many other components, and they were informed by focus groups with providers, other stakeholders, and EEC staff. In the center-based model, employee compensation (including wages, benefits, and payroll taxes) is 66 percent of costs, rent and utilities are 16 percent of costs, and food is 9 percent of costs.<sup>19</sup> Similar results have been found by experts who have analyzed the balance sheets of specific providers. For example, Neighborhood Villages (2024) studied a provider operating in a high-poverty area offering extensive wrap-around services and found that this provider spent 75 percent of its budget on employee compensation, 9 percent on facilities, and 8 percent on food.

The CELFE model incorporates geographic variation in costs because rents and salaries vary in different parts of the state. For the Northeast Region, the third most expensive of the six regions in the state, center-based costs at current salary levels are \$33,622 per child for infant care, \$26,168 per child for toddler care, and \$13,774 per child for preschoolers.<sup>20</sup> Given that 14 percent of children enrolled in formal care in the state are infants, 28 percent are toddlers, and 58 percent are preschoolers, the weighted-average cost of providing full-

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<sup>19</sup> The remaining 10 percent of costs includes maintenance, insurance, supplies, training, legal and audit support, among other costs. These numbers refer specifically to the version of the model with current staffing and wage rates. There are also versions of the model with higher staffing and higher wages.

<sup>20</sup> In the CELFE model, costs in Metro Boston, the highest cost region in the state are approximately 6.5 percent higher than those for the Northeast Region, and costs in Western Massachusetts, the lowest cost region, are approximately 8 percent lower.

time center-based care to a typical child in Massachusetts at current salary levels is almost exactly \$20,000 dollars per year.<sup>21</sup>

### *Government Funding*

Table 2 presents an attempt to construct a consistent data series of state and federal support for early education in Massachusetts. There are two reasons why constructing this data series is challenging. First, some of the federal funding that flows into the state to support early education ends up on the state balance sheets and some does not. Second, my analysis is limited to education and care for children who are not yet in elementary school. However, the Department of Early Education and Care is also responsible for licensing and funding after-school programs for children up to the age of 12. So in my analysis, I cannot simply take the published budget totals, but need to determine the share of the funding that goes to support children in the age range that is my focus.

Table 2 shows that the state government in Massachusetts spent approximately \$951 million in fiscal year 2024 on early education and care for children who are not yet in kindergarten.<sup>22</sup> A significant portion of the state spending originates in the federal government and flows through the state government on the way to families and providers.<sup>23</sup> The federal government also directly provided another \$188 million to child care centers for Head Start.<sup>24</sup> So total state and federal spending totals \$1.139 billion. These government funding flows represent an average of \$3,000 per child. I have not been able to assemble consistent data on pre-K spending by cities and towns, but, based on enrollment, it is likely that cities and towns spend a further \$250 million beyond the amounts shown in Table 2. Adding in this spending would bring the public sector EEC spending per young child in Massachusetts to \$3,700. Since just over 50 percent of children are enrolled in formal care, this spending represents \$7,400 per child enrolled in formal early education and care. Based on these numbers, I estimate that government spending pays for about 40 percent of the total cost of the formal early education and care delivered in the state.

Total federal and state spending shown in Table 2 has increased substantially in recent years, rising from \$575 million in 2019 to \$1.1 billion in 2024. These numbers are nominal.

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<sup>21</sup> The exact calculation comes out to \$20,024. The CELFE model is calibrated to 2022 costs.

<sup>22</sup> This is direct spending to support the provision of care. It does not include the costs of administering the overall child care system, such as licensing providers.

<sup>23</sup> Massachusetts Taxpayers Foundation (2023) estimates that 37% of the Massachusetts Department of Early Education and Care's budget in 2022 came from the federal government.

<sup>24</sup> My back-of-the-envelope calculation suggests that the federal tax credit for child and dependent care expenses and federal dependent care flexible spending accounts provide another \$50 million in support for Massachusetts families with young children. These tax credits are not included in Table 2.

In constant dollars, there has been a 58 percent increase in spending over the past 5 years.<sup>25</sup> The largest component of the increase comes from the Commonwealth Cares for Children (C3) program. During the Covid-19 pandemic, the federal government made large grants to states to stabilize the early education sector. Massachusetts used these funds to create the C3 program which makes grants to providers for on-going operational expenses and investments in workforce and program quality on a per-child basis, with adjustments for staffing levels and equity. When the federal funding ran out after FY 2023, the governor and legislature decided to continue this program at the same level with state funds. Massachusetts is the only state in the country that fully maintained funding levels after the federal funding ended.

The second biggest component in the state's increased spending on early education and care is the Child Care Financial Assistance (CCFA) program that reimburses providers for costs of serving children in low-income and/or high-need families. There are two components of the CCFA program. Families with certain kinds of active cases with the Department of Transitional Assistance or the Department of Children and Families are automatically eligible; they receive early education and care at no cost to the family. Other low-income families with certain service needs (such as working, attending school, or participating in job training) are eligible to receive child care financial assistance with the subsidy amount varying with the family's income. However, there is a wait list for receiving the income-based subsidies. The Department of Early Education and Care estimates that subsidies reach 29 percent of income-eligible families across all of the age groups that the agency serves, and subsidies reach 46 percent of families with young children and all adults in the workforce.<sup>26</sup>

Under the income-eligible component of CCFA, children are eligible for financial assistance if their family income is below 50 percent of the state median income (SMI). Once enrolled, children remained eligible so long as their family income remains below 85 percent of SMI. The FY 2025 state budget contains language directing the Department of Early Education and Care to expand eligibility to families with incomes up to 85 percent of SMI at the initial application phase, while continuing to prioritize families with incomes

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<sup>25</sup> In calculating the percentage increase in spending, I leave out spending on CPI, because I do not have data on that component of spending for 2019.

<sup>26</sup> It is challenging to estimate the share of eligible families receiving assistance. Estimates of take up rates for government programs that divide administrative counts of subsidy recipients by Census-based estimates of eligible families are notorious for understating take up rates because of measurement error from families having income that is not reported to the Census Bureau (Bee and Mitchell, 2017; Meyer, Mok, and Sullivan 2015).

below 50 percent of SMI. Because funding was not increased in proportion to the expansion in eligibility, wait lists are likely to increase.

Another significant state investment occurs through the Department of Elementary and Secondary Education's Chapter 70 program which is the state's main funding stream for public schools. Chapter 70 provides funding based on enrollment, wage levels, tax capacity, and a variety of equity factors. When public schools offer pre-K programs, the district is eligible for Chapter 70 payments for the children served, but only at the half-day kindergarten rate regardless of the hours of pre-k provided.

The Commonwealth Preschool Partnership Initiative (CPPI) is a smaller funding source that is likely to be increasingly important going forward if there is a decision to try to expand preschool capacity. This program currently supports a limited number of Massachusetts communities each year in expanding their preschool capacity. CPPI had its origins in the federal Preschool Expansion Grants. When those grants ran out in 2019, the state created CPPI.

For completeness, this table also includes federal Head Start funding even though those funds do not flow through the state. There is also a state program that supplements the federal Head Start funds with state grants.

The funds displayed in this chart are those that go directly to providing child care and early education to children. There are other funds, not shown, that go to important administrative and policy purposes such as licensing, capital investments, curriculum development and professional development, and program management.

### *Income-based Subsidies*

As discussed above, Massachusetts provides subsidies for children to receive early education and care services through the Child Care Financial Assistance (CCFA) program. There are two forms of subsidies, vouchers and contracts. Under the voucher program, individual children meeting eligibility criteria receive a voucher that they can use to obtain child care from any provider who agrees to participate in the CCFA program and accept the state rate for providing care. Under the contract program, the state enters into a contract with a provider who agrees to accept the state payment rate, and the provider uses the funding to enroll an eligible family and receive the subsidy from the state. The state specifies daily rates that vary depending on the ages of the children being served and the region of the state the center or family-based provider is located in. On an annual basis (assuming 261 days of care), the center-based rates for FY2024 work out to between



\$25,364 and \$31,195 for infants, between \$19,700 and \$28,308 for toddlers, and between \$14,937 and \$20,913 for preschoolers.

In February 2024, 33,819 infants, toddlers, and preschoolers were receiving subsidized child care through the CCFA program. This is up from 29,993 in July 2019 as the state has increased funding and the Department of Early Education and Care has made a concerted effort to increase access to CCFA. There are more than 19,000 infants, toddlers, and preschoolers on the CCFA waitlist.

In February 2024, the average state subsidy amount was \$1413 per month (\$16,956 per year). As mentioned above, some families obtain eligibility through the child welfare system or from participating in TANF. These families represent 41 percent of the caseload and receive completely subsidized child care with no family contribution necessary. The rest of the caseload obtains eligibility from having income at the time of initial enrollment below 50 percent of the state's median income for their household size (\$53,611 for a family of two; \$66,226 for a family of three; \$78,840 for a family of four) and current income below 85 percent of SMI (\$91,139 for a family of two, \$112,583 for a family of three, \$134,028 for a family of four).

In the income-eligible caseload, families pay nothing for child care so long as their income is below the poverty line for their family size. Families with income above the poverty line pay a portion of the cost on a sliding scale, with the total of the state subsidy and the parent contribution equaling the CCFA payment rate. Figure 4 shows how the payment amount that a family of four is responsible for increases as its income rises.

Under the current 50 percent of SMI eligibility threshold, a large portion of the income-eligible caseload is receiving completely subsidized child care, and the average state payment amount per child for families in the income-eligible portion of CCFA is only approximately \$100 a month lower than that for the DTA and child welfare families who automatically receive fully subsidized care.

### *Providers, Employment, and Wages*

There are approximately 2200 child care centers operating in Massachusetts that serve infants, toddlers, and/or preschoolers. These centers have an average enrollment of 60 children per center. There are also approximately 5300 family child care providers with an average enrollment of 6 children per center. In addition, there are approximately 35,000 children enrolled in public school pre-K programs.

41,000 early educators work in the early education and care sector in Massachusetts. Table 3 shows estimates for February 2024 based primarily on C3 applications. In child care centers, there are approximately 19,000 lead teachers, 7000 assistant teachers, and 2700 center directors. In licensed family child care, there are approximately 5000 owners and 2500 assistants. There are an estimated 4000 teachers in public pre-k classrooms.

Figure 5 and table 4 show the hourly wage distribution of these early educators from the spring of 2024. The median wage for center-based lead teachers was \$21.50 (\$43,000 a year, assuming 2000 annual hours), with an interquartile range of \$19.50 to \$25.00. For assistant teachers, the median was \$17.50 (\$35,000 a year) with an interquartile range of \$16.00 to \$19.50. The median center director earns \$30 an hour (\$60,000 a year). Assistants in family-based child care centers earn less, with a median of \$15.50 (\$31,000 a year).

In conversations with center directors, one hears that it is harder than ever to recruit staff, that they are hiring people with less work experience than they used to, and that some do not operate at their licensed number of classrooms because they cannot find enough qualified teachers. One also hears that they lose talented staff members to public schools because of the much higher pay and benefits and also to retail outlets which offer somewhat better pay and much more flexible hours.

A feature of the post-Covid labor market has been rapid real wage growth at the bottom of the wage distribution. If child care providers cannot match this wage growth, they will find it hard to recruit and retain talent. To better understand these labor market pressures, I analyzed the earnings growth since 2020 of occupations that compete for the same employees that early education providers aim to hire. Specifically, I used matched Current Population Survey data to examine the most common occupations that early educators worked in immediately before or after working in early education. Then I compared the wage growth in Massachusetts since 2020 in early education to those in these competitor occupations using the Bureau of Labor Statistics Employment and Earnings data series.

Table 5 shows that early educators are most likely to work as kindergarten teachers, teacher's assistants, elementary and middle school teachers, maids and housekeeping cleaners, cashiers, and home health aides before and after working as early educators. Table 6 shows that nearly all of these occupations have experienced faster wage growth in recent years than early educators. The exception is kindergarten and elementary school teachers, where wages are determined by multi-year union contracts that did not immediately reset when inflation spiked. Overall, these data are consistent with the anecdotes. There is increased competition for the kinds of workers who tend to work in

early education, and, without further increases in early educator wages, it will continue to be challenging for the early education system to hire and retain the talent it needs.

### *Prices, Cross-subsidies, and Profits*

We saw earlier that annual costs of delivering full-time center based care vary considerably with the child's age -- ranging from about \$34,000 for infants, to \$26,000 for toddlers, and \$14,000 for preschoolers. Prices charged for care do not vary nearly as widely by age. Table 7 shows the distribution of prices for center-based care in Massachusetts. Average prices are \$25,000 for infants, \$22,000 for toddlers, and \$18,000 for preschoolers. What is apparently going on is that because many families cannot afford the true cost of delivering infant and toddler care, centers are keeping prices down in the early years by charging more than costs for preschool care.

While it is helpful that the market has figured out a way to do cross-subsidization and make things work to some extent for families, this dynamic also creates some perverse incentives. Centers that offer only preschool slots have the potential to make profits. Centers that focus on infant and toddler classrooms need philanthropic support or other subsidies such as C3 dollars to breakeven. On the margin, this means that centers are financially discouraged from opening new infant and toddler classrooms. When school districts open pre-K classrooms and siphon off preschoolers from programs offering the full age ranges of care, they can destabilize the existing programs.

Figure 6 illustrates this phenomenon using the actual distribution of classroom types across centers from the C3 dataset under the assumption that infant classrooms lose \$8000 per child, toddler classrooms lose \$4000 per child, and preschool classrooms have revenues that exceed costs by \$4000 per child. The figure plots center "profits" as a function of the percentage of enrollment that is preschoolers. Centers in which less than half of their enrollment is preschoolers lose money and centers in which more than 60 percent of their enrollment is preschools could see a profit. How this actually plays out in the real world is more complicated. Centers earning a surplus due to high number of preschool classrooms may plow the surplus back into higher salaries for teachers, more specialists, and other investments that lead to higher quality care. Some centers facing a deficit may receive additional funding from other sources.

Because the federal government has until recently required CCFA subsidy rates to be based on market rates, CCFA rates have historically reinforced this pattern of cross-subsidization. In the past year, the state has received approval to take costs into account in setting rates. To avoid destabilizing the market, it makes sense to move gradually to a truly cost-based set of rates for CCFA. The state should also consider subsidizing infant and

toddler care more broadly as a way to eliminate the perverse incentives that result from within-provider cross-subsidization while also keeping the price gradient with age similar to what it is today.

#### **IV. Key Issues in Charting a Path Forward**

When policymakers say they aspire to make affordable, high quality child care available to all infants, toddlers, and preschoolers in Massachusetts, I interpret them as meaning four specific things:

1. We need to raise the quality of child care, which will require raising wages for early educators and doing a better job of training them, credentialing them, and helping them build sustainable careers in the sector.
2. We need to generate additional child care slots everywhere, but particularly in parts of the state where there is an imbalance between demand and supply.
3. We need to make it possible for families that cannot currently afford formal child care, and want it, to afford it.
4. We need to reduce costs for families currently paying for child care for whom these payments represent an excessive financial burden.

There are a lot of different ways that the state could spend dollars toward these objectives, but some ways of doing it are much more cost-effective and will result in less leakage of funds than others. Below I discuss each objective and the tradeoffs among different options for accomplishing it. But first I turn to the topic of how to sequence the policies so as to avoid imbalances during the transition to an improved system.

##### *Sequencing*

There are two reasons to think carefully about the sequencing of reforms. The first is that even if unlimited funds were available, we would not be able to bring on all of the additional capacity overnight, and new systems for training and credentialing the workforce will take some time to build, so there is a need to think through how all of the steps fit together. The second is that we may not immediately have all the funding we need to fully meet all four objectives, so we need to think through how to prioritize spending as we build toward the ideal system.

My analysis of conditions on the ground in Massachusetts and of the experience of other jurisdictions, particularly Canada, that have undertaken ambitious child care reforms suggests that we need to raise early educator wages first, then start working deliberately to expand capacity, and then phase in additional demand-side subsidies with a lag so that the additional subsidies become available around the same time that the new capacity comes on line.

If we try to expand capacity before raising early educator wages, we are going to build classrooms but fail to staff them. If we provide additional financial assistance to families, before bringing new capacity on line, we will increase the size of waitlists and generate frustration, rather than expanding access. This is especially true if we use a funding mechanism that caps prices.

One could argue the opposite: that we should first make basic child care available to and affordable for every family before we spend money on the luxury of quality. But the evidence from Tennessee and Quebec that strategies emphasizing slots before quality led to adverse outcomes for children makes such an approach quite risky.<sup>27</sup> Moreover, some of the gains we hope to achieve in terms of child development and closing readiness gaps almost certainly require higher quality, a conclusion reinforced by evidence of benefits from Boston's expansion of high-quality pre-K.<sup>28</sup> And even if one questions the relevance of the Quebec and Tennessee research for Massachusetts, there is still the question of how to recruit a sufficient workforce without higher wages.

### *Quality and Wages*

The key challenge in subsidizing the wages of early educators is how to do it in a way that actually raises their take home pay and does not end up getting captured by their employers. Suppose you have a worker making \$12 an hour and the government provides a \$2 an hour wage subsidy. The employer might reduce the worker's wage to \$10 an hour, in which case the worker is still receiving only \$12 an hour even after the subsidy.<sup>29</sup> Under this scenario, the employer has saved \$2 an hour and captured the subsidy. This possibility is not just hypothetical. Research has found that employers capture about half of the value of the portion of the Earned Income Tax Credit that is targeted at single mothers (Rothstein, 2010).

The solution is to combine a wage subsidy with a wage floor – so that employers cannot reduce wages. Other jurisdictions have figured this out. Washington, DC is spending \$40 million per year on an Early Educator Pay Equity Fund that compensates providers for

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<sup>27</sup> Durkin, Lipsey, Farran, and Wiesen (2022) find that the statewide public pre-K expansion for low-income children in Tennessee led to lower achievement test scores in third through sixth grade along with more disciplinary infractions and lower attendance. Baker, Gruber, and Milligan (2019) found that the introduction of universal child care in Quebec led to increased hyperactivity, anxiety, and aggression in the short term among children and then worse health, lower life satisfaction, and higher crime rates later in life.

<sup>28</sup> On the impacts of universal preschool in Boston, see Gray-Lobe, Pathak, and Walters (2023).

<sup>29</sup> In practice the employer would be unlikely to directly reduce the worker's nominal wage. Instead, the employer would accomplish the wage reduction by giving employees smaller raises going forward.

raising educator wages.<sup>30</sup> In order to access the fund, providers are required to abide by minimum hourly wages that for lead leaders range from \$26.09 per hour (\$54,262/year) for a teacher with a Child Development Associate degree to \$36.11 per hour (\$75,103/year) for a teacher with BA or higher degree. Most Canadian provinces have adopted a similar approach as part of Canada's recent early education expansion. For example, in Alberta, level 1 early educators are receiving a \$2.64 per hour wage top up, level 2 educators are receiving a \$5.05 per hour top up, and level 3 educators are receiving an \$8.62 per hour top up. These government-funded wage increases come with new minimum hourly wage requirements.

Massachusetts could pay providers to increase early educator wages by adding funds to the C3 program. Any provider accepting the C3 wage subsidies would need to pay each of their educators at least the specified minimum wage for that employee's role and education/credential level. The state could provide a base increase for all early educators immediately and then supplement this with an additional education/credential based tier once a new comprehensive system of credentialing linked to education and training for early educators is in place.

The data I presented in section 2 on early educator wages are from FY2024. In the discussion that follows I convert the FY2024 wages into FY2026 levels so that the presentation of funding levels is relevant for the coming year's budget discussions.<sup>31</sup>

Absent intervention, I expect the median wage for a center-based lead teacher to be \$23.00 per hour in FY2026. If the state were to provide a \$5 per hour subsidy for all early educators, paid to the provider, and combined that with a minimum lead teacher wage of \$28.00 per hour, the 50 percent of educators earning less than \$23.00 would all receive a raise of at least \$5 per hour. A worker initially receiving \$24.00 an hour would be guaranteed an increase of only \$4 an hour, but there is a good chance that their employer would raise their wage to above the minimum for the same reason that that employer was already paying more than the median -- they are competing for talent. In theory, one could require employers to give all workers a one-time wage increase of \$5 regardless of the worker's starting wage, in addition to establishing the minimum wage going forward. But that could be seen as penalizing providers who were already doing the right thing by paying higher wages and discourage providers from paying above the minimum going forward. To fully hold firms harmless, the state subsidy should be enough to cover both the extra wages and

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<sup>30</sup> Washington, DC has approximately one-tenth the population of Massachusetts, so the equivalent sized fund in Massachusetts would be \$400 million.

<sup>31</sup> Specifically, I inflate wages for FY2025 by 3.5 percent (assuming 2.5 percent inflation and 1 percent real wage increase) and for FY2026 by 3.0 percent (assuming 2.0 percent inflation and 1 percent real wage increase).

the provider's additional FICA, Worker's Compensation, and other fringe payments that would go up from paying the employee a higher wage.

There are several parity concepts the state could consider in deciding how much subsidy to provide and where to set the wage floor. For early educators with a BA, one could set the wage floor at the same annual salary as a first year BA K-12 teacher. This would imply an hourly wage that is only 10/12<sup>ths</sup> as high as that of a starting teacher because early educators work 12 months a year while K-12 teachers work 10 months a year. Alternatively, one could match the same hourly wage as a starting teacher. Or because K-12 salaries start low and rise quickly as teachers receive both step increases and cost of living increases, but early educators typically receive only cost of living increases, one could aim to match the same hourly pay as a 5<sup>th</sup> year teacher.

Table 8 shows target wages for each of these concepts along with the required hourly wage subsidy, and my estimate of the annual budget cost to the state of providing funding to providers to fully cover these wage increases. The budget cost assumes enrollment in early education rises 5 percentage points from 52 percent to 57 percent and that the state pays the full cost of the wage increase along with an additional 12 percent to cover incremental payroll taxes and fringe.

Wage increases would directly increase quality by enabling the sector to recruit workers with more education and experience, reducing turnover, and making it more worthwhile for educators to invest in career development. But, in addition, it makes sense to require more training and education in exchange for the higher wages. There are a number of promising initiatives underway in the state that are educating early educators – initiatives that lay the groundwork for the comprehensive system of training and credentials that would be reasonable to expect in conjunction with a wage-subsidy system. For example, the City of Boston has been partnering with UMass Boston, Bunker Hill Community College, and Urban College to deliver training that prepares students to become Pre-K teachers; Neighborhood Villages offers an apprenticeship program for assistant teachers to earn their Child Development Associate credential; The Department of Early Education and Care, in conjunction with the Department of Higher Education offers a number of pathways to certification and enrollment in higher education, and the FY25 state budget includes \$7.5 million to fund early educator scholarships.

### *Reducing expansion risk and removing other barriers to adding capacity*

There are two big obstacles that make it hard to add capacity: the large upfront costs of acquiring and renovating space and the risk that enrollment may not immediately match



projections. If the state wants new slots to come online quickly, it will need to expand the support it provides to providers who agree to expand capacity.

To address the first obstacle, the support should be a combination of low-interest loans for acquiring space and grants for renovating space. To address the second obstacle, the state could make extra payments, through C3 or another funding mechanism, to providers for each new classroom during its first year of operation – with the payments calibrated such that providers break even, even if enrollment in the first year is somewhat below projections.<sup>32</sup> In addition, finding appropriate space for a child care center is not simply a matter of having access to funds, it often takes specific community-level conversations about repurposing public property, adjusting zoning, and the like. The Commonwealth Preschool Partnership Initiative has been supporting these sorts of community level planning efforts and will need to be expanded for the state to generate additional capacity quickly in a thoughtful way that builds on the existing infrastructure of public and private programs. Further analysis is needed to figure out the right mix of funding across these alternatives and the right amount of subsidy to provide per additional child care slot created.

As mentioned at the end of section 2, the other barrier to an orderly expansion of capacity is the cross-subsidization that is occurring between preschool slots and slots for younger children. If this were addressed, we would no longer need to worry that efforts to expand standalone preschool capacity might destabilize the rest of the system. In addition, the legislature has recently expressed concerns about for-profit multi-site providers earning profits. In response, the legislature has capped the share of C3 dollars that may go to for profit chains. So far these large providers have been providing a large number of infant and toddler slots and do not seem to be gaming the system by focusing on preschoolers. But the misalignment between prices and costs across age groups is what could at some point create the opportunity for excess profits by a large provider that decided to focus on preschoolers. Given the need for additional capacity in the state, it makes more sense to allow for-profit chains to be part of the capacity solution by fixing the misalignment between prices and costs and directing state resources to address the market challenge, rather than limiting chains through other regulatory or statutory means.

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<sup>32</sup>Actually, the best solution here would likely be to offer explicit enrollment insurance to providers during the first year, with the state making up a fraction, perhaps 50 percent, of any tuition shortfall from under enrollment. The fraction should not be too close to 100 percent to avoid reducing the incentive for the provider to work hard to maximize enrollment. But the gains from setting a system like this up relative to simply paying at higher rates during the first year may not be worth the administrative complexity.

### *Tradeoffs in the design of demand-side subsidies*

As discussed above, approximately 34,000 children are receiving subsidies from the CCFA program, which provides assistance for low-income families to afford child care, and another 19,000 are on the waitlist. As discussed above, effective January 2025, the legislature has directed the Department of EEC to expand eligibility to families with incomes up to 85 percent of State Median Income while continuing to prioritize families with incomes below 50 percent of SMI. In February, the Biden Administration issued a new rule limiting family payments to 7 percent of income under the federal Child Care and Development Fund that provides much of the resources for CCFA. This regulation could require Massachusetts to redesign its subsidy formula, which currently keeps costs very low for the lowest income families but requires some middle-income CCFA families to pay more than 7 percent of their income. Such a redesign would shift dollars away from the lowest income families toward middle-income families.

These policy developments illustrate the key policy dilemma in designing demand-side subsidies for child care. On the one hand, it makes sense to target financial assistance to the lowest income families with the greatest need. On the other hand, families with incomes further up the income distribution cannot afford child care either, and there is a desire to help them as well. Society could, of course, decide that high quality early education and care should be free regardless of income, and raise the taxes necessary to pay for it. But until that happens, we need to make decisions about how subsidies should vary with income.

Figure 7 shows three illustrative subsidy schemes. For each, it shows how much a family of four would be required to pay at different income levels, assuming the full cost of care is \$20,000 per year. The yellow line is the current Massachusetts subsidy schedule. Families pay nothing until their income reaches the poverty line. Payments remain very low until twice the poverty line and then rise more steeply. Family payments exceed 7 percent of income starting a bit above \$80,000 of income.

The red line illustrates a subsidy scheme in which families pay nothing until income reaches the poverty line. Then they pay 10 percent of the portion of their income that is above the poverty line for care. So if a family's income exceeded the poverty line by \$10,000 they would pay \$1,000 a year for care. This subsidy schedule is less generous (requires greater family payments) than the Massachusetts schedule between the poverty line and \$84,000 of income, but is more generous (requires smaller family payments) above \$84,000. Under this scheme, families do not start paying more than 7 percent of income until about \$107,000.

The green line illustrates a plan that is free up to the poverty line but requires all families with income above the poverty line to pay \$20 a day for care. This imposes significantly higher costs on families just above the poverty line than the other two plans do, but keeps costs much lower at higher incomes.

The figure also shows that the two plans that provide greater subsidies to middle and upper income families cost much more than the current Massachusetts subsidy formula that targets its subsidies on those with low incomes. These costs calculations come from a simple microsimulation model based around Massachusetts data from the American Community Survey.

Table 9 shows for each income decile the amount that families would pay and the amount the state would pay under each of these subsidy schemes.

I suggested above that adding 5000 new childcare slots a year in the state for the next four years so that the fraction of children enrolled in formal care rises from 52 percent to 57 percent would be an ambitious but achievable target. The current subsidy waitlist for infants, toddlers, and preschoolers is 19,000, and this number is likely to grow with the introduction of the new 85 percent of SMI eligibility threshold in January. Adding sufficient funding to CCFA to match the increase in new slots – 5000 new CCFA vouchers per year – would enable thousands of families who currently lack child care to both afford it and access it. At current rates, an additional 5000 vouchers costs approximately \$80 million per year.

The state could go further in subsidizing care and aim not solely to enable additional families to access care, but also to reduce the financial burdens of those families who are currently using care. That could be a desirable, and popular, policy step, but it would be inconsistent with one of the principles I enumerated at the beginning of this report: that the state should seek to introduce additional dollars into the system to raise quality and expand slots while crowding out as little current financing as possible – so that the total incremental fiscal cost of the expansion is no higher than necessary.

### *Conclusion*

Massachusetts has the opportunity to become the national leader in making high quality child care available to and affordable for all families. Getting there is going to require four steps: wage subsidies for early educators, investments in the early educator workforce, investments in capacity expansion, and carefully designed demand-side subsidies.

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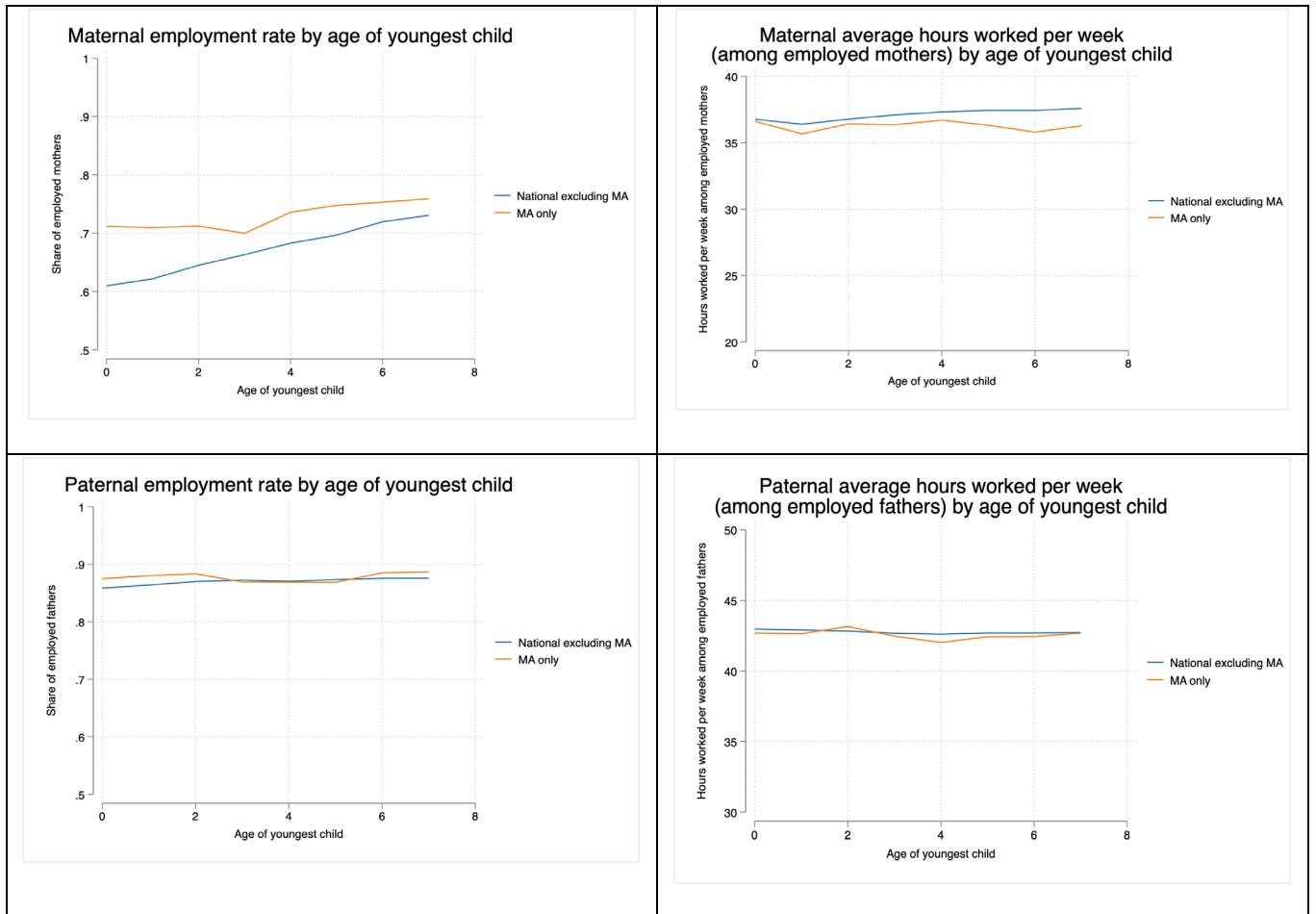
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**Figure 1**

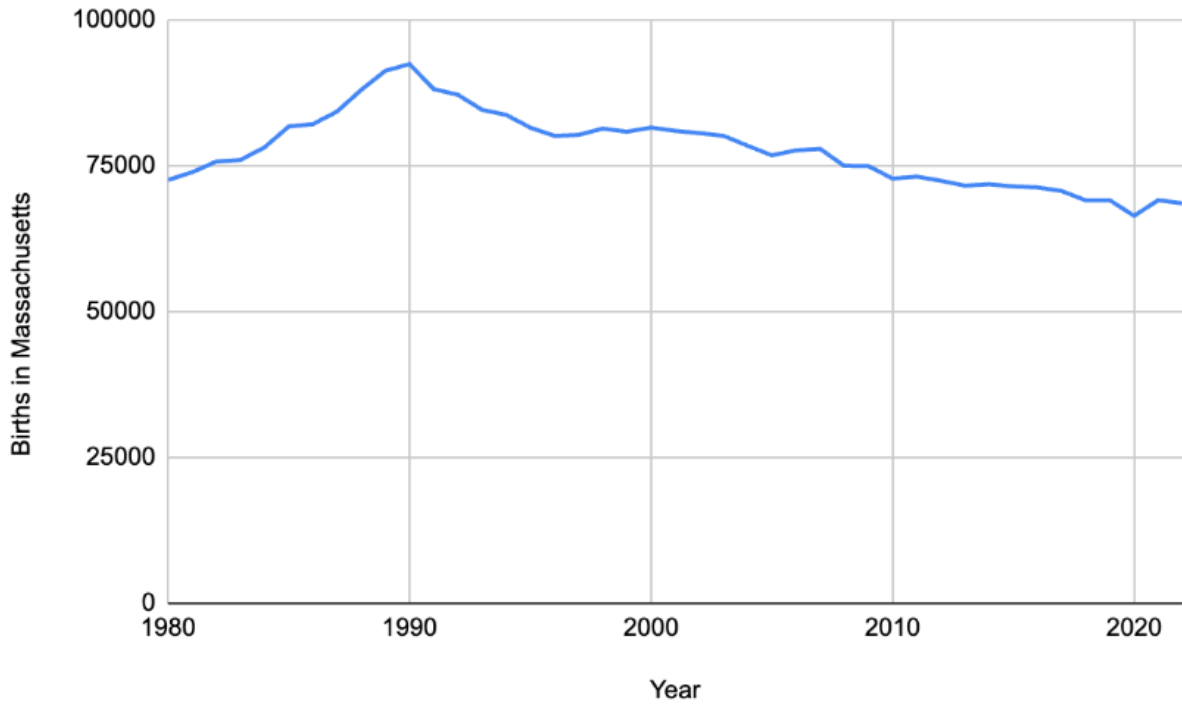
**Employment and Hours of Parents by Age of Youngest Child**



Source: Author's calculations from Current Population Survey.

**Figure 2**

Annual Births in Massachusetts

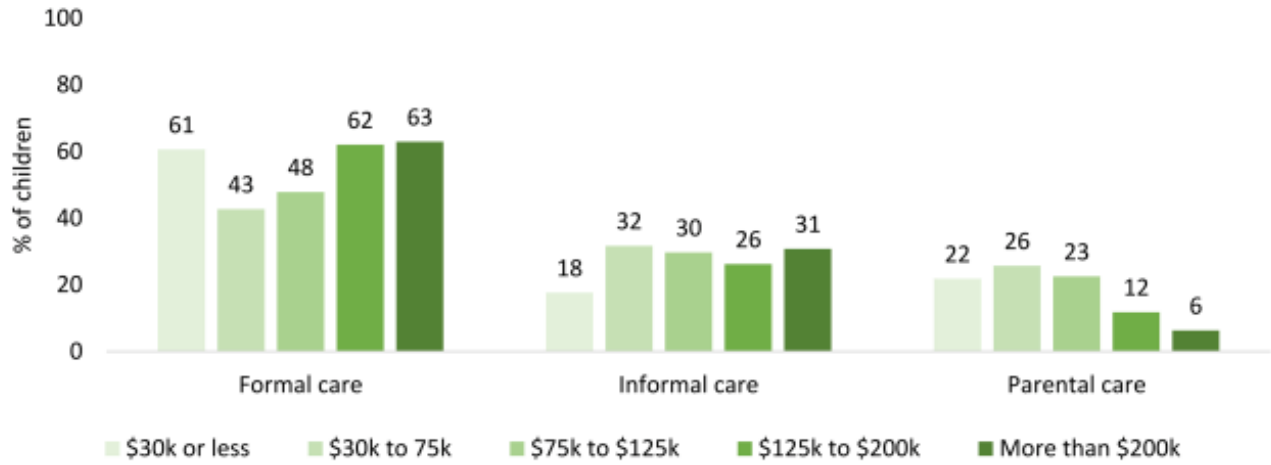


Source: Massachusetts Registry of Vital Records and Statistics



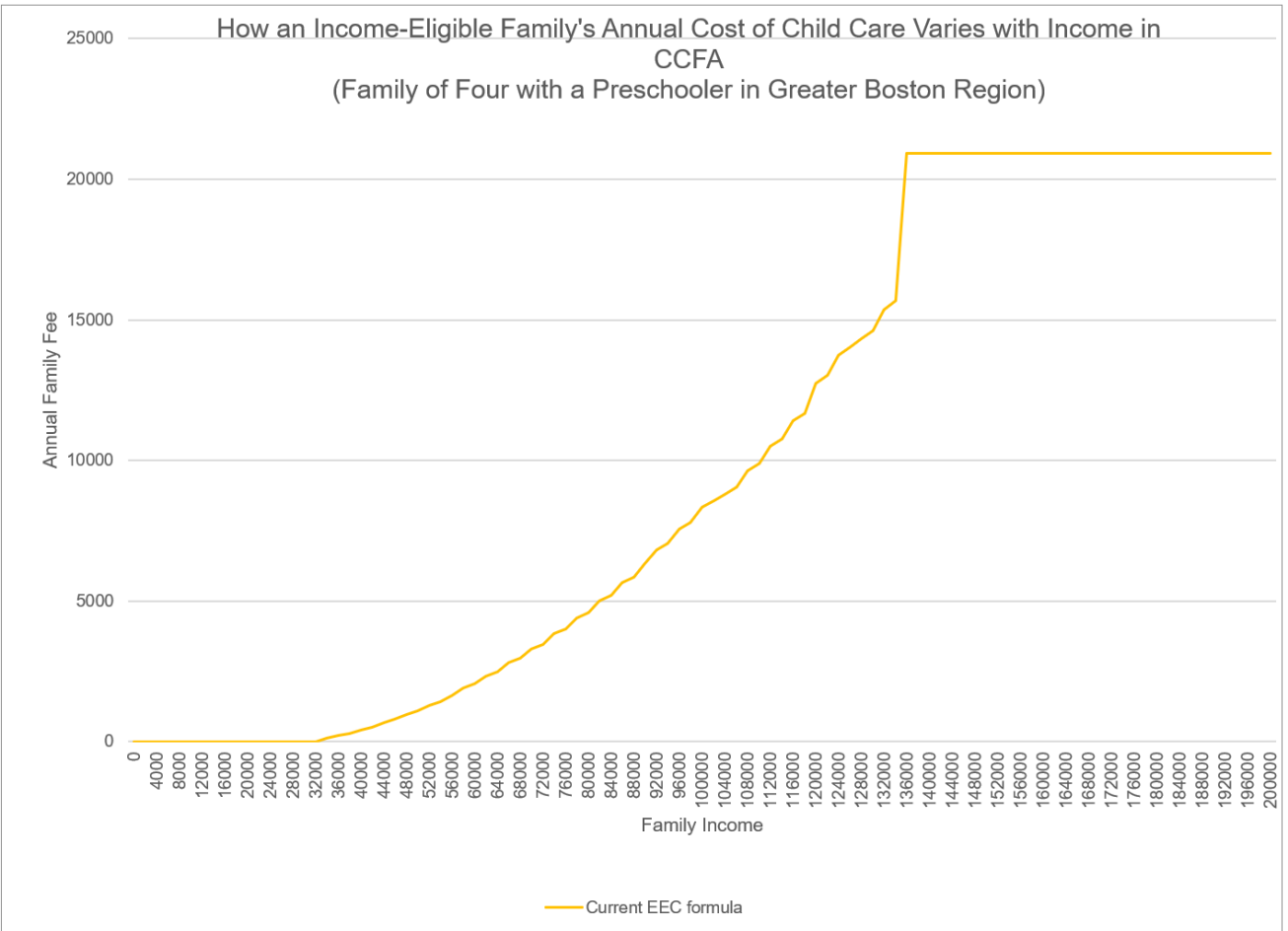
**Figure 3**

Relationship Between Income and Use of Formal Care in the 2018 Harvard Early Learning Study



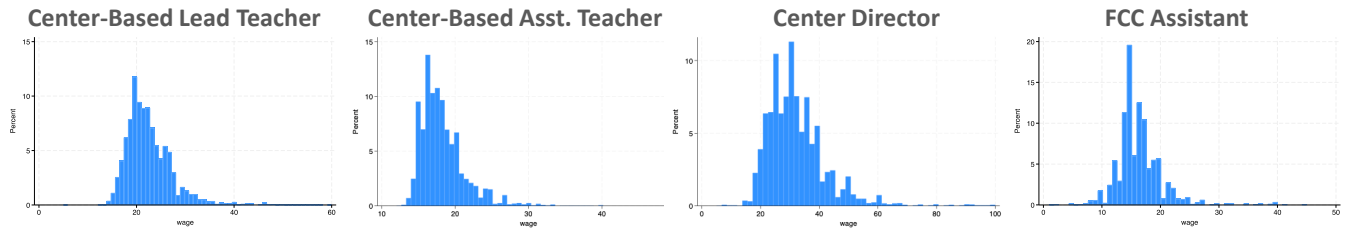
Data are for 3- and 4-year-olds. Reproduced from Jones, Stephanie M., Nonie K. Lesaux, Kathryn E. Gonzalez, Emily C. Hanno, and Rosa Guzman. 2020. "Exploring the Role of Quality in a Population Study of Early Education and Care." *Early Childhood Research Quarterly* 53:551–70. <https://doi.org/10.1016/j.ecresq.2020.06.005>.

**Figure 4**



**Figure 5**

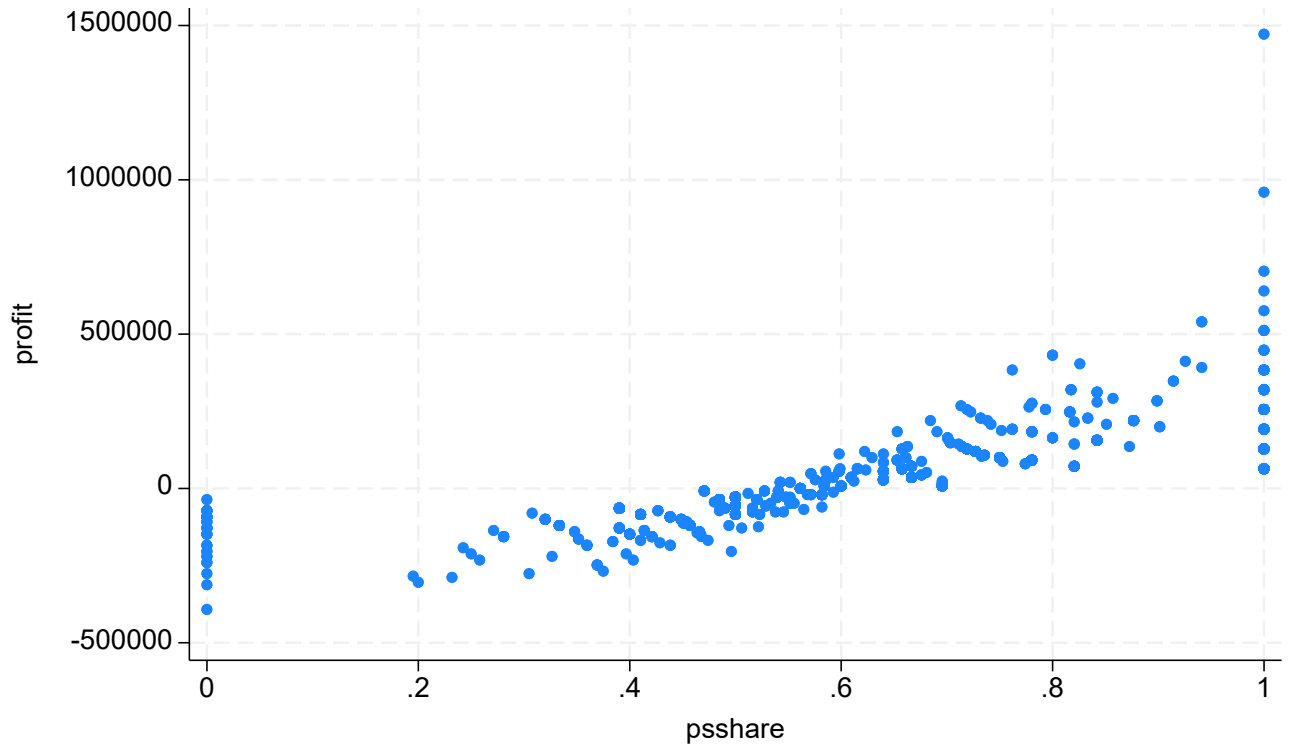
Hourly Wage Distributions of Early Educators in Massachusetts



Source: C3 surveys. For 86 percent of providers, data are from their April 2024 C3 application, for remainder, data is from the most recently available FY2024 C3 application.

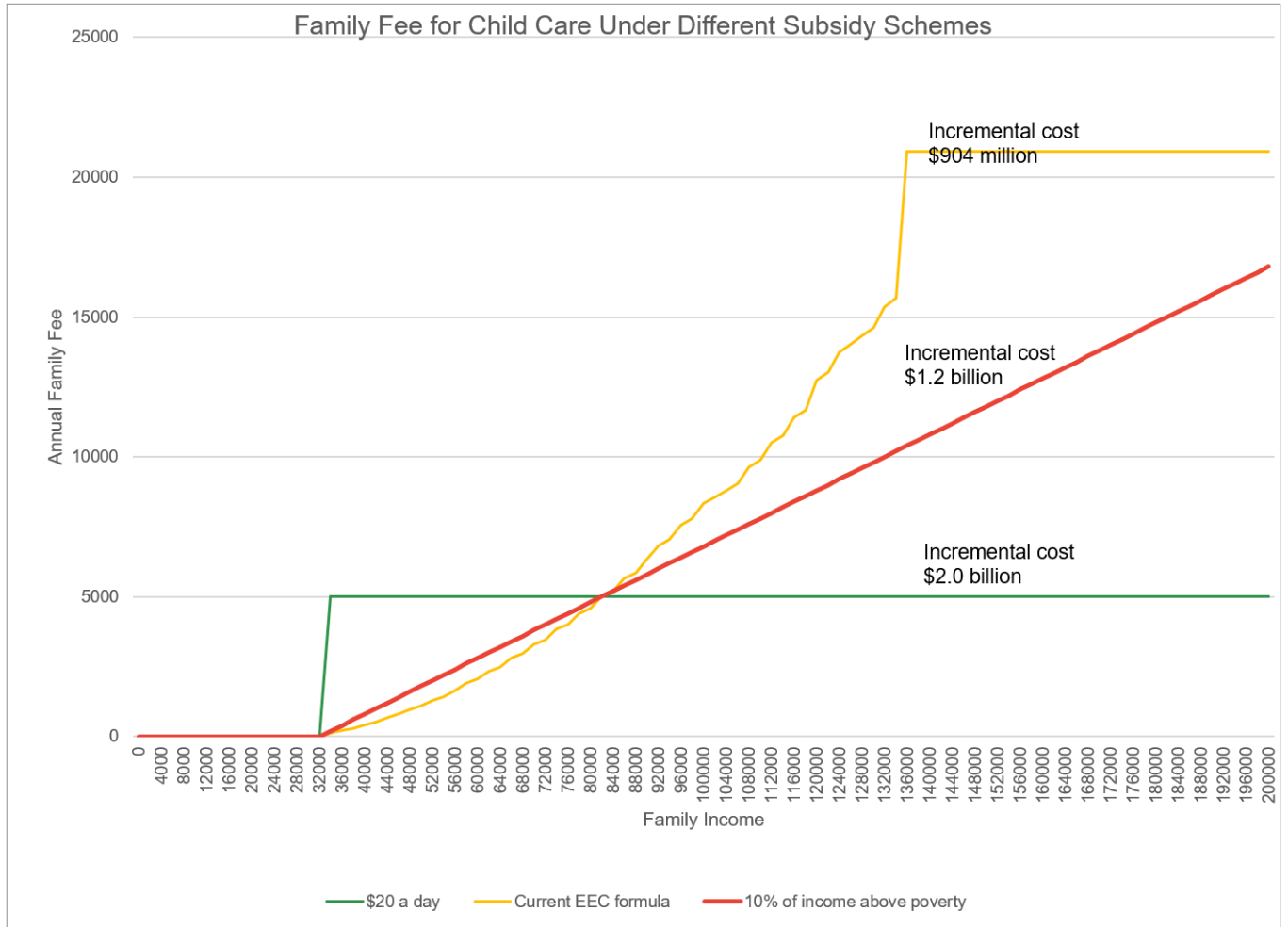
**Figure 6**

Relationship Between Share of a Center's Children who are Preschoolers and Profit



Source: Author's calculations from C3 data.

**Figure 7**



**Table 1**

A. Enrollment Rate in Formal Child Care, by Age Group (February 2024)

Age Group	Family Child Care	Child Care Center	Public Pre-K	Overall
Infant (0 to 15 months)	7.5%	16.2%		23.7%
Toddler (15 to 33 months)	11.8%	28.5%		40.3%
Preschool (33 months+)	7.0%	46.3%	17.9%	71.2%
<b>Overall</b>	<b>8.4%</b>	<b>34.9%</b>	<b>9.1%</b>	<b>52.4%</b>

B. Enrollment Rate in Formal Child Care, by Age (February 2024)

Age in months	Family Child Care	Child Care Center	Public Pre-K	Overall
0-12	6.4%	14.2%		20.6%
13-24	11.6%	26.3%		37.9%
25-36	12.0%	32.7%		44.7%
37-48	8.8%	48.9%		57.7%
48+	4.5%	40.6%	24.8%	69.9%

Source: Author's calculations from C3 data.

**Table 2**

State and Federal Spending on EEC for Massachusetts Infants, Toddlers, and Preschoolers								
Fiscal Year	CCFA Budget Allocation					State Grants to Head Start	Federal Head Start	Total Budget
	C3	Income-Eligible Childcare	DCF and DTA Childcare	PEG/ CPPI	Chapter 70			
2014	\$0	\$129,623,000	\$156,677,675	NA	\$32,108,376	\$8,100,000	\$124,459,511	\$450,968,562
2015	\$0	\$141,482,000	\$160,712,906	NA	\$48,732,456	\$9,100,000	\$130,475,615	\$490,502,977
2016	\$0	\$147,441,534	\$159,277,608	NA	\$49,762,571	\$9,100,000	\$133,636,337	\$499,218,049
2017	\$0	\$142,738,590	\$166,381,877	NA	\$53,964,448	\$9,100,000	\$139,818,066	\$512,002,981
2018	\$0	\$158,066,036	\$168,356,670	NA	\$57,334,952	\$9,100,000	\$143,821,413	\$536,679,071
2019	\$0	\$165,014,413	\$188,642,763	NA	\$60,663,632	\$9,600,000	\$150,718,056	\$574,638,864
2020	\$0	\$175,906,922	\$226,124,979	\$22,673,325	\$64,731,333	\$12,000,000	\$157,968,885	\$659,405,444
2021	\$0	\$208,146,765	\$178,658,866	\$17,232,021	\$65,259,226	\$15,000,000	\$162,250,043	\$646,546,922
2022	\$310,631,068	\$192,613,085	\$204,405,378	\$15,649,040	\$49,288,435	\$15,000,000	\$166,320,684	\$953,907,689
2023	\$383,317,183	\$255,713,129	\$238,173,920	\$17,106,632	\$65,158,322	\$16,500,000	\$179,352,034	\$1,155,321,220
2024	\$341,690,820	\$257,942,104	\$230,150,114	\$23,625,463	\$79,722,715	\$17,500,000	\$188,319,636	\$1,138,950,852

Notes: C3 spending and PEG/CPPI are tabulations from the Massachusetts Management Accounting and Reporting System (MMARS) provided to the author by the Department of EEC.  
 Assumes same fraction of C3 is spent on infants, toddlers, and preschoolers as CCFA.  
 CCFA spending is actual fiscal year spending from the Office of the Comptroller's CTHRU system multiplied by the fraction of CCFA spending going to young children from the Department of EEC's 213 and 214 reports.  
 Chapter 70 spending are author's calculations from Department of Education, Office of School Finance, foundation budget spreadsheets for FY14 to FY24  
 State Grants to Head Start data are from CTHRU (account 3000-5000).  
 Federal Head Start data come from <https://eclkc.ohs.acf.hhs.gov/browse/series/head-start-program-annual-fact-sheets>  
 NA reflects data that were not available in the current version of the MMARS system.

**Table 3**

Number of Early Educators

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<b><i>Center-based</i></b>	
Lead Teacher	19,290
Assistant Teacher	7,163
Center Director	2,739
<b><i>Family-based</i></b>	
Owner	5,119
Assistant	2,490
<b><i>Public Pre-K</i></b>	
Teacher	4,000
Total early educators	40,801

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Note: Center-based and family-based counts are calculated from February 2024 C3 applications. Totals are scaled up by 7 percent to account for licensed providers who do not participate in C3. Public pre-K counts estimated by dividing public pre-K enrollment by 8.5.



**Table 4**

Early Educator Wage Distribution Quantiles

Wage percentile	Center-based Lead Teacher	Center-based Assistant Teacher	Center Director	FCC Assistant
10th	\$17.79	\$15.00	\$22.00	\$12.50
25th	\$19.50	\$16.00	\$25.00	\$14.25
50th	\$21.50	\$17.50	\$30.00	\$15.50
75th	\$25.00	\$19.50	\$36.46	\$18.00
90th	\$27.91	\$22.00	\$44.42	\$20.50

Source: C3 surveys. For 86 percent of providers, data are from their April 2024 C3 application, for remainder, data is from the most recently available FY2024 C3 application.

**Table 5****Most Popular Professions Before and After Working in Early Education**

<b>Most popular professions before entering ECE</b>	
<b>Occupation</b>	<b>Share of months spent</b>
Preschool and Kindergarten Teachers	12.33%
Teacher Assistants	8.52%
Maids and Housekeeping Cleaners	4.72%
Education Administrators	4.26%
Law enforcement workers	3.96%
Nursing, Psychiatric, and Home Health Aides	3.20%
Waiters and Waitresses	2.89%
Recreation and Fitness Workers	2.89%
Chefs and Cooks	2.40%
Cashiers	2.74%

<b>Most popular professions after exiting ECE</b>	
<b>Occupation</b>	<b>Share of months spent</b>
Teacher Assistants	10.50%
Preschool and Kindergarten Teachers	7.94%
Nursing, Psychiatric, and Home Health Aides	4.58%
Cashiers	4.04%
Maids and Housekeeping Cleaners	3.63%
Other Teachers and Instructors	3.50%
Social Workers	2.96%
Receptionists and Information Clerks	2.69%
Elementary and Middle School Teachers	2.42%
Food preparation and serving related workers	2.29%

Source: Author's calculations from Current Population Survey.

**Table 6**

Comparing Earnings Growth for Child Care Workers vs. Other Competitor Occupations

Earnings index growth since 2020	
<b>Occupation</b>	<b>% change since 2020</b>
Maids and Housekeeping Cleaners	23.8%
Waiters and Waitresses	22.2%
Cashiers	16.3%
Nursing, Psychiatric, and Home Health Aides	15.4%
Teacher Assistants	14.2%
<b>Early Educators</b>	<b>13.5%</b>
Kindergarten Teachers	10.0%
<i>CPI</i>	<i>16.0%</i>

Source: Author's calculations from Bureau of Labor Statistics, Employment and Earnings database.

**Table 7**

Distribution of Prices for Center-based Care

Percentile	Infant	Toddler	Preschool
10 <sup>th</sup>	\$16,450	\$14,678	\$11,300
25 <sup>th</sup>	\$18,750	\$16,500	\$13,200
50 <sup>th</sup>	\$23,175	\$20,000	\$16,320
75 <sup>th</sup>	\$29,450	\$25,800	\$21,600
90 <sup>th</sup>	\$35,988	\$31,080	\$27,408
Mean	\$24,853	\$21,955	\$18,012

Source: Massachusetts Department of Early Education LEAD database.

**Table 8**

## Different Wage Parity Options

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	Required lead teacher wage	Required assistant teacher wage	Subsidy per hour	Budget Cost FY 2026 (millions)
\$5 an hour increase	\$28.00	\$24.00	\$5.00	\$428
Same annual pay as starting BA teacher	\$29.13	\$25.13	\$6.13	\$525
Same hourly pay as starting BA teacher	\$34.65	\$30.65	\$11.65	\$997
Same hourly pay as 5 <sup>th</sup> year BA teacher	\$40.86	\$36.86	\$17.65	\$1500

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Source: Author's calculation based on wage distribution from C3 applications.

**Table 9**

**Distributional Impacts of Three Illustrative Demand-Side Subsidy Schemes**

Schemes	Component (annualized)	Income Decile										All	Incremental Cost Above Current CFFA	
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10			
<b>Current EEC subsidies (up to 85% SMI)</b>														
\$20k cost of care	Average family out-of-pocket	\$0	\$261	\$1,442	\$4,156	\$9,614	\$17,515	\$19,812	\$20,000	\$20,000	\$20,000	\$20,000	\$11,263	
60% coverage	Average state subsidy	\$20,000	\$19,739	\$18,558	\$15,844	\$10,386	\$2,485	\$188	\$0	\$0	\$0	\$0	\$8,737	
Free below FPL, subsidized above up to 85% SMI	Total family out-of-pocket (millions)	\$0	\$4	\$23	\$67	\$152	\$283	\$314	\$330	\$304	\$318	\$318	\$1,794	
	Total state subsidy cost (millions)	\$341	\$297	\$292	\$254	\$164	\$40	\$3	\$0	\$0	\$0	\$0	\$1,392	\$904
<b>Free up to poverty line, 10% of income above</b>	Average family out-of-pocket	\$6	\$616	\$2,223	\$4,366	\$6,938	\$9,854	\$12,830	\$16,743	\$19,926	\$20,000	\$20,000	\$9,314	
\$20k cost of care	Average state subsidy	\$19,994	\$19,384	\$17,777	\$15,634	\$13,062	\$10,146	\$7,170	\$3,257	\$75	\$0	\$0	\$10,686	
60% coverage	Total family out-of-pocket (millions)	\$0	\$9	\$35	\$70	\$109	\$159	\$204	\$276	\$303	\$318	\$318	\$1,483	
	Total state subsidy cost (millions)	\$341	\$292	\$279	\$251	\$206	\$164	\$114	\$54	\$1	\$0	\$0	\$1,702	\$1,214
<b>\$20 per day (per child)</b>	Average family out-of-pocket	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	\$5,020	
\$20k cost of care	Average state subsidy	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	\$14,980	
60% coverage	Total family out-of-pocket (millions)	\$0	\$15	\$79	\$81	\$79	\$81	\$80	\$83	\$76	\$80	\$80	\$654	
251 work days	Total state subsidy cost (millions)	\$341	\$286	\$235	\$241	\$236	\$242	\$238	\$247	\$228	\$238	\$238	\$2,532	\$2,044

Source: Author’s calculations using American Community Survey-based microsimulation model.