

The Economic Impact OF THE Child Care AND Early Education Industry *in Massachusetts*



PREPARED BY THE

NATIONAL ECONOMIC DEVELOPMENT AND LAW CENTER



BACKGROUND

THE ECONOMIC IMPACT OF THE CHILD CARE AND EARLY EDUCATION INDUSTRY IN MASSACHUSETTS

The National Economic Development and Law Center (NEDLC), with a grant from the W.K. Kellogg Foundation, is working with states across the nation to produce reports and recommendations on the economic impact of the child care industry. The economic impact reports articulate child care and early education in economic development terms and quantify the ways in which the child care industry is critical to the state's economy. In addition, the reports help to build local partnerships aimed at increasing the child care industry's capacity to respond to the shifting child care needs of America's families. For the Massachusetts report, NEDLC partnered with the Department of Education Division of Early Learning Services (www.doe.mass.edu) to form an Advisory Board of Massachusetts statewide leaders in the fields of business, government, child care and early education, and economic development.

NATIONAL ECONOMIC DEVELOPMENT AND LAW CENTER

The National Economic Development and Law Center, established in 1969, is a non-profit public interest law and planning organization that specializes in community economic development. It works in collaboration with community organizations, private foundations, corporations and government agencies to build the human, social, and economic capacities of low-income communities and their residents. NEDLC helps to create both strong, sustainable community institutions that can act as "change agents" and an effective local infrastructure for their support.

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INTRODUCTION

The child care and early education industry in Massachusetts encompasses a range of programs designed to nurture, support, enrich, and educate children from birth through age 14 outside of traditional K – 12 education. Licensed center-based care, family child care homes, nursery schools, before-and after-school programs for children ages 5 through 14, public or private pre-schools, and Head Start child development centers are all considered a part of the child care and early education industry. In addition to the inherent social benefits it provides children, the industry has two main functions, both of which have changed significantly over time, and both of which link the industry to the economy.

One main function is that the child care and early education industry enables parents to work. In traditional child-rearing models, parents were solely responsible for daytime care and education of their own young children. Families with two working parents were rare. In those families who did have two working parents or a single working parent, care and education was generally entrusted to relatives, neighbors, and friends. Today, one in four labor participants in Massachusetts has a child under the age of 18, and over two-thirds of children live in families in which all parents work.¹

Another main function is that the child care and early education industry provides learning opportunities for children. Research and public concern over the education and developmental needs of young children have increased dramatically over the last two decades. Many more parents now demand early education and out-of-school-time programs as part of their children's education. For children from birth through age five, quality programs help them to develop core skills and competencies that prepare them for future success in traditional K to 12 education. For children ages 5 through 14, before- and after-school programs provide enriching educational activities outside of the traditional school curriculum.

As a result of the shifts in these two main functions, the industry and its role in the economy have also been transformed. The industry is one of the drivers of the economy, providing financial benefits in three main ways.

The child care and early education industry is an economic driver. It:

- Provides nearly 30,000 jobs and generates \$1.5 billion in gross receipts
- Ensures a strong future economy by preparing children to be skilled and productive workers who can meet future labor force demands
- Enables employers to attract and retain employees and increase productivity

First, the child care and early education industry is a significant industry in Massachusetts in its own right. Since 1993 alone, the number of licensed child care and

¹ U.S. Census Bureau, Census 2000.



early education slots in the state has more than doubled. The average consumer price for child care and early education programs for a pre-schooler is now more than \$9,000 and for a school-age child nearly \$4,000. Research presented in this report demonstrates that child care and early education is a significant income-generating, job-creating industry sector, contributing annual gross receipts similar to many other significant and recognized industries in the state, including pharmaceutical manufacturing and telecommunications. In addition, child care and early education directly employs more individuals than computer manufacturing, and is on par with telecommunications and legal services.² As an industry, economic development activities will strengthen and expand child care and early education's ability to maximize its benefits to the Massachusetts economy.

Second, quality child care and early education programs ensure a strong future economy. For children from birth through age five, recent research on early brain development demonstrates that, far from being a luxury, child care and early education is a vital service, improving children's health, school readiness, and later contributions to society.³ The quality of early education opportunities is linked to positive school outcomes for children of families in all income brackets, though studies have shown particularly striking findings in children from low-income families. Three separate longitudinal studies of targeted, intensive intervention programs for low-income children have indicated significant and positive long-term outcomes in areas such as grade repetition and special education needs, juvenile criminal activity, and adult welfare participation. These effects reduce future public spending in such areas as K-12 education, criminal justice and welfare assistance. Compared to other areas of public investment, these early childhood development interventions yield a high rate of public return, making targeted investments in quality early childhood education one of the strongest candidates for public funding.⁴ For children from 5 to 14, model after-school programs offer enrichment activities that enhance performance in school and decrease the likelihood of dropping out. Quality programs also reduce the likelihood of costly negative outcomes in school-age children such as juvenile delinquency and smoking, alcohol, or drug use while increasing community engagement and educational and career aspirations.⁵

Third, the child care and early education industry plays a significant role in enabling employers to attract and retain employees and increase productivity by reducing employee turnover and absenteeism. Like transportation and housing, without accessible, affordable child care and early education, employees may experience barriers to working, and their employers and the economy as a whole suffer.

This report analyzes the significance of the child care and early education industry to the economy. Specifically, this report:

- Describes demographic and economic trends and their implications for the child care and early education industry
- Quantifies the direct economic impact that child care and early education

² See Section 3 for further discussion of results and methodology.

³ J.P. Shonkoff and D.A. Phillips, Editors. *From Neurons to Neighborhoods: The Science of Early Childhood Development*. Washington, D.C. National Academies Press, 2000.

⁴ A. Rolnick and R. Grunewald. *Early Childhood Development: Economic Development with a High Public Return*. Fedgazette. Minneapolis, MN, Federal Reserve Bank of Minneapolis, January, 2003.

⁵ B. M. Miller. *Critical Hours: After-school Programs and Educational Success*. Nellie Mae Educational Foundation, Quincy, MA, 2003.

currently have on the economy of Massachusetts through gross receipts and direct employment

- Discusses economic development and business benefits of child care and early education, including bottom-line returns for individual businesses and substantial returns on targeted public investment
- Analyzes the challenges for industry sustainability and growth
- Provides recommendations to maximize economic returns from the industry

Understanding the interaction between the supply of affordable, accessible, quality child care and early education and economic growth and then working to improve the efficiency of investments in the industry increases Massachusetts' economic competitiveness.

DEFINING THE CHILD CARE AND EARLY EDUCATION INDUSTRY

Still labeled “child day care services” by national industrial classifications, the term “child care and early education” is used in this report to reflect changes in the industry. Programs may be offered outside of traditional office hours, thus the term “day” is removed from the title. For this report, “child care” is intended to represent the diverse array of formal programs that educate and nurture children from birth through age 14. To highlight the educational benefits of the industry, this report includes the term “early education” in the industry name. The term “early” is not meant to undermine the important educational role that programs for school-age children play, but to ensure that the industry is not confused with the current K – 12 education system. Some of the programs in the child care and early education industry may be operated in public schools, but they are not a part of the traditional, mandated K – 12 curriculum.

All the establishments captured in the formal child care and early education industry for this report are required by law to meet minimum health and safety standards set by the state legislature and primarily regulated by the Office of Child Care Services or the Department of Education's public school guidelines. These establishments include all formal full-day and part-day child care and early education centers, Head Start centers, family child care homes, and public preschools for children. Family child care homes are licensed as regular family child care (up to 6 children from birth through age 14), family child care plus (up to 8 children, 6 children under age 7, and 2 school-age children), or group family child care (10 children; 2 adults).⁶ In addition, before- and after-school programs for children ages 5 through 14 that are licensed by the state or formal, license-exempt school-age programs are also a part of the child care and early education industry.

The child care and early education industry includes formal education and care programs for children from birth through age 5 and out-of-school time programs for children from ages 5 through 14.

There are informal types of care and education that are not included in the industry. These arrangements are either not regulated, such as care outside the child's home in a relative's home or home care that is provided by a nanny or babysitter, or unlicensed programs that are required to be legally licensed, such as paid child care on a regular basis

⁶ Office of Child Care Services. *Family Child Care Licensing Regulations*. Section 102, CMR 8.00, 2003. Available at http://www.qualitychildcare.org/pdf/family_child_care_regs.pdf.



in the home of an unlicensed friend or neighbor. (Massachusetts allows exemptions to licensing if friends or neighbors develop an informal cooperative arrangement where no money changes hands.⁷)

Although informal care and education arrangements are widely used, and thus also add much to the economy, it is difficult to ascertain their impact.

Because formal child care and early education is easier to capture economically (e.g., the sector is subject to taxes, state regulations, etc), this report focuses primarily on them. By excluding unlicensed, informal care and education, this report's findings are conservative estimates of the total impact that the industry has on the economy.

Analyses in this report exclude unlicensed care by nannies, babysitters, or relatives, making the economic estimates conservative in terms of the full impact of the industry.

OUTLINE OF THE REPORT

Following this introduction, Section One describes the demographic and economic profile of the state and the implications for the child care and early education industry. Section Two analyzes the overall economic effects of the child care and early education industry as measured by both industry earnings and employment and current levels of government investment. Section Three explores the links between child care and early education, business, and economic development, and Section Four discusses the challenges for a thriving industry in Massachusetts. The final section considers future implications for the state's economy, and makes conclusions and recommendations.

⁷ Ibid.

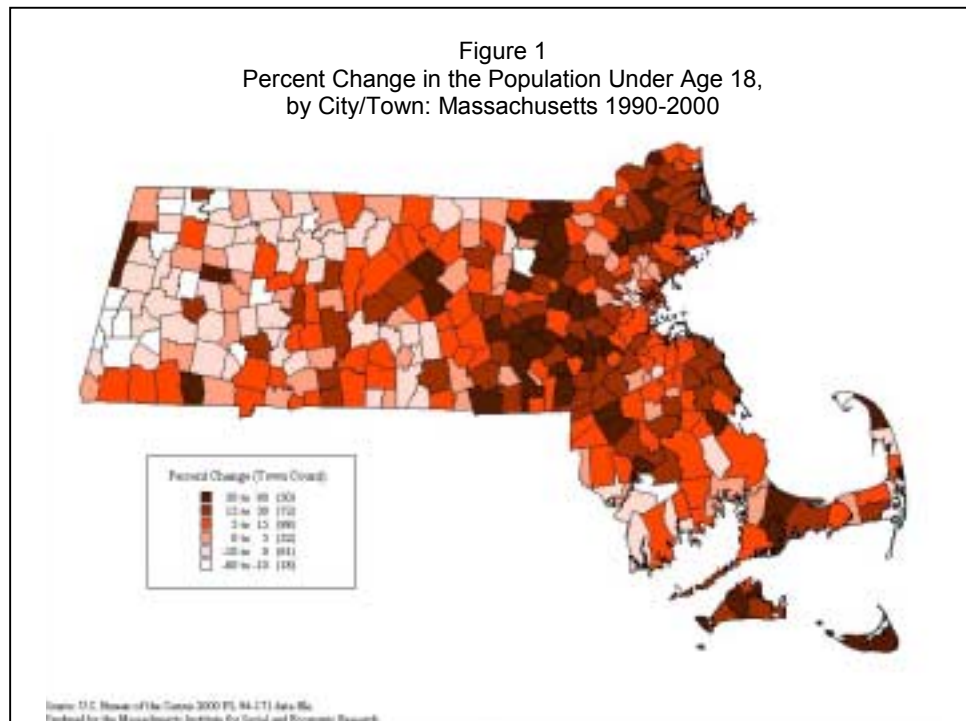
DEMOGRAPHIC AND ECONOMIC PROFILE OF MASSACHUSETTS

Massachusetts' demographic and economic trends, including population shifts, labor force characteristics, employment demands, and the cost of living in the state, have significant implications for care and education programs for young and school-age children in the state. This section gives a brief overview of those trends.

POPULATION SIZE AND CHARACTERISTICS

Massachusetts' population has increased 5.5 percent from 1990 to 2000, reaching 6.38 million residents in 2000.⁸ The population of children under age 18 has grown more rapidly, however, increasing 10.9 percent over the same time period to 1.5 million in 2000. More than one-third of cities and towns in the state experienced child population increases of over 15 percent. The greatest regional increases were in the areas surrounding Boston, particularly in Norfolk, Middlesex, and Essex counties (see Figure 1).⁹

From 1990 to 2000, the population of children under 18 grew more rapidly than the population overall.



⁸ U.S. Census Bureau. Census 2000.

⁹ A. Donta. *Where the Kids Are: Massachusetts 2000*. Massachusetts Institute for Social and Economic Research, 2000.



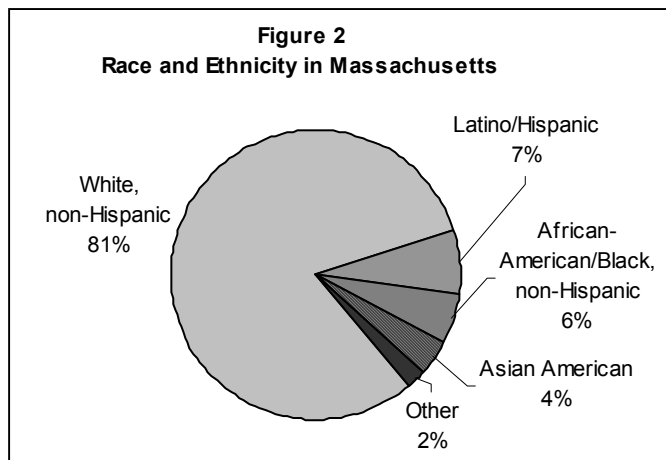
Migration to other states has played a negative role in the state's population; more people have moved out of Massachusetts into other states than have moved from other U.S. states into Massachusetts.¹⁰ However, the state's population has grown overall

The population increase from 1990 to 2000 was largely a result of families moving into Massachusetts from other countries as well as natural growth.

because of two other trends: natural increases (births minus deaths) and immigration from other countries. From 1990 to 2000, Latin America and Puerto Rico accounted for 45 percent of foreign immigration, while Asia accounted for almost 25 percent and

Europe 18 percent.¹¹ The age groups with the largest numbers of new Massachusetts residents during this time were 25 to 44 and 5 to 19, indicating a rise in the number of working families of foreign origin.¹²

Massachusetts is becoming more diverse, particularly in urban areas, but is still predominantly white, non-Hispanic. Specifically, 81 percent of the current population is white, non-Hispanic; 7 percent is Hispanic or Latino; 6 percent is African-American or black, non-Hispanic; 4 percent is Asian American; and 2 percent is Native American, Alaskan, Hawaiian, or another self-reported race (see Figure 2).¹³ Compare this to the 1990 Census when 88 percent of the population was white, non-Hispanic; 5 percent was Hispanic or Latino; 5 percent was African-American or black, non-Hispanic; 2 percent was Asian American; and less than 1 percent was Native American, Alaskan, Hawaiian, or another self-reported race.¹⁴ With more families from other countries moving into the state the diversity is expected to continue rising throughout the next decade.



Diversity is expected to continue rising in the state.

There are an estimated 6.43 million people in Massachusetts. More than 18 percent of the total population, 1.19 million residents are between birth and 14 years of age. Six percent are children under 5, and twice as many, 12 percent, are children 5 to 14 (see

¹⁰ State Population Estimates and Demographic Components of Population Change: April 1, 1990 to July 1, 1999. Populations Estimates Program, Population Division, U.S. Census Bureau.

¹¹ R. Nakosteen and A. Sum. *Immigration's Impact on the Commonwealth*. Massachusetts Benchmarks, Volume 4, issue 2, 2001. R. Nakosteen is a faculty member at the University of Massachusetts in Amherst and A. Sum is a professor of economics and the director of the Center for Labor Market Studies at Northeastern University.

¹² U.S. Census Bureau, Census 2000 Migration Information.

¹³ U.S. Census Bureau. Census 2000.

¹⁴ U.S. Census Bureau. 1990 Census .

Figure 3).¹⁵ Together, children from birth through age fourteen currently outnumber seniors 65 and older in the state.

Children from birth through age fourteen currently outnumber seniors 65 and older in the state.

The number of children by year of age is included in Table 1. Broken down by child care and early education age groups, the population currently includes 99,000 infants (birth through 15 months), 120,000 toddlers (15 months through 2 years and 9 months), and 176,000 pre-schoolers (2 years, 9 months through 5 years), and 795,000 school-age children (ages 5 through 14).¹⁶

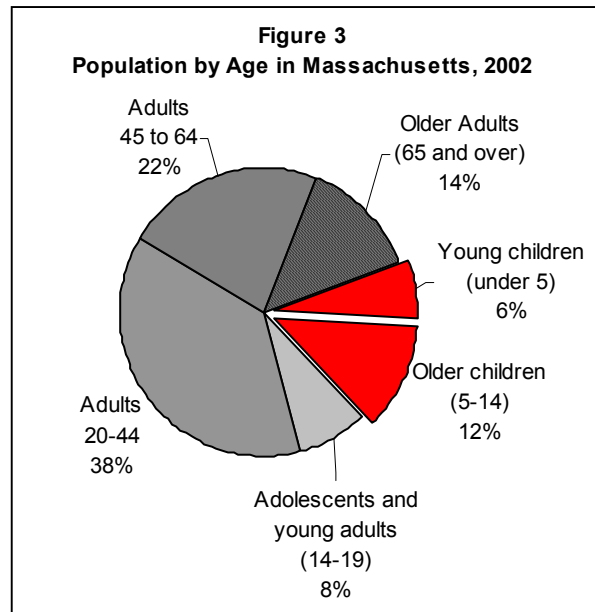


Table 1
Population of Children by Age in Massachusetts

| Age of child | Number of children | Percent of total population |
|--------------|--------------------|-----------------------------|
| Under 1 year | 78,965 | 1.23% |
| 1 year | 79,928 | 1.24% |
| 2 years | 79,990 | 1.24% |
| 3 years | 80,688 | 1.26% |
| 4 years | 82,622 | 1.29% |
| 5 years | 84,185 | 1.31% |
| 6 years | 84,864 | 1.32% |
| 7 years | 87,792 | 1.37% |
| 8 years | 87,945 | 1.37% |
| 9 years | 91,416 | 1.42% |
| 10 years | 91,830 | 1.43% |
| 11 years | 87,857 | 1.37% |
| 12 years | 87,496 | 1.36% |
| 13 years | 84,592 | 1.32% |
| Total | 1,192,172 | 18.53% |

The majority of children live in households in which all parents participate in the labor force. In dual-parent households, 58 percent of children under six and 69 percent of children six to seventeen have both parents in the workforce. Similarly, 65 percent of young children living with their mothers and 82 percent of young children living with their fathers, and 73 percent of school-age children living with their mothers and 85 percent of school-age children living with their fathers live in a household in which their parent participates in the

¹⁵ Based on population breakdowns by age from Census 2000 and population estimates for July, 2002 from the U.S. Census Bureau Population Estimates Division.

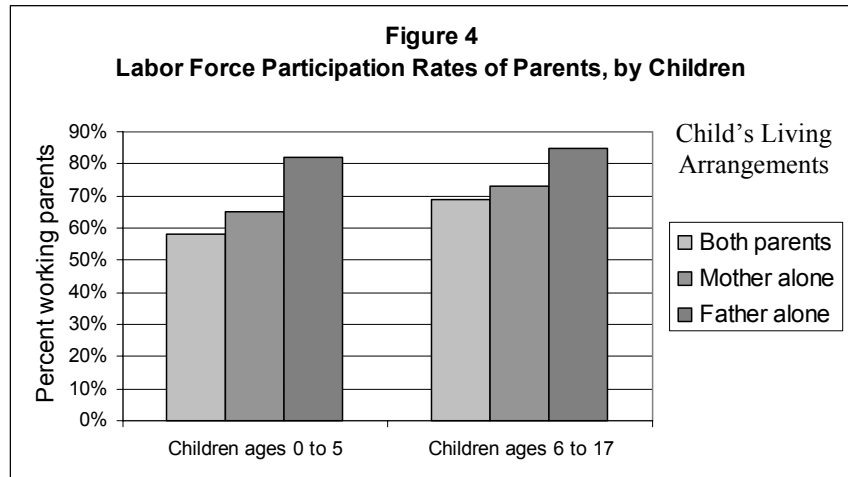
¹⁶ Ibid.



labor force (see Figure 4).¹⁷ Overall, two-thirds of Massachusetts' children live with working parents.

Given 2002 population estimates and labor force statistics in Massachusetts, 60,100 infants, 72,900 toddlers, 107,100 pre-schoolers, 117,000 children ages five to seven, 123,600

children ages seven to nine, 190,700 children ages nine to twelve, and 121,000 children twelve to fourteen have working parents—a total of nearly 800,000 children. While not all families use licensed care—some may arrange work schedules so that one parent is home with children and others may place children with family, friends or neighbors—these demographics do highlight the need for care and education programs for children so that their parents can work. The child care and early education industry currently has the capacity to serve 246,250 children at any one time.



Implications for Child Care and Early Education

Given population trends, there is a significant and sustained need for child care and early education programs for young children from birth to five and out-of-school time programs for children between five and fourteen now and in the future.

The increasing diversity in Massachusetts' children requires dual- or multi-lingual staff to communicate with children and their parents, and culturally sensitive curricula and care to meet children's needs and parents' desires for their children's upbringing.

Given population estimates and labor force participation rates of parents in Massachusetts, a total of nearly 800,000 children and two-thirds of all children in the state have working parents. This highlights the need for programs for children so that parents can work.

LABOR FORCE TRENDS

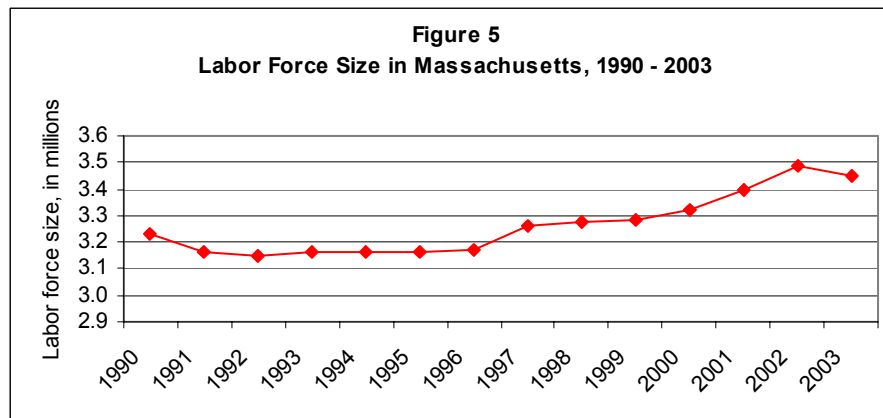
The Massachusetts civilian labor force increased from 3.23 million in 1990 to 3.45 million in 2003 (see Figure 5).¹⁸ Growth from 1990 to 2000 was slow, and was considerably slower than growth nationwide. While in Massachusetts the labor force increased 2.8

¹⁷ U.S. Census Bureau. *Census 2000*.

¹⁸ Bureau of Labor Statistics (2003). Detailed Statistics available at www.bls.gov.

percent from 1990 to 2000, in the U.S. the labor force increased 11.9 percent.¹⁹ The past few years since 2000 have seen more rapid increases in the labor force. Overall, the state and national labor forces grew older, more diverse, and more female.²⁰ A significant portion of the labor force are parents with children in the home. One in four workers has children under 18 in the home and one in ten has children under age six.²¹

One in four workers in Massachusetts are parents with children under 18 and one in ten are parents with children under age 6.



While there are no specific labor force projections for Massachusetts for the next decade, trends over the past decade are expected to continue, with modest increases in the state’s labor force resulting from natural population growth and continued growth in participation of women in the work force.²² The future labor force in the state and in the New England region is threatened in large part by a loss of young workers between 20 and 34 years due to birth rate fluctuations and considerable domestic migration into other states. From 1990 to 2000, the New England region lost nearly 700,000 residents between 20 and 34 years old—a 20 percent drop.²³ This prompted the co-chairs of the New England Council’s Commission on High Technology Workforce Development to write “[t]he region must do a much better job retaining talented workers or we risk becoming an aging economic backwater.”²⁴

¹⁹ H. N. Fullerton, Jr and M. Toossi. “Employment Outlook 2000-10. Labor Force Projections to 2010: Steady Growth and Changing Composition”. *Monthly Labor Review*, November 2001, pp. 21 – 38.

²⁰ A. Sum, I. Khatiwada, N. Pond, J. Motroni, and S. Palma. *The Absent Male Worker and the Limited Growth in New England’s Labor Force in the 1990s: Implications for Future Educational and Workforce Development Policy*. Center for Labor Market Studies, Northeastern University, 2002.

²¹ U.S. Census Bureau. *Census 2000*. The survey does not collect information specifically on children under 14.

²² H. N. Fullerton et al., “Employment Outlook 2000-10”, *Monthly Labor Review*, pp. 21 – 38. An increase in the participation of older workers is also expected due to the aging of the baby boom generation.

²³ A. Finucane and R. M. Freeland, “Help for New England’s Labor Market” Op-Ed piece for the Boston Globe, August 13, 2001.

²⁴ Ibid.



Implications for Child Care and Early Education

Sustained supply of quality, affordable child care and early education in the future is necessary to support labor force participation of parents.

State and regional efforts to attract and retain a skilled workforce rely on making Massachusetts an attractive place to live and work. For working families who have to cope with rising housing costs, the accessibility of affordable, quality care and early learning opportunities and after-school programs for their school-age children is a draw.

EMPLOYMENT OUTLOOK

Despite the recent downturn, employment growth is projected to expand at a 1.2 percent average annual rate from 2004 through 2007, with a peak 2 percent annual increase in mid-2005.²⁵ Over the long-term, the employment outlook for the state is strong, with projections estimating a 10 percent growth in the number of jobs from 1998 to 2008, resulting in 346,000 new jobs by 2008 and 3.76 million jobs overall.²⁶

These trends are accompanied by projected shifts in the kind of work that the state economy will demand. Although the economy relies on a diverse set of industries, the service industry has grown faster than others in the state, employing a larger portion of the Massachusetts labor force than other major industry sectors.²⁷ From 1988 to 1998, the service industry moved from holding 29 percent of all jobs in Massachusetts to 36 percent, putting it in first place. The service industry is expected to hold 40 percent of all jobs by 2008, generating 267,200 jobs and accounting for 83 percent of the new jobs in the state from 1998 to 2008.²⁸ The majority of these jobs are likely to be in the following areas:

- Business services (computer and data processing; personnel supply; public relations; 107,300 jobs)
- Health services (surgical, medical, and other health services in facilities or homes; 65,800 jobs)
- Engineering and management services (management consulting, architecture or engineering consulting, some engineering research and design; 33,400 jobs)
- Social services (family services, job training, and residential care; 22,100 jobs)

²⁵ New England Economic Project. "Though Slump Continues, Massachusetts Cautiously Predicts Slow Growth," June 5, 2003, www.neepecon.org.

²⁶ Massachusetts Division of Employment and Training. *Massachusetts Employment Projections through 2008: A focus on Jobs, the Industries, and the Workforce*, <http://lmi2.detma.org>.

²⁷ Ibid.

²⁸ Ibid. These projections are based on the Standard Industrial Classification (SIC) system. The U.S. Department of Commerce uses a categorization system called the North American Industry Classification System (NAICS) and the Department of Labor uses the Standard Industry Classification (SIC) "Child Day Care Services are NAICS code 624410 and for the SIC code 8351. Both classify economic markers by industries (rather than by occupations).

In addition, employment increases in areas of wholesale and retail trade are expected, particularly in:

- Eating and drinking establishments (19,600 jobs)
- Wholesale trade (9,800 jobs)

The technical, business, professional, and some health services areas require highly skilled employees who receive relatively high wages. Educational opportunities to develop a skilled future workforce and re-train working adults for new employment areas must be in place.

The growth areas in social and some health services and in retail and wholesale trade have jobs with low wages and often require work outside of traditional workday hours. Workers in these areas require support to sustain their families if they are not economically self-sufficient and an infrastructure that enables them to get to work during non-traditional hours.

Other specific industries, such as the biotechnology and high-tech industries, have been targeted for economic development to stimulate growth. A recent report by the Massachusetts House Committee on Science and Technology identified that “[t]he continued vitality of this scientific and technology dependent economy requires a highly skilled, flexible workforce educated in science, mathematics and technology.”²⁹ In addition, this report lists the state’s positive and negative attributes for encouraging growth in its science and technology sector. The lack of entry-level professionals is listed as one of four major barriers.³⁰ A strong economic infrastructure for workers in these industries must be in place to secure projected economic growth.

Implications for Child Care and Early Education

Increased demand in skilled service areas such as health and business in Massachusetts indicates a need for quality, accessible child care and early education to continue labor force participation by skilled workers with young children and to enable parents to get necessary higher education degrees and specialized training.

A strong child care and early education infrastructure offering high quality programs is necessary to maintain Massachusetts’ attractiveness as a place to live and work for a skilled workforce.

Increased employment demand in lower-wage service and retail areas highlights the necessity for quality, affordable, accessible child care and early education as well as programs offered outside of traditional workday hours.

²⁹ Science and Technology Task Force, “Using Science and Technology to Create an Economic Engine for the Commonwealth,” p. 9. Report released and presentation made on March 27, 2003 by Representative Mark A. Howland, 2003.

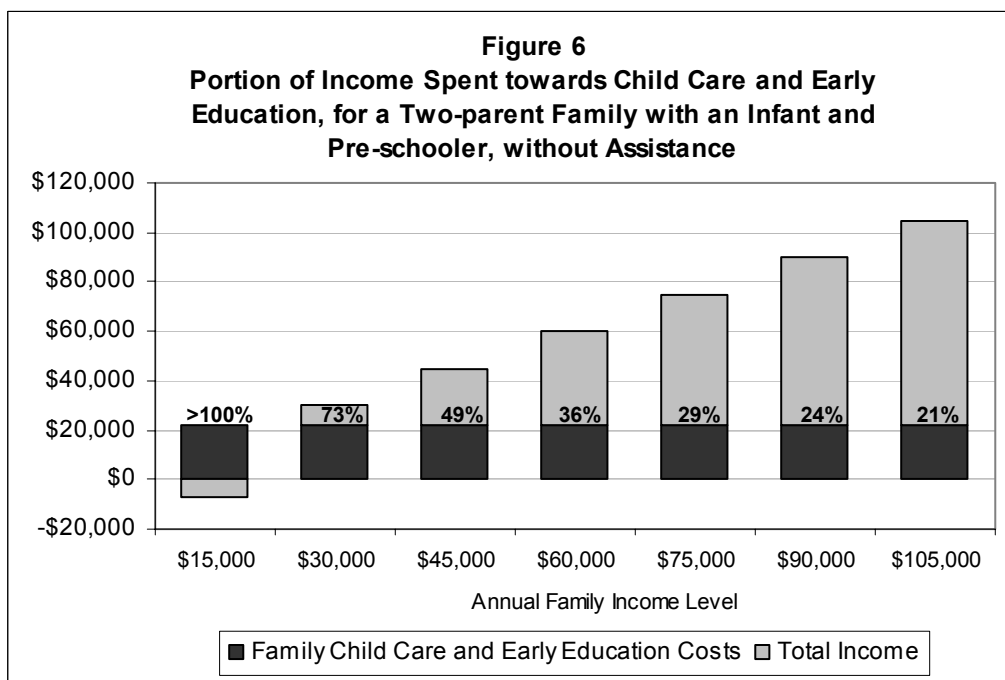
³⁰ Ibid, p. 17.



CHILD CARE AND EARLY EDUCATION PROGRAMS AND THE FAMILY BUDGET

The average annual cost in Massachusetts for full-time licensed child care and education program for an infant is \$12,735, for a toddler is \$11,420, for a pre-school-age child is \$9,100, and for a school-age child is \$3,962.³¹ Education and care programs are significant expenses for families in most income brackets. For a family at the state’s median family income (\$68,964), these costs take up 18, 17, 13, and 6 percent of the total income, respectively.³² Families are likely to have fewer resources when parents and children are young, thus increasing the early education and care burden for families when they need it.³³ For families who have children with special needs, costs can be well out of reach at most income brackets.

Without any assistance, the percent of income spent towards child care and early education decreases as income level increases. Thus, the highest percentages are for families with the lowest incomes (see Figure 6). For a family with an infant and a pre-schooler, average costs would be 75 percent for a family at \$30,000, and 21 percent for a family with an income of \$105,000. This does not include tax deductions that would reduce the percentage paid by higher income families. The average, non-subsidized, full-time cost for an infant is 82 percent of the income of someone working full-time at minimum wage (\$6.75 per hour). For families on the waiting list for assistance, licensed child care and early education programs are cost prohibitive.³⁴



With assistance from state and federal programs designed to help low-income families afford the costs of early education and care, out-of-pocket costs vary. All

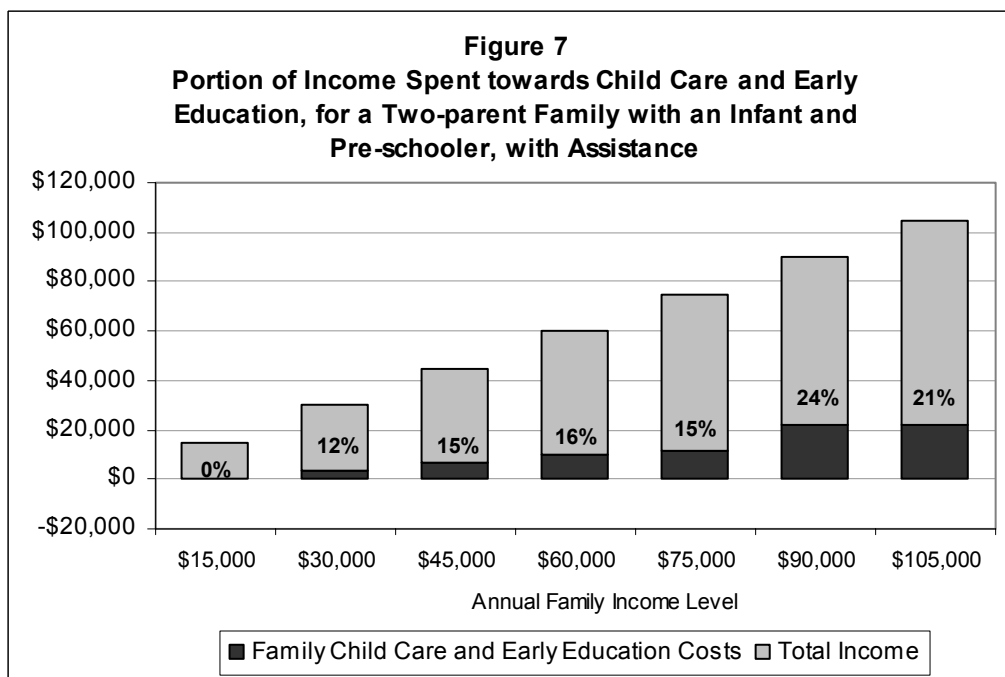
³¹ Massachusetts Child Care Resource and Referral Network, 2003.

³² Office of Child Care Services, 2003.

³³ G. Becker and N. Tomes. “Human Capital and the Rise and Fall of Families.” *Journal of Labor Economics*, Vol. 4(3):S1-S39, 1986.

³⁴ Office of Child Care Services, 2003

assistance programs in Massachusetts include a parental co-payment for services which increases with income. For a two-parent family with an infant and a preschooler, the percentage of annual income spent towards child care ranges between 0 and 24 percent (see Figure 7).³⁵



The cost of education and care programs is a barrier to accessing these programs. In a survey of parents in Massachusetts with children 12 and under, nearly one in four parents reported that program cost was a problem for their family. Of those who changed education and care arrangements over the previous year, one in five parents said it was primarily because of cost.³⁶ Almost half of these parents reported that cost was a problem in finding new arrangements.

An analysis of the income needed for Massachusetts families to meet their basic needs (including costs for housing, food, transportation, health care, taxes, and child care) revealed increases in costs as high as 36 percent from 1998 to 2003.³⁷ Rising costs of housing, particularly in the Boston area, but in other parts of the state as well, coupled with increases in health care and child care and early education and care expenses, have made it increasingly difficult for families to remain in the state.

In a report to the Legislature about building a strong science and technology business sector, “cost-of-living factors” was included in the top four barriers to building the

³⁵ Based on parent’s co-payment schedule from the Massachusetts Office of Child Care Services and the Massachusetts Department of Education, 2003.

³⁶ R. Albelda and C. Cosenza, *Choices and Tradeoffs: The Parent Survey on Child Care in Massachusetts*. University of Massachusetts, Boston for Parents United for Child Care: Boston, MA, 1999.

³⁷ D. Pearce and J. Brooks. *The Self-Sufficiency Standard for Massachusetts*. Prepared for the Women’s Educational and Industrial Union, Boston, 2003. The greatest change was for families including one adult and one pre-schooler living in the city of Boston.



sector.³⁸ Similarly, a recent survey of Massachusetts residents revealed that one in four residents overall report that “making ends meet” is the biggest problem facing them.³⁹ One in four residents reported that they would move given the opportunity.⁴⁰ The high cost of living was cited as the main reason for wanting to move.

Quality child care and early education affects quality of life. In the same survey, one in five Massachusetts residents said the “availability of affordable, quality child care” was a big problem. Of parents with children under 18, 43 percent reported that “adequate child care” was a problem. This response varied by reported income level: one in three parents who described themselves as working class or poor compared with approximately one in ten parents who described themselves as middle or upper class reported that “affordable, quality child care” was a big problem.

Implications for Child Care and Early Education

The availability of affordable child care and early education affects families in all income brackets.

Stable, affordable education and care enables parents to pursue and maintain employment opportunities and improves quality of life.

OVERALL IMPLICATIONS OF DEMOGRAPHIC AND ECONOMIC TRENDS ON THE CHILD CARE AND EARLY EDUCATION INDUSTRY

Massachusetts’ shifting economic and demographic landscape creates a challenge for its child care and early education industry. Changing and evolving economic and social conditions – population shifts, growing diversity, high labor force participation by parents, and economic projections -- fuel the demand for continued growth in child care and early education programs.

POPULATION

The population increase from 1990 to 2000 was largely a result of families moving into Massachusetts from other countries as well as natural growth. The population of children grew more rapidly than the population overall. Children from birth through age 14 continue to make up a significant part of Massachusetts, numbering 1.7 million and accounting for 18 percent of the total population.

- This highlights the current need for education and care programs for young children from birth through five and school-age children between five and fourteen.

³⁸ Science and Technology Task Force (2003). “Using Science and Technology to Create an Economic Engine for the Commonwealth,” p. 9. Report released and presentation made on March 27, 2003 by Representative Mark A. Howland, p. 17.

³⁹ The Massachusetts Institute for a New Commonwealth (MassINC). *The Pursuit of Happiness: A Survey on the Quality of Life in Massachusetts*. Boston, MA, 2003.

⁴⁰ Ibid.

DIVERSITY

The increasing diversity in Massachusetts' children requires a varied array of culturally appropriate care and education programs.

- Dual- or multi-lingual staff are necessary to communicate with children of different nationalities and their parents, and culturally sensitive curricula and care are necessary for meeting and children's needs and parents' desires for their children's upbringing.
- Child care and early education offers a unique opportunity to address bilingual education changes in the K-12 system.

LABOR MARKET

The majority of Massachusetts's families currently need early care and education for their young children and before-and after-school programs for their school-age children to enable parents to continue participating in the labor force. State efforts to attract and retain a skilled workforce rely on making Massachusetts an attractive place to live.

- Given population estimates and labor force participation rates of parents in Massachusetts, 60,000 infants, 73,000 toddlers, 107,000 pre-schoolers, and 560,000 children ages 5 to 14 have working parents—a total of nearly 800,000 children, or two-thirds of all children in the state.
- For working families, the accessibility of affordable, quality programs and early learning opportunities for their young children and after-school programs for school-age children can make the state attractive.
- Increased demand in employment for lower-wage service and retail areas highlights the necessity for affordable quality child care and early education as well as programs offered outside of traditional workday hours.
- The availability of affordable child care and early education affects families in all income brackets. Assistance programs make child care and early education an option for low-income families. Stable, affordable education and care enables parents of all income levels to pursue and maintain employment opportunities.



ECONOMIC PROFILE OF THE CHILD CARE AND EARLY EDUCATION INDUSTRY

To assess the economic characteristics of the child care and early education industry in Massachusetts, this section quantifies:

- The size of the industry, as reflected in output or gross receipts
- The total direct employment of the industry
- The capture of federal and state monies designated for child care and early education
- The size and characteristics of the child care and early education market

It will also discuss factors that play a part in increasing demand for the industry. It should be re-emphasized that the economic analysis covers licensed programs and formal child care and early education and excludes unlicensed, informal child care and education, so the findings in this report are underestimates of the full impact of the industry. In addition, as part of a conservative approach, the analyses in this section do not include revenue and employment in indirect support services through the child care and early education infrastructure, including research, oversight, administration, and training activities at government, non-profit, and for-profit establishments. Again, this results in an underestimate of the industry's impact on the state's economy.

MEASURING INDUSTRY OUTPUT OR GROSS RECEIPTS

Output, also known as gross receipts, measures the size of an industry in terms of the overall value of the goods and services produced by that industry over the course of a given year. For the child care and early education industry, gross receipts are equal to the total amount of dollars flowing into the sector in the form of payments for care, including both parent fees and private and public subsidies.

State and national surveys do include “child day care services” as an industry classification, but they underestimate the size of the industry because of its diversity of establishments, which includes self-employed individuals, programs run by religious or social organizations, and not-for-profit and for-profit small businesses and chains.⁴¹ This study uses a more accurate method of measuring the size of the child care and early education industry because it primarily relies upon data from the Massachusetts Child Care Resource and Referral Network, the Massachusetts Department of Education and the Massachusetts Office of Child Care Services. Each of the fourteen regional resource and referral agencies (R&Rs) across the state collect comprehensive local data on the availability and use of licensed establishments and most formal, legally unlicensed programs. The information is then pulled into a statewide database which includes all

⁴¹ The North American Industry Classification System (NAICS) is the most used classification system, separating industries into 20 major sectors, and 1,196 industry subsectors. “Child Day Care Services” is NAICS code 624410.

actively licensed child care centers, family child care homes, and before- and after-school programs. The Department of Education has comprehensive information about public pre-schools. The Office of Child Care Services administers and maintains information about all licenses for child care and subsidy payments and programs. The information from these three entities provides a comprehensive picture of the child care and early education industry in the state.

Gross receipts were calculated by multiplying the current average annual consumer price by usage. Because children’s enrollment can be part or full time, usage was defined as full-time equivalent (FTE) enrollment rather than the number of children served. In addition, to ensure that gross receipts were accurately captured, market rate price and FTE enrollment information were broken down by type of establishment (family child care homes, center-based programs, public pre-schools, and before- and after-school programs). For center-based programs, price and FTE enrollment were further broken down by age of child (infant, toddler, pre-school age, and school age). Annual government expenditure information was used for Head Start. The United States Department of Agriculture has a Child Care Food Program which contributes dollars directly to services within the industry, and those dollars were included (see Appendix A for detailed methodology).

Based on the methodology briefly described above, the estimated value of annual gross receipts for licensed child care and early education in Massachusetts is \$1.5 billion including \$1.2 billion for all

center-based programs including pre-schools and Head Start and \$300 million for family child care homes. The majority

The annual gross receipts for child care and early education in Massachusetts total \$1.5 billion.

of these dollars is paid by parents, but a portion is paid by government assistance programs for low-income families.⁴² This gross receipts value includes any subsidies from employers to parents, since they would make up a portion of the consumer price paid towards child care and early education programs the parents purchase for their children. This analysis does not include, however, any employer monies invested outside of the consumer price. For example, if a company made a grant to an on-site or near-by establishment which enabled the establishment to offer services at a lower cost to parents, only the cost to parents would be captured. This discrepancy would result in an underestimate of the total dollars going into the industry.

The U.S. Census Bureau’s Economic Census reports gross receipts for “child day care services” totaling \$665 million in Massachusetts, adjusted to 2003 dollar values.⁴³ This value is less than half that of the more comprehensive value calculated in this report. Given that the capacity of the industry has grown from nearly 190,000 in 1997 to more than 245,000 in 2003, some of the discrepancy is likely due to the time difference between surveys (1997 compared to 2003) while some is due to the Census Bureau’s less comprehensive industry classification.

GROSS RECEIPTS COMPARED WITH OTHER INDUSTRIES

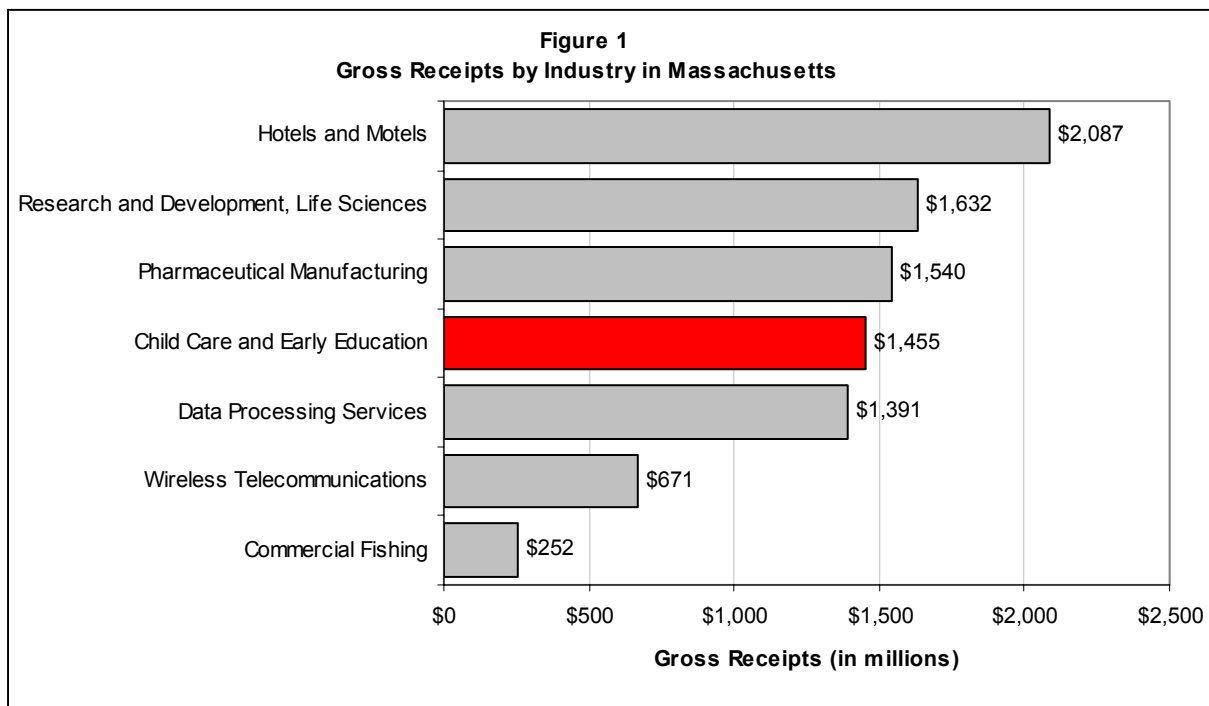
⁴² Government spending for early education and care is profiled later in the section, although many of the total dollars are spent towards informal care and education or programs that are not a part of direct services and are not included in the gross receipts analysis.

⁴³ U.S. Census Bureau. 1997 Economic Census. The Census is mailed to a list based on U.S. businesses with employer identification numbers (EIN), and excludes private households and governments. The 1997 Economic Census is the most recent for which data is available, and although the value has been adjusted to 2003, it may not reflect industry changes over the past five years.



Comparing the child care and early education industry's gross receipts with other industries in the state puts the gross receipts calculation into context. Massachusetts industries range from \$718,000 in annual gross receipts for record production to more than \$12 billion for retail sales of new automobiles.⁴⁴ Comparing the child care and early education industry with Massachusetts' other industry sectors indicates that it is more than five times larger than the commercial fishing industry (\$252 million), and also considerably larger than the \$671 million wireless telecommunications industry (see Figure 1 and see Appendix C for more comparisons).⁴⁵ Child care and early education is similar in size to other industries in the state which are recognized as significant, such as data processing services (\$1.39 billion), pharmaceutical manufacturing (\$1.54 billion), and research and development in the life sciences (1.63 billion).⁴⁶

The gross receipts of child care and early education are similar to the data processing services, pharmaceutical manufacturing, and research and development in the life sciences industries in Massachusetts.



⁴⁴ Based on the U. S. Census Bureau's 1997 Economic Census, and adjusted to 2003 values using the CPI.

⁴⁵ Fishing gross receipts are derived from D. Georgianna. *The Massachusetts Marine Economy Economic Development*. University of Massachusetts Donahue Institute, 2000 and updated to 2003 dollars. Wireless telecommunications gross receipts value is based on the U. S. Census Bureau's 1997 Economic Census, and adjusted to 2003 values using the CPI.

⁴⁶ Based on the U. S. Census Bureau's 1997 Economic Census, and adjusted to 2003 values using the CPI.

DIRECT EMPLOYMENT

Direct employment for child care and early education in 2003 in Massachusetts is estimated to be 29,555 full-time equivalent jobs (FTEs).⁴⁷ This figure is derived from

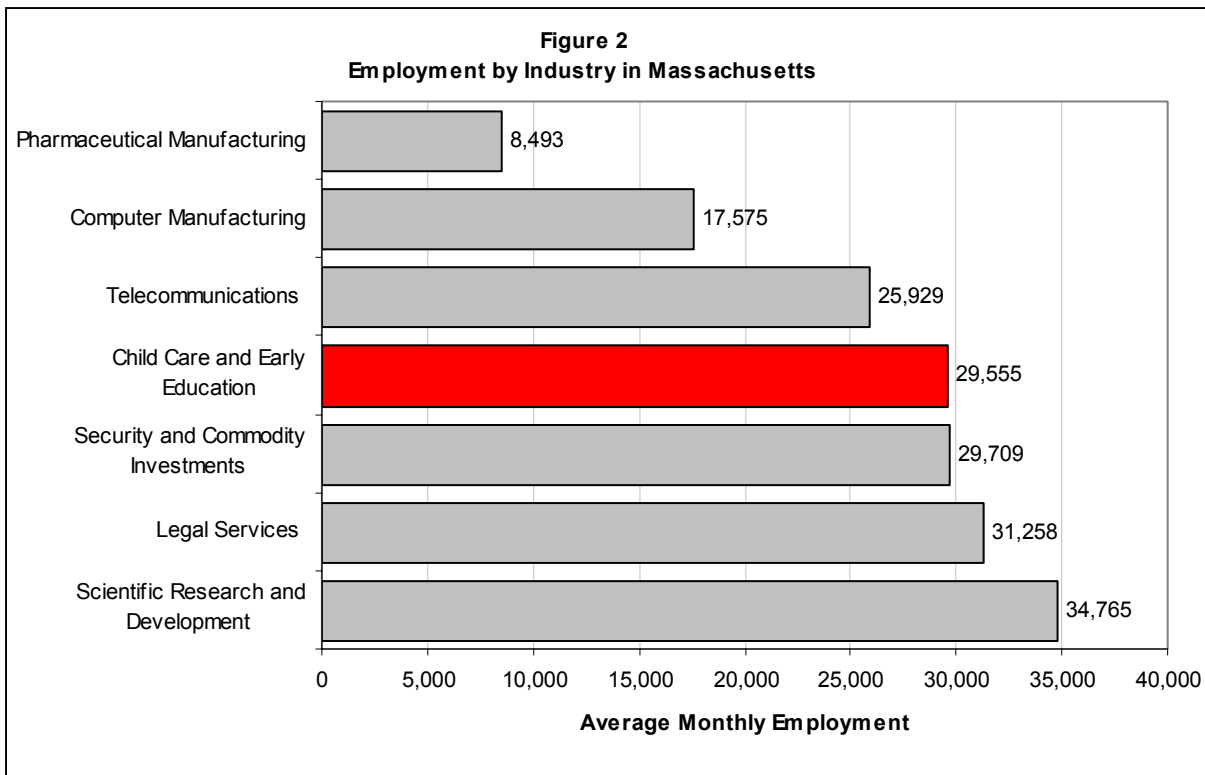
The child care and early education industry directly supports nearly 30,000 full-time equivalent jobs.

minimum mandated staffing requirements for different age groups of children in different types of programs, and minimal support staffing in centers (see Appendix A for a detailed methodology).

The total number of people working in the child care and early education industry is likely higher because so many education and care professionals work part time. The estimate derived from statewide data also understates the total child care and early education economic activity because it excludes informal, individual care-giving by nannies, babysitters, relatives, or neighbors. In addition, the estimate is calculated based on the minimum staff-child ratio required by state law. Some child care and early education operators choose to maintain higher ratios in order to improve program quality or to achieve specific quality goals that increase their business' competitiveness.

DIRECT EMPLOYMENT COMPARED WITH OTHER INDUSTRIES

To put employment findings in context, the number of FTEs in child care and early education is compared to employment in other industries (see Figure 2).



⁴⁷ Full-time equivalencies in this report adjust for part-time workers but do not adjust for the long hours that many providers work, particularly in family child care homes.



The number of FTEs in child care and early education is similar to the number of employees in legal services (31,258) and securities and commodity investment services in the state (29,709, and see Appendix C for more comparisons).⁴⁸ There are more FTEs in child care and early education in the state than there are workers in telecommunications (25,929) or computer manufacturing (17,575). There are almost as many FTEs in child care and early education as there are people working in scientific research and development, which includes the physical sciences, engineering, and life sciences (34,765 people). There are far more child care and early education professionals than there are faculty and staff at community colleges or workers involved with the Boston Central Artery/Tunnel Project, also known as the “Big Dig” (7,000 and 5,000 employees, respectively).⁴⁹ The leading employer in Massachusetts, Stop & Shop supermarkets, employs fewer people in the state than does child care and early education.⁵⁰

There are over four times more people working in child care and early education than working on the Big Dig.

MEASURING INDIRECT AND INDUCED EFFECTS

Child care and early education is linked to the rest of the local economy in a number of ways. Child care and early education establishments purchase supplies from other businesses and its employees spend their earnings in part on locally produced goods and services. These linkages can be measured using an input-output model and its associated multipliers, a methodology used by some economic development specialists. Many informed observers have indicated that these effects are not part of a conservative approach and thus these analyses are not included in the main body of this report. An analysis of these linkages for employment in other industries is included in Appendix B.

In addition, the child care and early education industry pays taxes to state and federal governments. Because of the diversity of establishments, including for-profit and not-for-profit establishments, the direct tax contribution is not possible to calculate. Indirect business taxes, including excise, sales, and property taxes total \$19.1 million annually.⁵¹

CAPTURE OF FEDERAL AND STATE SUBSIDIES

The state and federal governments provide support for child care and early education, including assistance to families, funded child development programs, and quality improvement. The availability of federal and state child care and early education supports plays an important role in supporting local economic development, sustained employment of low-income families, and development of Massachusetts’ children for future economic success. There are a number of programs that provide direct services in local communities. They are each described here with the most recent funding information available.

⁴⁸ Data is from the 2002 Massachusetts Covered Employment and Wages (ES-202) survey.

⁴⁹ Massachusetts Community College Council, www.mccc.org and Massachusetts Transportation Authority information about the Central Artery/Tunnel Project (Big Dig), www.bigdig.com.

⁵⁰ Boston Business Journal. “Massachusetts Largest Employers.” *Book of Lists*. Boston, 2003.

⁵¹ Based on direct multipliers in the IMPLAN input-output model. See Appendix B for more details about the model.

- The Office of Child Care Services manages the Income Eligible Voucher Program and income eligible contracts for working families earning up to 50 percent of the state median income of \$68,964.⁵² In State Fiscal Year (SFY) 2002, this program received \$203.4 million in state and federal funds to serve more than 33,000 children from birth through age 12. In addition, OCCS administers the Employment Services Program to provide assistance for care and education opportunities so that Massachusetts parents can transition from welfare to work and participate in work activities. In SFY 2002, this program received \$74.4 million in state and federal funds to serve nearly 13,000 children. OCCS also administers the Supportive Child Care Placement Program, which had funding levels of \$51.1 million in SFY 2002.⁵³ In all of these programs, families may choose their own licensed or legally unlicensed child care and early education provider.

- The Massachusetts Department of Education administers the Community Partnerships for Children (CPCs) which serve families earning up to 125 percent of the SMI. This program received \$96.4 million in SFY 2002 in state and federal funds to serve more than 21,000 children and \$78.2 million in SFY 2003 to serve 17,500 children. The Department of Education also administers funds to expand kindergarten programs to full-day programs. These expansion grants totaled \$24 million in SFY 2002. Early Childhood Special Education funding totaled an additional \$10.1 million.

- Head Start serves children from birth to age five, pregnant women and their families in child-focused programs designed to increase school readiness of young children in low-income families.⁵⁴ In federal fiscal year (FFY) 2002, Massachusetts received \$96 million in federal funds for Head Start and an additional \$9.27 million fund for Early Head Start, for a total of \$105.3 million.

- Some federal funds for child care and early education include a requirement that four percent be used to improve the quality of services. These federal dollars are matched by state funds. In Massachusetts, this amounted to more than \$23 million in SFY 2002. This money supports education and training of child care and early education professionals, research projects, inclusion grants to provide services to children with special needs, and other assistance to child care and early education providers.

- Early Intervention funding for parenting and healthy infant development totaled \$39.6 million in SFY 2002. These funds are granted to early education and care establishments and other agencies to provide comprehensive services for families.

Massachusetts received \$105 million in state and federal funds for Head Start and Early Head Start child development programs.

⁵² Office of Child Care Services. *State Median Income for Four-Person Families for Federal Fiscal Year 2002*.

⁵³ Information made available through the Department of Education, 2003.

⁵⁴ US Department of Health and Human Services, Administration for Children, Youth and Families; Head Start website at <http://www2.acf.dhhs.gov/programs/hsb/about/index.htm>.



In total, state and federal funding for child care and early education in Massachusetts was \$627.3 million in FY 2002 (see Table 1). Some of the funds for direct services were distributed through licensed child care and early education facilities; however, a portion of parent vouchers were redeemed by legally unlicensed providers, thus these funding levels should not be compared to the gross receipts analysis described earlier in this section.

The child care and early education industry in Massachusetts received \$627.3 million in state and federal funds in fiscal year 2002.

| Table 1 Federal and State Spending in Massachusetts for Child Care and Early Education, Fiscal Year 2002 | |
|---|---------------------------|
| Program | Total, in millions |
| Income Eligible Vouchers | \$203.4 |
| Community Partnerships for Children | \$96.4 |
| Head Start* | \$96.0 |
| Employment Services Program | \$74.4 |
| Supportive Child Care Placements | \$51.1 |
| Early Intervention | \$39.6 |
| Expansion Grants for Full-day Kindergarten | \$24.0 |
| Quality Improvement | \$23.0 |
| Early Childhood Special Education | \$10.1 |
| Early Head Start* | \$9.3 |
| Total: | \$627.30 |

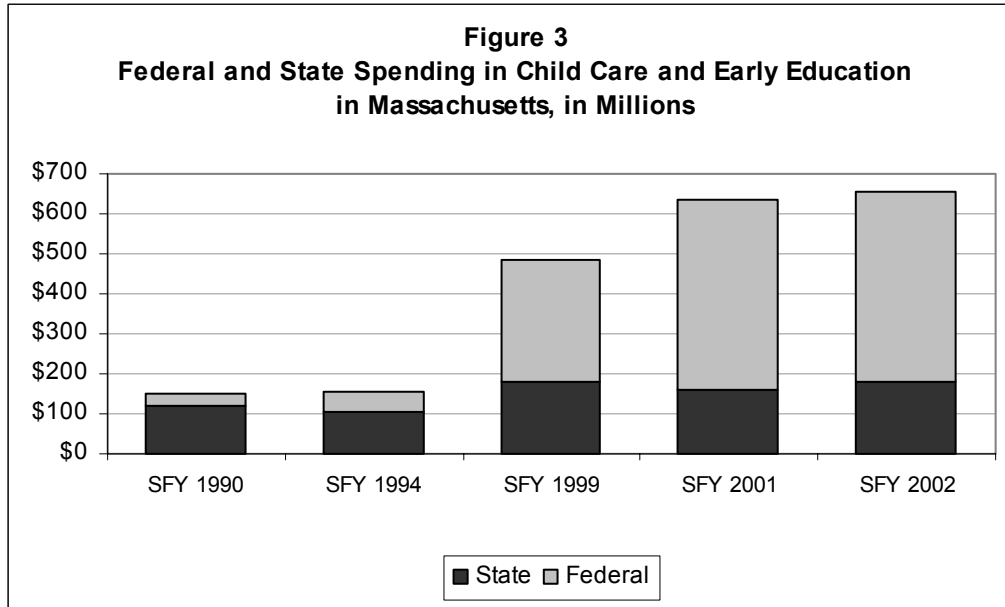
* Head Start funds are for Federal Fiscal Year 2002. All other program expenditures are for State Fiscal Year 2002.

There are other areas of significant investment in healthy child development that are not targeted to direct child care and early education programs for children. These funds are included in this report to give a snapshot of programs that support children and their families but which are not a part of the child care and early education industry as defined by this report. These programs are administered by OCCS, the Department of Education, and the Department of Public Health. Even Start funding totaled \$4.6 million and Title 1 funding was \$6.9 million.⁵⁵ Teen parenting programs, run by OCCS, received \$8.9 million from the state. Similarly, the Parent/Child Home Project provided \$3.0 million in funds for programs of parent involvement.

There have been significant shifts in the proportion of total government assistance provided over the last decade, stemming from a much more significant increase in federal funds for child care and early education than state funds (see Figure 3).⁵⁶

⁵⁵ Massachusetts Department of Education and the Office of Child Care Services, 2003.

⁵⁶ Massachusetts Department of Education data.



In SFY 1990, 19 percent of the total child care and early education budget came from federal funds while the majority came from state funds, but in SFY 1999, 63 percent of government funds were federal. In SFY 2002, nearly three-quarters of public funding in Massachusetts for child care and early education came from federal funding.

In State Fiscal Year (SFY) 1990, 19 percent of the total child care and early education budget came from federal funds. In SFY 2002, nearly three-quarters of funding for child care and early education came from federal funding.

THE CHILD CARE AND EARLY EDUCATION MARKET

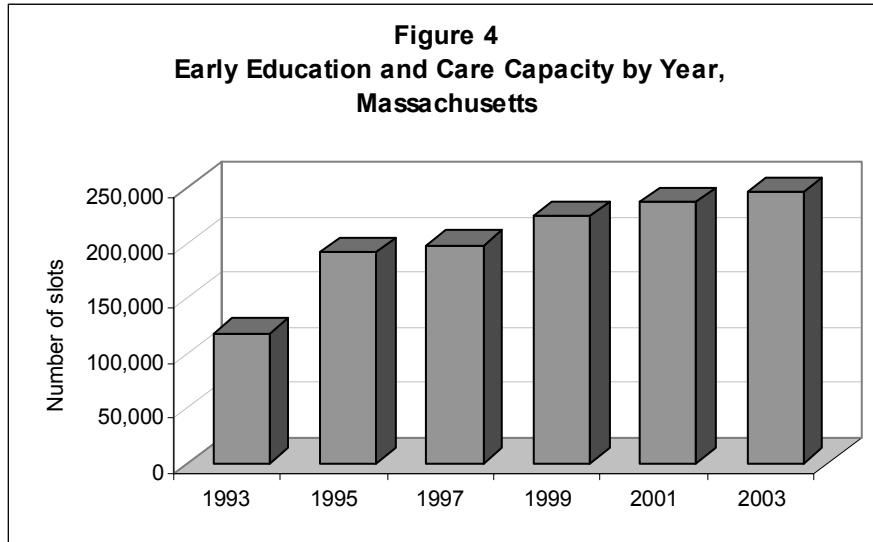
There has been significant growth in child care and early education capacity over the past decade (see Figure 4).⁵⁷ In 1993, there were slightly over 115,000 licensed slots. Capacity increased aggressively to reach more than 245,000 licensed slots in 2003, more than 100 percent growth rate over the decade. Capacity increased even while the economy was in a downturn, suggesting that the child care and early education industry is relatively resilient to economic fluctuations.

Currently, the child care and early education industry, including licensed child care centers, Head Start facilities, family child care homes, after-school programs, and pre-schools has the capacity to serve 246,250 children at any one time.⁵⁸

⁵⁷ Information provided by the Massachusetts Office of Child Care Services and Department of Education, 2003.

⁵⁸ Massachusetts Child Care Resource and Referral Network, Massachusetts Department of Education, and the Massachusetts Office of Child Care Services, 2003.





Includes establishments licensed through the Office of Child Care Services and pre-schools administered by the Department of Education. This chart does not include unlicensed programs, including many license-exempt after-school programs.

Overall, 21 percent of the 1.19 million children ages birth to 14 in the state can be served at any one time by licensed programs. The percent of children served varies significantly by age. Infants and toddlers are significantly more underserved than pre-schoolers, who are served by public pre-schools and nursery schools as well as in centers and family child care homes. (see Table 2).⁵⁹

| | Number in Population | Maximum Full-time Capacity* | Percent of Population Served by Maximum Capacity |
|---|----------------------|-----------------------------|--|
| Infants (birth to 15 months) | 99,000 | 26,043 | 26 |
| Toddlers (15 months to 2 yrs, 9 months) | 120,000 | 43,645 | 36 |
| Pre-schoolers (2 yrs, 9 months to 4 yrs, 11 months) | 176,000 | 135,771 | 77 |

* The sum of maximum capacity by age values exceeds total aggregated capacity because family child care capacity is not regulated by age, except that programs may have no more than two infants with one toddler or no more than three toddlers with no infants at any one time, not to exceed a total of six children from birth to age 14.

⁵⁹ U.S. Census Bureau. *Annual Population Estimates by State for July, 2002, December, 2002*. Estimates of the proportion of children in the 2002 population are based on Census 2000 and U.S. Census Bureau Population Estimates for 2003.

The number of 5 to 14-year-old children who are served by licensed programs is low (see Table 3), although it is difficult to capture comprehensive information on whether these children are in other, informal, or license-exempt programs. For example, a survey of 400 Boston parents with children 10 to 14 indicated that a majority of school-age children in Boston participate in some type of after-school program.⁶⁰ In a statewide survey, however, parents with children ages 6 to 18 indicated that 62 percent of children “almost never” participate in an organized after-school activity.⁶¹ In addition, these parents reported that nearly one in six children ages 10 to 14 take care of themselves at least three days per week after school.⁶²

| | Number in Population | Maximum Full-time Capacity* | Percent of Population Served by Maximum Capacity of Licensed Programs |
|--|----------------------|-----------------------------|---|
| Younger school-age children (4 yrs, 11 months to 12 yrs) | 612,774 | 83,571 | 14 |
| Older school-age children (12 to 14) | 172,088 | 77,447 | 45 |

* The sum of maximum capacity by age values exceeds total aggregated capacity because some slots may be available to both younger and older school-age children.

A number of factors contribute to private demand for the child care and early education industry, thus making demand difficult to quantify. While all families might benefit from educational programs for young children or enrichment programs for school-age children, not all families would use these programs if they were available. Some prefer to keep children at home or in the care of parents or relatives. While this preference means that demand for child care and early education slots will not equal the total number of children in the state, there are other factors which lower market demand -- affordability, quality, and accessibility.

AFFORDABILITY

The majority of dollars spent in child care and early education are from parents, and, as discussed in Section One, costs can be barriers to parents who would otherwise enroll their children in licensed programs. In a survey of parents who discontinued their current education and care arrangements, almost one in five cited a problem with cost, and nearly seven percent lost a subsidy or benefit that enabled them to afford the program.⁶³ The average annual cost for full-time center-based education and care for a four-year-old is

⁶⁰ Boston’s After-school for All Partnership: A Survey of Boston Parents about their Children’s Out-of-School Hours. Boston, October, 2003.

⁶¹ Massachusetts 2020. *No Time to Lose: Children and their After-school Hours*. Boston: January, 2002.

⁶² Ibid.

⁶³ R. Albelda et al., *Parent Survey on Child Care*.



\$9,100; for an infant, \$12,735.⁶⁴ Some families receive benefits to support the high cost of care (over 101,000 children are served through Massachusetts subsidies administered by the Office of Child Care Services and the Department of Education and more than 12,000 are served through Head Start and Early Head Start), but the majority do not.⁶⁵ The constraints on spending by parents may restrict their demand for licensed child care and early education despite their need or desire for programs.

QUALITY

As the public gains understanding about the importance of young children's social and cognitive development, parents' demand for quality in programs increasingly includes more than just health and safety measures. Educational measures, including the developmental appropriateness of equipment and activities and teacher's engagement of children, become paramount. At the same time, parents may not know how best to assess quality and may not have the opportunity to observe day-to-day interactions between teachers and children. Parental education dealing with quality indicators and accreditation programs or other standardized quality indicators can help to create a demand for the highest quality programs. Not all families will be able to afford higher quality programs unless efforts are made to bring these programs into the affordable range.⁶⁶ Increasing program quality without increasing the price parents must pay will increase demand for the industry.

ACCESSIBILITY

Accessibility refers to the ease with which parents can use programs, and relies on location and the hours that programs are offered. In the survey of parents who discontinued their current education and care arrangements, 19 percent reported a problem with the hours of care offered and nearly 7 percent reported a problem with the program's location.⁶⁷ Programs without extended hours may be difficult for parents with nontraditional work schedules or long commutes that extend the work day. Working parents without private transportation or convenient public transit options are particularly likely to need extended hours care. Programs which are easily accessible from work, such as centers built in an office complex or on a company campus, have higher demand than programs that involve a separate trip for the caretaker and child. In addition, transportation for children either from home or school to child care and early education establishments will also increase demand for those programs.

Again, while it is difficult to quantify the three main factors affecting demand of the child care and early education industry, it is clear that for parents to utilize these programs, all three -- accessibility, affordability, and quality -- play a role.

⁶⁴ Massachusetts Child Care Resource and Referral Network, June, 2003.

⁶⁵ Massachusetts Office of Child Care Services, 2003.

⁶⁶ N.L. Marshall, C.L. Creps, N.R. Burstein, F.B. Glantz, W.W. Robeson, and S. Barnett. *The Cost and Quality of Full Day, Year-round Early Care and Education in Massachusetts: Preschool Classrooms*. Wellesley Center for Women and Abt Associates Inc., 2001.

⁶⁷ R. Albelda et al., *Parent Survey on Child Care*.

SECTION SUMMARY

The diversity of the child care and early education system is a vital feature in its ability to meet the needs of Massachusetts' families, but it also makes it difficult to analyze and measure. However, using data maintained by organizations charged by the Commonwealth with tracking the supply, cost and licensure of child care and early education facilities, an estimate of its composite size can be derived. This overall size, measured in terms of gross receipts and employment, is comparable to many other more easily recognizable industries in the state, such as telecommunications, pharmaceutical manufacturing, and research and development.

The substantial size of the child care and early education industry means that it not only supports the economy by allowing parents to work and preparing children for future academic success and employment, but also contributes to the economy's vitality by employing significant numbers of workers, providing tax revenue, and purchasing goods and services from many other industry sectors. The industry also supports the economy by garnering significant levels of federal funds available to support quality improvement and to provide child care and early education to low-income families.



CHILD CARE AND EARLY EDUCATION, BUSINESS AND ECONOMIC DEVELOPMENT

In addition to being a significant job-creating, income-generating industry in its own right, there are four key ways in which the child care and early education industry is linked to Massachusetts businesses and the state's economy as a whole. Child care and early education:

- Enables the working-parent labor force in Massachusetts
- Drives labor force productivity by decreasing absenteeism, reducing turnover, and enhancing recruitment at existing businesses
- Offers a financial return by reducing future public spending in such areas as criminal justice, remedial education, unemployment, and welfare
- Cultivates Massachusetts' future workforce by improving the cognitive skills and emotional well-being of children and boosting their chances of entering the traditional K-12 school system ready to continue learning

These linkages between child care and early education and business and economic development in the state indicate that economic development activities involving the child care and early education industry will benefit the economy.

ENABLING THE CURRENT LABOR FORCE

The child care and early education industry:

- Sustains labor force participation rates of parents
- Enables them to develop careers and advance their education
- Attracts young working families to the state and helps retain them

Sustaining Labor Force Participation

Massachusetts' working families are vital to the economy. One in four participants in the Massachusetts labor force has children under 18 and one in ten has children under age six.⁶⁸ In total, the half-million families with children under 18 in which all parents work earn over \$31.9 billion annually and families with children under age six earn \$13.1 billion annually in the state.⁶⁹ Working families span all income brackets and industries, although a survey of

One in four Massachusetts workers has children under 18 and one in ten has children under age 6.

⁶⁸ U.S. Census Bureau. *Census 2000*. The survey does not report data specifically on children under 14.

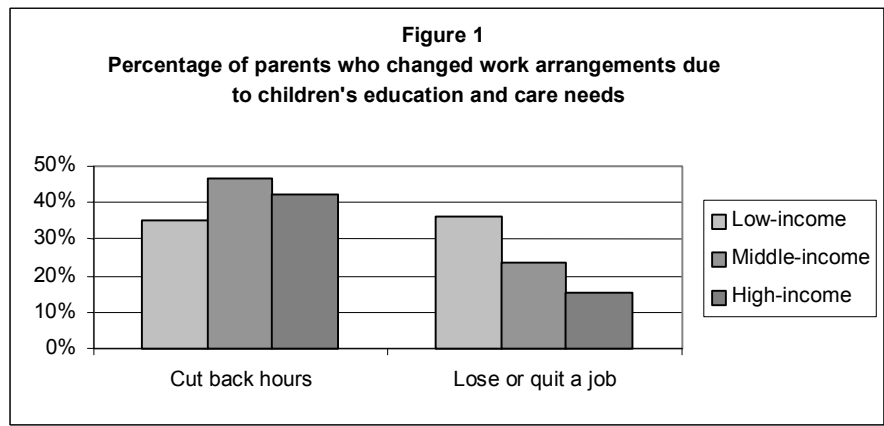
⁶⁹ Based on Census 2000 income for various family types with and without children.

Massachusetts parents revealed that mothers in middle-income families (with incomes between \$30,000 and \$80,000 annually) were more likely to be employed full-time than mothers in either high-income families (with incomes over \$80,000 annually) or low-income families (with incomes less than \$30,000).⁷⁰

Working parents with children under age 18 earn \$31.9 billion annually in Massachusetts.

The majority of these working families rely on care outside of the home for their children.⁷¹ There are clear links between the availability of affordable child care and early education and parents' participation in the workforce. Almost one-quarter of parents in Massachusetts with children under age 12 report having to quit their employment to cope with child care needs, and 5 percent report that they lost a job due to child care difficulties.⁷² In a survey of Massachusetts parents with school-age children ages 6 to 18, 56 percent of women and 36 percent of men—51 percent overall—reported that they made career or job changes “based entirely on their child’s school schedule.”⁷³ More than 70 percent of the nation’s part-time workforce is made up of women, many of whom reduce hours at work to care for children.⁷⁴

Barriers to work due to children’s needs span all income brackets. More than 30 percent of low-income working parents with children 12 and under (incomes of \$30,000 or less), 20 percent of middle income parents (incomes of \$30,000 to \$80,000) and 15 percent of high-income parents (incomes of more than \$80,000) said they have lost or quit a job because of their children’s care and education needs. (see Figure 1).⁷⁵ In each income bracket, an even higher percentage of parents report cutting back on hours because of their children’s care and education needs.



Interestingly, the largest percentage of parents who cut back hours are middle income. Middle-income families were also less likely to use paid child care and early education arrangements than lower-income and higher-income families. The survey did not collect information on the reasons for using particular arrangements, so it is not clear

⁷⁰ R. Albelda et al., *Parent Survey on Child Care*.
⁷¹ Massachusetts Department of Education. *Community Profiles*. Parent survey, 2003.
⁷² R. Albelda et al., *Parent Survey on Child Care*.
⁷³ Massachusetts 2020, *No Time to Lose: Children and their After-school Hours*.
⁷⁴ National Employment Law Project and Greater Boston Legal Services. *Protecting Working Families and Our Economy: Unemployment Insurance in Massachusetts*. Washington, DC: National Employment Law Project, 2003.
⁷⁵ R. Albelda et al., *Parent Survey on Child Care*.

whether cost, availability, preference, or other factors affect these differences in family use by income.⁷⁶

Clearly, not all families who currently have a parent at home would choose to have that parent in the workforce if there were increases in accessible, affordable, quality child care and early education capacity. But, for economic vitality, particularly given the dip in the number of younger workers 20 to 34 in the region, providing the infrastructure so that all adults who wish to work can find and sustain employment is critical to meeting workforce demands. It allows for an economically competitive region and offers the economy an untapped labor force in those willing to work but who are unable to do so because they are caring for children.

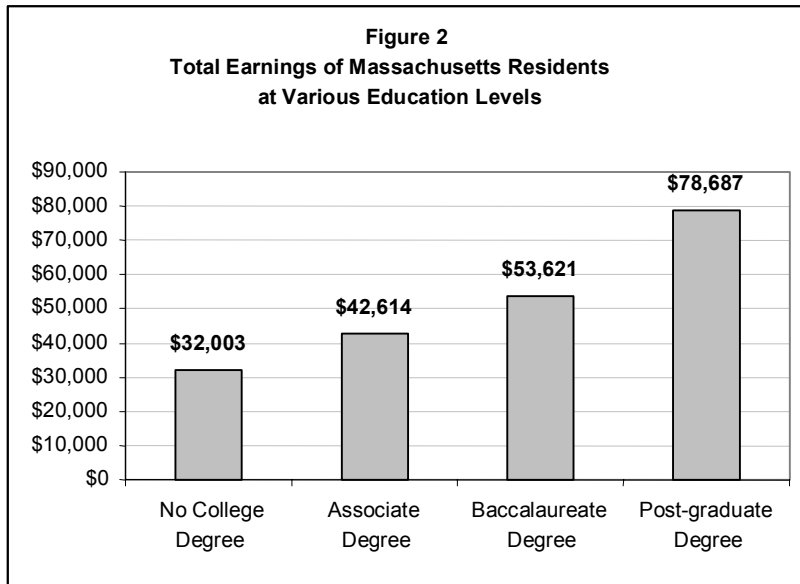
Career Development

The availability of child care and early education programs also gives parents the opportunity for a higher education. That helps meet the demand Massachusetts has for a highly skilled labor force and benefits the economy in a number of ways.

Child care and early education enables parents to advance in their careers and contribute more to the economy.

In Massachusetts, the higher the level of education an individual has, the higher the individual's annual income is likely to be (see Figure 2).⁷⁷ This translates into increased tax revenue for government. Higher educational attainment also reduces the likelihood of needing various government supports. In a long-term study of low-income families who needed government assistance to meet basic family needs, mothers with children who participated in an intensive child care and early education

program that included parental involvement achieved higher educational and employment status than similar mothers whose children were not randomly assigned to the program.⁷⁸ Another study, investigating higher education opportunities for individuals transitioning from welfare to work found that 88 percent of individuals receiving welfare assistance who obtained four-year college degrees discontinued participation in welfare



⁷⁶ Ibid.

⁷⁷ S. P. Cohen, J. B. Berger, R. L. Forest, and E. Smith. *Massachusetts Public Higher Education: A Shrewd Investment with Significant Returns*. Massachusetts Institute for Social and Economic Research (MISER) and the Center for Education Policy at the University of Massachusetts, Amherst, January, 2002.

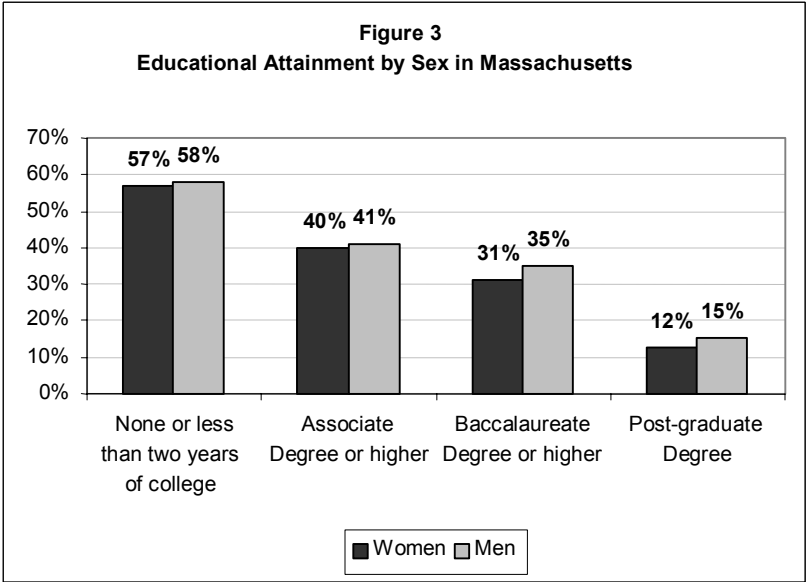
⁷⁸ Discussion of results of *The Abecedarian Study*, as cited on www.fpg.unc.edu/~abc/.

after earning their degree.⁷⁹

Higher education levels increase income and decrease the need for government programs such as welfare and unemployment insurance.

Unemployment is also less likely for those who have attained higher education. A comparison of unemployment rates of the nation's labor force between October 2002 and October 2003 indicates that 9.0 percent with less than a high school diploma were unemployed; 5.4 percent of those who graduated high school ; 4.8 percent of those with an associate's degree or some college, and 3.1 percent of those with a Bachelor's degree or higher.⁸⁰

Women, traditional caretakers for children, have human capital potential that remains untapped. In Massachusetts, women over 25 years of age show a slight attrition in educational attainment relative to men over 25 (see Figure 3).⁸¹ The gap between men and women widens as you move up the educational ladder. Access to affordable child care and early education enables women to pursue higher education opportunities if they desire.



Many colleges and universities are committed to enabling primary caregivers access to higher education and provide on-site child care and early education facilities to accommodate parents pursuing both undergraduate and graduate degrees. However, funding for these programs, so necessary if they are going to be affordable, is often in jeopardy.

Attracting Young Professionals

As discussed in Section One, many economic and civic leaders are realizing the importance of making social and economic policy changes to attract young professionals to the Commonwealth. In a survey of Massachusetts residents, one in five reported that

⁷⁹ T. Karier, *Welfare Graduates: College and Financial Independence*, Levy Economics Institute of Bard College, as cited in *Grassroots to Graduation: Low-income Women Accessing Higher Education*. Boston: Wellesley College Center for Research on Women and Women's Institute for Housing and Economic Development, 2003.

⁸⁰ U.S. Department of Labor. *The Employment Situation: October 2003*. Washington, D.C. : U.S. Department of Labor Bureau of Labor Statistics, 2003.

⁸¹ U.S. Census Bureau. Census 2000. These statistics refer to Massachusetts residents, and would not include those who attend educational institutions in Massachusetts who do not officially change their residence to Massachusetts or who move after graduation.



“affordable, quality child care” is a big problem in the state.⁸² Improving this perception will make Massachusetts an attractive place to live and work.

Improving education and care opportunities for children makes Massachusetts a more attractive place to live and work.

A DRIVER OF INCREASED LABOR FORCE PRODUCTIVITY

The benefits to the labor force on a state level can be seen in individual businesses as well. The availability of affordable, accessible, quality child care and early education has positive effects on businesses’ bottom lines. Many companies realize this and work to ensure that child care and early education options exist for their employees. A recent national survey found that 18 percent of employees with children under 13 have access to resource and referral services through their employer and 10 percent have child care and early education services offered by their employer.⁸³ Individual businesses use child care and early education as a business tool to:

- Increase employee retention
- Reduce absenteeism
- Enhance recruitment of the most skilled workers

Staples, Inc., in Framingham, built an on-site child care center with 108 spaces for 2,500 employees and shortly after the center’s opening had to double the center’s capacity to meet employee demand. As Ron Sargent, President and CEO of Staples, said, “Staples Child Care Center...has been a major asset in attracting and retaining Home Office associates. Associates with children at the center have fewer child care hassles to deal with, so we believe it helps their productivity at work.”⁸⁴

These effects improve the quality of business services as well. FleetBoston Financial based in Massachusetts was recently named one of the “100 Best Companies for Working Mothers” because of its commitment to child care and early education, flexible scheduling, and advancement of women in the company. Anne Szostak, Executive Vice President and Director of Human Resources and Diversity, explained why FleetBoston’s family-friendly policies are so important: “Our progressive employee WorkLife programs offer benefits that help not only working mothers but all of our employees effectively integrate the demands of home and work. This enables us to maintain the highest possible level of service to our customers.”⁸⁵ Similarly, Terri Ireton, Director of Associate Relations at Blue Cross Blue Shield of Massachusetts (BCBSMA) said: “BCBSMA’s most important priority is to put its members first in every way. We have discovered that one of the best ways to achieve that is to help our associates to be as productive and, frankly, as happy

⁸² The Massachusetts Institute for a New Commonwealth (MassINC), *Survey on the Quality of Life in Massachusetts*, 2003.

⁸³ J. T. Bond, C. Thompson, E. Galinsky, and D. Prttas. *Highlights of the National Study of the Changing Workforce*. Families and Work Institute: Washington, DC, 2003.

⁸⁴ Bright Horizons. *Solutions Online: Executive Spotlight, Ron Sargent, President and CEO of Staples, Inc.* Fall 2003. www.bfamsolutionsonline.com. Retrieved January 5, 2004.

⁸⁵ FleetBoston Financial. “Fleet Named a ‘Best Place to Work’ for Working Mothers.” Press release, September 23, 2003.

with their jobs as is possible. We also want to attract the best and the brightest candidates to come work for BCBSMA.”⁸⁶

Increasing Employee Retention

Particularly for companies that rely on highly skilled workers, retaining existing staff is a priority. Non-portable benefits, such as child care, are an effective business tool to increase retention. Employees with young children who would otherwise discontinue work or move to a more family-friendly company remain. Those who feel supported in their new family roles and who feel that their workplaces support a balance between work and home obligations are less likely to leave their jobs.⁸⁷ Child care benefits can also be used as a business tool to increase career advancement of female employees, an expressed goal of many companies.⁸⁸

There is considerable evidence that child care and early education benefits do increase employee retention. A national study of companies that offer on-site child care and early education for their employees found that voluntary turnover was nearly one-half in those who used the center compared to other workers.⁸⁹ The survey also found that more than half of the center users had been with their company for over five years and nearly half had been with their company for more than ten years. In another survey, 19 percent of employees at companies with child care and early education programs indicated that they have turned down another job rather than lose work-site child care and early education.⁹⁰

A national study of companies found that turnover of employees who used on-site child care and early education was nearly one-half of those who did not.

When employees do leave because of child care and early education problems or transfer to a company with better child care and early education options, companies lose human capital and incur high turnover costs. A meta-analysis of 15 different turnover cost studies found that average turnover costs for a full-time employee making \$8 per hour are over \$9,000, 56 percent the annual wages for that employee.⁹¹ For salaried employees, costs are at least 150 percent of the base salary, and they increase for higher-paid and more valued staff.⁹²

Reducing Absenteeism

Unscheduled absenteeism in 2002 cost an average of \$60,000 a year for each small company and more than \$3.6 million for each large company, according to a national survey

⁸⁶ Blue Cross Blue Shield of Massachusetts. “Blue Cross Blue Shield of Massachusetts Named One of the 100 Best Companies for Working Mothers Nationwide.” September 23, 2003, www.bcbsma.com.

⁸⁷ Ibid.

⁸⁸ Ibid. Other companies who have been recognized as one of the “100 Best Companies for Working Mothers” have expressed goals for advancing women in their organization.

⁸⁹ Bright Horizons Family Solutions. *The Real Savings from Employer-sponsored Child Care: Investment Impact Study Results*. Boston, MA: Bright Horizons, 2003.

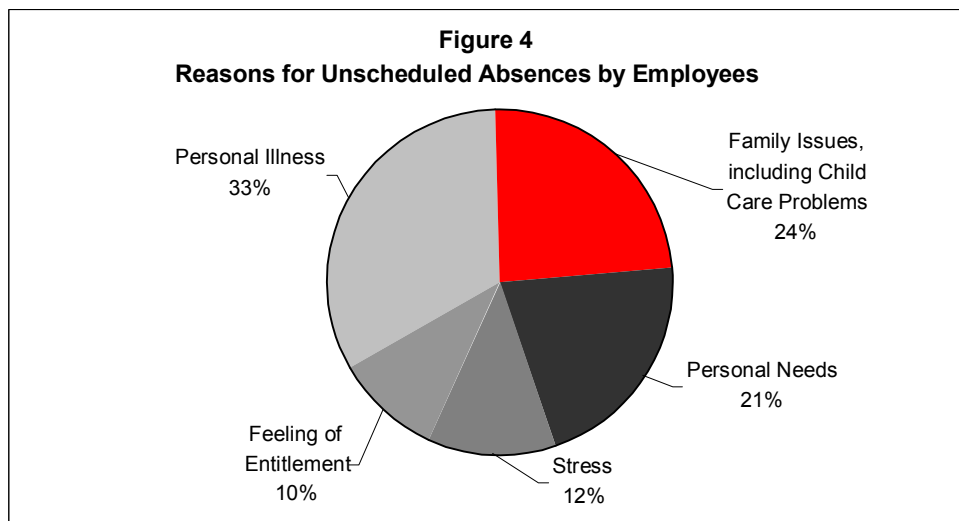
⁹⁰ Simmons College, *Benefits of Work-Site Child Care*, 1997, as cited by Bright Horizons Family Solutions.

⁹¹ Sasha Corporation. Turnover costs in 15 different studies. www.sashacorp.com. November 2003.

⁹² W. Bliss. *The Business Cost and Impact of Employee Turnover*. New Jersey: Bliss & Associates, Inc., 1999, www.blissassociates.com.



of human resource executives.⁹³ While one-third of unscheduled absences were due to personal illness, one-quarter were due to family issues, including children’s illness and unscheduled breakdown of child care and early education arrangements (see Figure 4).⁹⁴



Currently, approximately 16 percent of major employers nationally offer sick or emergency back-up care to reduce absenteeism of their employees.⁹⁵ These programs offer a significant return on investment. J.P. Morgan Chase found that operating a back-up center, as well as providing employees with resource and referral consulting to help them find stable quality care, netted an annual savings of \$800,000 in saved workdays, a 112 percent return on the company’s investment in child care and early education benefits.⁹⁶ Similarly, PNC Financial Services Group, a 6,000 employee company based in Pittsburgh, Pennsylvania, found a 91.7 percent return on investment from a newly implemented back-up program, recovering 3,060 parent-days at work and receiving positive feedback from parent-employees, their coworkers, and their managers, who report less distraction and more loyalty.⁹⁷ Small businesses with fewer employees may find even greater benefits from reducing absenteeism, particularly when programs are low or no cost.

Enhancing Recruitment

The accessibility of quality, affordable child care and early education, on-site or in the community, is a strong recruitment tool for businesses. Family-friendly policies indicate a company’s commitment to the well-being of new employees and their personal lives, which make the company more attractive in a competitive workforce market. Particularly for highly specialized workers, company values are critical to attracting the best of the labor pool, with or without young children.

Family-friendly policies make a company more attractive in a competitive hiring situation.

⁹³ Harris Interactive. *The 2002 CCH® Unscheduled Absence Survey*. Riverwoods, IL: CCH®, 2003.

⁹⁴ Ibid.

⁹⁵ Hewitt Associates. “Hewitt Study Shows Work/Life Benefits Continue to Grow Despite Slowing Economy” April 23, 2001. www.was.hewitt.com

⁹⁶ Bright Horizons Family Solutions. *Return on Investment*. Presentation, 2003.

⁹⁷ K. D’Appolonia. *The Business Case for Back-Up Child Care*. PNC Financial Services Group. Presented at the 2003 WorkFamily Congress in New York, NY, October, 2003.

The Commerce Insurance Company, based in Webster, Massachusetts, has offered child care and early education for its employees' children for 17 years with great success. Leann Shea of Commerce's Human Resources said "We started the center with one classroom and a handful of kids because we had young employees who needed day care for their young children, and there was nothing like that offered in Webster at that time. Now we operate 13 classrooms with 135 children. It's been a significant attraction to women returning to the workforce. Certainly, it's something that we're very proud of."⁹⁸ Similarly, in an internal survey of working parents at Carlson Companies in Minnesota, 78 percent of parents who were hired since an on-site center opened and who use the center reported that the benefit played a role in their decision to seek employment at Carlson.⁹⁹

AN INVESTMENT WITH A SIGNIFICANT FINANCIAL RETURN

While there are no long-term studies of the economic effects of child care and early education in Massachusetts specifically, cost-benefit analyses of three long-term, high-quality, early education intervention programs indicate that there are significant future savings when money is invested in high-quality early education and care, particularly for low-income children. They indicate what can be achieved when high-quality programs are delivered by a well-trained professional staff for children who are at risk for later problems.

In the Chicago study, low-income children in a high-quality, child-focused intervention program were less likely than peers to drop out of high school, be in special education, repeat a grade, or be arrested as juveniles.¹⁰⁰ The Abecedarian Project found that children who participated in the early intervention program were significantly more likely to attend college and be in a high-skilled job or in higher education at age 21.¹⁰¹ In the Perry Pre-School Study, individuals who were randomly selected to be in the high-quality child intervention program were assessed at age 27. The study found that they earned more money, were more likely to own their own home and were less likely to have been on welfare than their peers (see Figure 5).¹⁰²

There are significant future savings when money is invested in high-quality child care and early education.

Decreasing the need for remedial education in the traditional school system and decreasing involvement in the criminal justice and welfare systems save public funds. Increased earnings by adults who attended quality early education programs translates into a larger tax base. Future savings can also be found in reduced child welfare spending associated with child abuse and neglect, tangible costs to crime victims and health costs from smoking and other causes. These far surpass the greater costs associated with increased participation in higher education programs.

⁹⁸ Leann Shea, Human Resources, Commerce Insurance. Private interview with NEDLC, October, 2003.

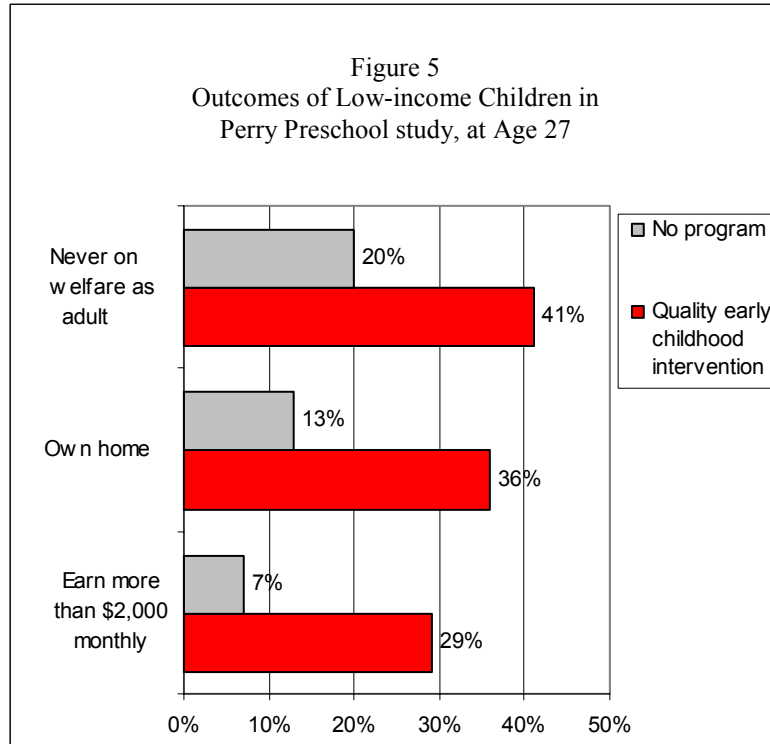
⁹⁹ Carlson Companies, Inc. Internal survey, 2001. Minneapolis, MN.

¹⁰⁰ A. J. Reynolds, J. A. Temple, D. L. Robertson, E. A. Mann. "Long-term effects of an early childhood intervention on educational achievement and juvenile arrest- A 15-year follow-up of low-income children in public schools." *Journal of American Medical Association*, May 19, 2001, v. 285, no. 18, pp. 2239-2346.

¹⁰¹ www.fpg.unc.edu/~abc/.

¹⁰² L. J. Schweinwart, H. V. Barnes, and D. P. Weikart. *Significant benefits: The High/Scope Perry preschool study through age 27* (Monographs of the High/Scope Educational Research Foundation, 10). Ypsilanti, MI: High/Scope Press, 1993.





Economists have analyzed the overall costs and benefits of these three early education and care programs, and found that significant cost savings were realized in each program (see Table 1 for a summary).¹⁰³

| Table 1 Economic Benefits of Targeted Early Education Intervention Programs | | | | |
|--|----------------------------|-------------------------------|---------------------------------|----------------------------|
| | Number of Years of Program | Average Annual Cost per Child | Total Cost of Program per Child | Lifetime Benefit per Child |
| Chicago CPC Study | 2, half-day | \$3,500 | \$7,000 | \$48,000 |
| Perry Pre-School Project | 2, half-day | \$6,000 | \$12,000 | \$108,000 |
| Abecedarian Project | 5, full-day | \$7,200 | \$36,000 | \$136,000 |

All dollar values reported are based on a 3 percent discount rate. Costs and benefits are presented adjusted to the following dollar values: Chicago CPC: 1998; Perry Pre-school: 1992; Abecedarian: 2002.

¹⁰³ Reynolds, Arthur J., Temple, Judy A., Robertson, Dylan L., Mann, Emily A. "Age 21 Cost-Benefit Analysis of the Title I Chicago Child-Parent Center Program: Executive Summary", 2001, and Reynolds, A. J., Temple, J. A. Robertson, D. L., Mann, E. A. & Ou, S. "Prevention and cost-effectiveness in the Chicago Child-Parent Centers." Paper presented at the Biennial Meeting of Society for Research in Child Development, Tampa, FL, April 2003. Values are in 1998 dollars, and benefits are based on a 3 % discount rate evaluated at beginning of pre-school participation. Barnett, Steven, W. *Lives in the Balance: Age 27 benefit-cost analysis of the High/Scope Perry Preschool Program*. Ypsilanti, MI: High/Scope Press, 1996. Values are in constant 1992 dollars and based on a 3% discount rate. Leonard N. Masse and W. Steven Barnett. *A Benefit Cost Analysis of the Abecedarian Early Childhood Intervention*. New Brunswick, NJ: National Institute for Early Education Research, 2002. Values are in 2002 dollars, and are discounted at 3 %.

After-school programs for school-age children also save public sector dollars. A review of multiple research studies to evaluate the effects of after-school programs showed significant gains in school engagement, school attendance, academic performance, and positive youth development.¹⁰⁴ A cost-benefit analysis found that the financial benefits from improved school performance, increased compensation during their years in the workforce, reduced juvenile and adult criminal activity, and reduced welfare costs outweighed the costs of the programs and those that schools sustained from increased attendance.¹⁰⁵

The state's quality of life is affected by after-school programs as well. At least 50 percent of youth crime occurs in the hours after school.¹⁰⁶ A study of eighth graders found that children in self-care for 11 hours or more per week were twice as likely to smoke cigarettes, drink alcohol, or use drugs.¹⁰⁷ Risk behaviors during adolescence predict a future of increased criminal behavior and health problems in adulthood. In a George Mason University study, 91 percent of police chiefs surveyed agreed that "If America does not make greater investments in after-school and educational child care programs to help children and youth now, we will pay more later in crime, welfare, and other costs."¹⁰⁸

Ninety-one percent of police chiefs agree: "If America does not make greater investments in after-school and educational child care programs to help children and youth now, we will pay more later in crime, welfare, and other costs."

These findings indicate the economic value of investing in quality child care and early education, particularly for low-income children. Children in middle- and high-income families are also affected by many of the negative outcome areas that were researched, however, including significant grade retention and high school dropout rates.¹⁰⁹ Overall, Massachusetts' spending in these areas is significant (see Table 2).

Certainly not all of these dollars can be saved through targeted investments in child care and early education, but significant savings can be realized. For example, special education made up 17.4 percent of local and state spending on education in Massachusetts in SFY 2003, totaling \$1.365 billion.¹¹⁰ Research indicates that model child development programs, such as the Perry pre-school project, reduce special education participation of children in low-

Reductions in special education enrollment similar to those found in model child development programs could save \$90 million in taxpayer money and move 10,000 low-income children out of special education in Massachusetts.

¹⁰⁴ B.M. Miller. *Critical Hours: Afterschool Programs and Educational Success*, 2003.

¹⁰⁵ W.O. Brown, S.B. Frates, I.S. Rudge, and R.L. Tradewell. *The Costs and Benefits of After-school Programs: The Estimated Effects of the After School Education and Safety Program Act of 2002*. Claremont, CA: The Rose Institute, September, 2002.

¹⁰⁶ U.S. Department of Justice (1997) as cited by the Massachusetts Executive Office of Public Safety. *Cops & Kids Fact Sheet*, 2000.

¹⁰⁷ D. A. Farbman. *The Forgotten Eighty Percent: The Case for Making the Most out of Children's Time out of School*. Boston, 2003.

¹⁰⁸ Fight Crime, Invest in Kids, *Poll of Police Chiefs conducted by George Mason University Professors Stephen D. Mastrofski and Scott Keeter*. Washington, DC, November 1, 1999.

¹⁰⁹ W. S. Barnett. *Characteristics of Successful Early Education Programs*. Presentation at *The Economics of Early Childhood Development: Lessons for Economic Policy* conference, Federal Reserve Bank of Minneapolis, October 17, 2003. Information is based on the National Center for Education Statistics.

¹¹⁰ Massachusetts Department of Education. Internal data request, 2003.



income families by 19.6 percent.¹¹¹ If these findings are applied to Massachusetts' special education population, they indicate that 10,000 low-income children could move out of special education, saving as much as \$90 million in taxpayer dollars and improving the academic outcomes for those children.¹¹²

| Area | Expenditures |
|--|----------------|
| Special Education ¹¹³ | \$1.37 billion |
| Juvenile Justice System ¹¹⁴ | \$124 million |
| Adult Incarceration ¹¹⁵ | \$395 million |
| Welfare (TANF) ¹¹⁶ | \$279 million |

A recent study by economists at the Federal Reserve Bank in Minneapolis used the Perry High-Scope findings to estimate overall returns on public investment. The economists found that quality early childhood development programs generate a 16 percent rate of return on investment, 12 percent of which is a public rate of return.¹¹⁷ As they argue, "Most of the numerous projects and initiatives that state and local governments fund in the name of creating new private businesses and new jobs result in few public benefits. In contrast, studies find that well-focused investments in early childhood development yield high public as well as private returns."¹¹⁸

A recent study by economists at the Federal Reserve Bank estimates that quality early childhood development programs generate a 16 percent rate of return on investment, 12 percent of which is a public rate of return.

"Most of the numerous projects and initiatives that state and local governments fund in the name of creating new private businesses and new jobs result in few public benefits. In contrast, studies find that well-focused investments in early childhood development yield high public as well as private returns."
-Arthur Rolnick, Vice President, Director of Research, and Rob Grunewald, Regional Economic Analyst, Federal Reserve Bank of Minneapolis

¹¹¹ Head Start data is from Barnett, W.S. "Preschool Education for Economically Disadvantaged Children: Effects on Reading Achievement and Related Outcomes." In S. Neuman and D. Dickinson (Eds.) *Handbook of Early Literacy Research*. New York, NY: Guilford Press, 2001, pp. 421-443. Effects of model programs is from Barnett, W. S., & Camilli, G. "Compensatory Preschool Education, Cognitive Development, and 'Race.'" In J. M. Fish (Ed.), *Race and Intelligence: Separating Science from Myth*. Mahwah, NJ: Erlbaum, 2002, pp. 369-406.

¹¹² Based on special education enrollment and income data from the Massachusetts Department of Education, state fiscal year 2003.

¹¹³ Massachusetts Department of Education, 2003.

¹¹⁴ Massachusetts Department of Youth Services. Annual Operating Budget by Appropriation Amount, State Fiscal Year 2002. These dollars include administration, pre-trial, and committed residential services, and non-residential services. <http://www.state.ma.us/dys/budget.html>

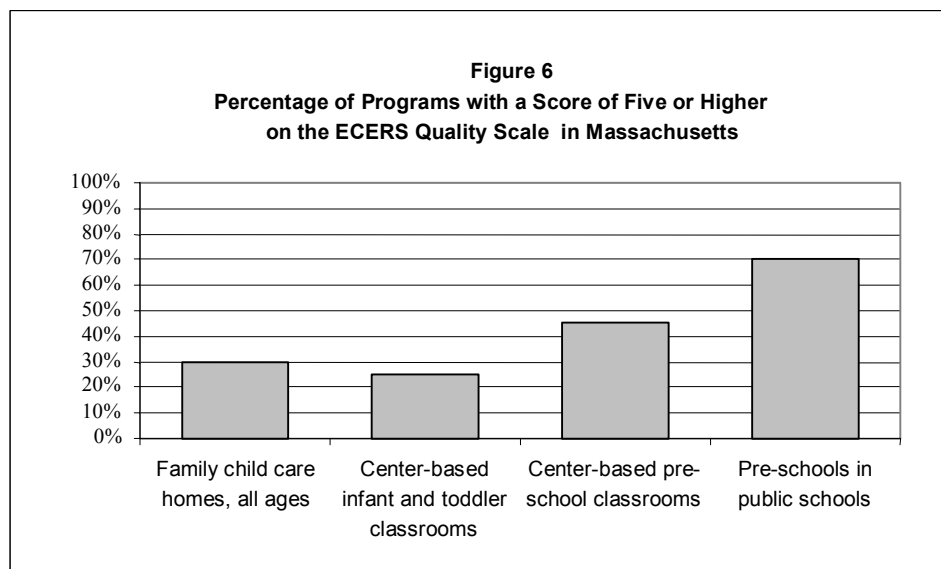
¹¹⁵ Massachusetts Department of Corrections Frequently Asked Questions. Based on 9,610 inmates in January, 2002 and average annual cost as of June, 2003. <http://www.state.ma.us/doc/faqs.htm>.

¹¹⁶ U.S. Department of Health and Human Services, Administration for Children and Families. *Fiscal Year 2002 TANF Financial Data*. www.acf.dhhs.gov

¹¹⁷ A. Rolnick et al., *Economic Development with a High Public Return*, Fedgazette.

Given these clear economic benefits of targeted investments in child care and early education, more research has been dedicated recently to the elements of successful programs that are essential to outcomes which are so economically beneficial. For young children, research at the National Institute for Early Education Research investigated the similarities of the three long-term studies on which many economic analyses have been based. The research found that all the studies had qualified, relatively well-paid teachers with small classes.¹¹⁹ In addition, each study incorporated rigorous evaluation research methods with long-term follow-ups which enabled practitioners and policy leaders to determine whether proposed outcomes were achieved.

The long-term outcome data was focused on quality in general but not on which components are the most critical and what level of quality is necessary for maximum benefit. The time expense and delay makes it difficult to conduct additional long-term research in this area. Numerous other studies, however, have identified key components of high-quality early education and care programs which do improve children’s outcomes into their K-12 educational careers. The Early Childhood Environment Rating Scale (ECERS) is a standardized scale of structural and process-related quality indicators including physical setting, program structure and activities, health and hygiene, relationships between staff and children, and relationships between staff and parents.¹²⁰ A series of in-depth studies found varying levels of good quality classrooms in Massachusetts, as defined by a score of five or higher on the ECERS scale (see Figure 6).¹²¹



¹¹⁸ Ibid, page 1.

¹¹⁹ W. S. Barnett. *Characteristics of Successful Early Education Programs*. Presentation to the Florida State Board of Education Universal Pre-kindergarten Education Advisory Council, Florida, July 23, 2002.

¹²⁰ T. Harms, R. M. Clifford, and D. Cryer. *The Early Childhood Environment Rating Scale-Revised Edition*. New York: Teachers College Press, 1998.

¹²¹ Based on a four-part study by Wellesley Center for Women and ABT Associates. N. L. Marshall et al., *Cost and Quality of Preschool Classrooms*. N. L. Marshall, C. L. Creps, N. R. Burstein, F. B. Glantz, W. W. Robeson, W.S. Barnett, J. Schimmenti, and N. Keefe. *Early Care and Education in Massachusetts Public School Preschool Classrooms*. Wellesley Centers for Women and ABT Associates, Inc., 2002. N. L. Marshall, C. L. Creps, N. R. Burstein, K. Cahill, W. W. Robeson, S. Y. Wang, J. Schimmenti, and F. B. Glantz. *Family Child Care Today*. Wellesley Centers for Women and ABT Associates, Inc., 2003. Data for infant/toddler classrooms were presented by N.L. Marshall at the National Association for the Education of Young Children annual conference, Chicago, 2003.



Many of the quality indices in the ECERS can not be directly regulated by policies or mandates. Some program characteristics which are correlated with higher quality, however, can be regulated. These studies have identified certain “regulable” program characteristics that are associated with higher quality for each of the types of programs they investigated.¹²²

The studies found that in Massachusetts, higher quality in center-based preschool-age classrooms is associated with better educated teachers, increased labor expenditures, lower child-to-staff ratios, and accreditation by the National Association for the Education of Young Children (NAEYC). In public-school-based preschool classrooms the investigators identified additional teacher training beyond formal education levels, NAEYC accreditation, smaller class sizes, and lower child-to-staff ratios.

The study of family child care homes identified provider education levels. In addition, the study found that overall cost of the program was correlated with higher quality, and the majority of the cost went towards labor expenses.¹²³

The most significant areas for quality improvement in Massachusetts are providers’ wage levels and their attainment of higher education degrees.

Given the relatively high minimum standards of staff-to-child ratios and percentage of accredited programs in the state, the most significant areas in need of improvement are wage levels of providers and their getting degrees in higher education.¹²⁴ Continued efforts to attain program accreditation will still benefit the industry.

Given cost differences between Massachusetts pre-school classrooms of various levels of quality, the studies found that the cost of all center-based pre-school classrooms operating as “good” or better on the ECERS scale would cost an estimated additional 24 percent on top of total current costs.¹²⁵ Given the variation in cost between lower and higher quality family child care homes, the study found that the additional cost of operating family child care homes at the “good” level or higher would be an additional 13.5 percent of current family child care operating expenses.¹²⁶

“There are some areas of clear agreement between market economists and child development researchers. The time has come to invest in young children, and there are substantial gains to be made from these investments if they are made wisely.”

-Jack Shonkoff, Dean of The Heller School for Social Policy and Management, Brandeis University, and Co-Editor of *From Neurons to Neighborhoods*¹²⁷

¹²² N. L. Marshall et al., *Cost and Quality of Preschool Classrooms*.

¹²³ N. L. Marshall et al., *Family Child Care Today*. Because of the nature of family child care homes business structures, the study calculated an “effective wage” based on the money brought in by the provider subtracting out-of-pocket expenses.

¹²⁴ The state has a larger number of accredited establishments than any other state, according to the National Association for the Education of Young Children (NAEYC). Nearly one-third of establishments are accredited.

¹²⁵ Ibid.

¹²⁶ Ibid.

¹²⁷ J. Shonkoff. Closing remarks at *The Economics of Early Childhood Development: Lessons for Economic Policy* conference, Federal Reserve Bank of Minneapolis, October 17, 2003.

Studies of the necessary attributes of formal after-school programs have also found a number of key components that improve children's outcomes, including staff education, program consistency, accountability, and infrastructure. The Massachusetts After-school Research Study, a collaborative research project, will investigate quality indicators in Massachusetts after-school programs. Preliminary results will be available in 2005.¹²⁸

MASSACHUSETTS' FUTURE LABOR FORCE AND ITS SKILLS

There is a demonstrable link between high-quality child care and early education programs and the preparation of qualified, skilled individuals entering the labor force. While not every child care and early education program can guarantee lifelong success for its participants, quality education and care can increase the likelihood of positive academic outcomes and future labor force participation.

"Research has shown that investing in early childhood education is an investment in human capital, helping to produce a supply of literate, educated, employable workers...Ensuring an adequate supply of educated workers and increasing the likelihood of obtaining a college degree, by improving children's early learning opportunities, will help position Massachusetts for future economic growth and prepare tomorrow's work force for the changing demands of our economy."

"Early Childhood Education is Investment in Our Future"

by

Richard Lord, President, Associated Industries of Massachusetts and
Alan MacDonald, Executive Director, Massachusetts Business Roundtable,
*Boston Sunday Herald*¹²⁹

Decades of research have been dedicated to understanding the effects of child care and early education on young children.¹³⁰ For example, a national survey found that young children who attended higher quality and more stable child care and early education centers had the following characteristics through elementary school, compared to peers in care settings rated as having poorer quality.¹³¹

- Improved math and language ability
- Enhanced cognitive and social skills
- Fewer behavioral issues

¹²⁸ Massachusetts Afterschool Research Study (MARS) Overview. MARS is led by United Way of Massachusetts Bay, which is collaborating with the Massachusetts Department of Education, Office of Child Care Services, Intercultural Center for Research in Education (INCRE) and National Institute on Out-of-School Time (NIOST) at the Wellesley Centers for Women, Wellesley College, 2003.

¹²⁹ R. Lord and A. MacDonald. "Early Childhood Education is Investment in Our Future." *Boston Sunday Herald*. October 12, 2003. Opinion, pg. 28.

¹³⁰ J. Brooks-Gunn. "Do You Believe in Magic? What We Can Expect from Early Childhood Intervention Programs." *Social Policy Report*, 17, 1. Society for Research in Child Development, 2003.

¹³¹ E. S. Peisner-Feinberg, M. R. Burchinal, R. M. Clifford, M. L. Culkin, C. Howes, S. L. Kagan, and N. Yazejian. "The Relation of Preschool Child-Care Quality to Children's Cognitive and Social Development Trajectories through Second Grade." *Child Development*. September/October 2001, Volume 72, Number 5, Pages 1534-1553. Quality was assessed in this study using the following criteria: classroom quality measures using the Early Childhood Environment Rating Scale (ECERS), teacher sensitivity using the Caregiver Interaction Scale (CIS), child-centered teaching style using Early Childhood Observation Form (ECOF), teacher responsiveness using Adult Involvement Scale (AIS). In addition, teacher-child relationship and child assessment measures were used.



The National Academy of Sciences recently brought together a committee of experts to synthesize research on early childhood development. They agreed that “the effects of child care derive not from its use or nonuse but from the quality of the experiences it provides to young children.”¹³²

The National Academy of Sciences found that “The effects of child care derive not from its use or nonuse but from the quality of the experiences it provides to young children.”

Consistent participation in quality after-school programs enhances the education of children from 5 to 14 and prepares them for future success. After-school programs lead to higher educational aspirations and better attitudes to school, as well as increasing feelings of community engagement and higher self-esteem.¹³³ As traditional K-12 curricula increasingly stress academic skills, young students often do not have opportunities to build “soft” skills that are critical in the workplace. Communication, interpersonal, and analytical skills are three highly desired attributes for entry-level professionals. Quality after-school programs enhance these skills.¹³⁴

Schools and universities receive public and private investments in part because their role in educating and preparing children for the future labor market is clear. While more research will enable a better understanding of the long-term effects of high-quality child care and early education for all children, current findings indicate that investments in early education have greater returns than educational investments in later life because younger people have more time to generate returns on investments and because “skill begets skill.”¹³⁵ Without that firm foundation of skills-building in children, future investments cannot reap maximum benefits. Once they understand that quality child care and early education are vital parts of the education system, decision makers will gear child care and early education systems toward preparing the future workforce for success.

CONCLUSION

Child care and early education, business, and economic development are linked in many ways. A healthy child care and early education industry ensures that the current labor force has access to jobs and career advancement opportunities and helps businesses attract and retain the best employees and increase their productivity. Investments in high-quality early education programs and after-school programs reduce future public expenditures and help the Commonwealth develop a skilled and productive future workforce. In the same way that local government and the private sector collaborate to increase the availability of affordable housing and quality transportation systems in order to attract a skilled workforce, they benefit from investing together in the child care and early education infrastructure. Investing in quality child care and early education benefits all stakeholders:

¹³² J. Shonkoff and D.A. Phillips, Editors. *From Neurons to Neighborhoods*, p. 307.

¹³³ B.M. Miller. *Critical Hours: Afterschool Programs and Educational Success*.

¹³⁴ *Ibid.*

¹³⁵ James J. Heckman and Aaron Wildavsky Forum. Policies to Foster Human Capital Joint Center for Poverty Research working paper, Northwestern University/University of Chicago, pg. 39, 2001.

- Commonwealth taxpayers benefit when costs for criminal justice, remedial education, and welfare decline as a result of high-quality child care and early education.
- Businesses benefit when quality, affordable, accessible child care and early education options attract new skilled workers to the area, and prepare children for future skilled employment.
- Communities benefit when quality child care and early education improve quality of life by decreasing criminal activity and negative outcomes for youth.
- Children from birth to age five benefit because they enter the traditional K-12 school system socialized and ready to continue learning.
- Children ages five to fourteen benefit because they graduate from school with the skills to become responsible, involved community members.



MEETING INDUSTRY CHALLENGES TO ENSURE MAXIMUM ECONOMIC BENEFITS

The child care and early education industry faces a number of challenges. If unaddressed, these challenges will continue to constrain growth and limit the bottom-line returns for Massachusetts employers and financial returns on public investments. The challenges include, but are not limited to:

- Lack of integration with economic development activities despite clear linkages
- Insufficient investment by business and government
- Economic barriers to increasing program quality
- Financial constraints of consumers

LACK OF INTEGRATION WITH ECONOMIC DEVELOPMENT

Despite clear links between the two, the child care and early education industry and economic development activities are not well integrated. State and municipal governments and economic development entities engage in planning processes so that necessary components are in place to ensure economic vitality. Public and private activities, such as financial investment, tax abatements, regulatory relief, low-cost capital financing, workforce development resources, business assistance programs, and other concessions are used to stimulate and strengthen targeted industries. These strategies are rarely used to ensure the economic success of the child care and early education industry because it is not traditionally regarded as an income-generating, job-creating, necessary component of the economic infrastructure.

Labor accounts for 72 percent of expenditures in Massachusetts early education and care centers.

Economic development activities often lower the start-up or operating costs for a particular industry's establishments. For child care and early education, facilities and labor are both significant expense

areas. Licensing regulations which require minimum staff-to-child ratios result in high labor costs for establishments, so that 72 percent of expenditures in center-based preschool classrooms in Massachusetts, on average, are for labor.¹³⁶ Typically, a business recoups professional development investments through increasing productivity; however, in child care and early education, productivity can not be increased in typical economic ways. A highly qualified, experienced teacher, for example, cannot take on more children than the staff-to-child ratio allows.

In child care and early education, productivity can not be increased in typical economic ways.

The need for locations near residential or office parks rather than traditional shopping areas, and the unique building requirements for child care and early education centers contribute to high rent or mortgage costs. Interviews with a representative sample of center directors in

¹³⁶ N.L. Marshall et al., *Cost and Quality of Preschool Classrooms*.

Massachusetts found that the largest non-labor expenditure is for rent or mortgage payments.¹³⁷ There are difficulties in obtaining necessary permits and support for program operation as well. At a recent family child care provider network meeting in Jamaica Plains, many of the over 50 providers attending complained about high rents as well as discrimination by landlords, threatened evictions, and problems with federal Section 8 or code enforcement.¹³⁸

Quality improvements involving facilities or labor, such as new facilities or facilities renovations, or professional development of

Child care and early education program budgets leave little room for additional expenditures, such as higher wages for teachers.

existing staff and/or recruitment of more qualified staff, increase expenditures. In most other industries, these expenses would be passed on to consumers, but given the difficulty most parents experience in paying for these programs, raising fees will have a negative effect on the industry's ability to meet the state's needs. Economic development activities will enable establishments to improve programs without passing on costs.

Although child care and early education professionals make up one of the largest self-employment industry sectors in Massachusetts and represent a large number of small businesses across the state, many professionals do not have the business skills to run their businesses effectively.¹³⁹ Research shows that there is an increasing demand in the child care and early education field for information about financial planning.¹⁴⁰ Child care and

Child care and early education professionals make up one of the largest self-employment industry sectors in Massachusetts. Many professionals in the field have a real need for financial planning information.

early education owners and directors require specific knowledge about financial management and budgets, debt capacity, and business planning to run financially sustainable small businesses. Understanding these basic financial tools helps providers become more familiar with financing packages, and enables them to measure their capacity to take on

debt. These skills are also important for securing financing and making a current business more successful, viable, and fiscally solvent. Turnover of establishments from poor business management clearly affects the ability of the industry to meet the needs of Massachusetts' employers and increases operating costs.

INSUFFICIENT INVESTMENT FROM BUSINESS AND GOVERNMENT

Business and government investments are insufficient to ensure that the industry meets their needs.

Business Investment

Employers, who benefit from quality child care and early education in multiple ways (see Section Three for more detailed information), have invested less than all other

¹³⁷ Ibid.

¹³⁸ Jamaica Plain Neighborhood Development Corporation. *JPNDC's Childcare Housing Initiative*. Jamaica Plains, MA: 2003.

¹³⁹ U.S. Census Bureau. *Economic Census 1997: Non-employer statistics, Massachusetts*. www.census.gov.

¹⁴⁰ National Economic Development and Law Center. *Child Care Financial Planning and Facilities Development Manual*. April 2000.



stakeholders.¹⁴¹ Some businesses do offer benefits to their employees. A recent national survey found that 18 percent of employees with children under 13 have access to resource and referral services through their employer and 10 percent have child care and early education services offered by their employer, though not necessarily fully funded by their employer.¹⁴² Services may include offering dependent care tax credits up to \$5,000 to help employees cover child care and early education expenses as well as elder care costs, operating an on-site center through underwriting start-up or operating costs, offering reduced-price back-up care for times when regular arrangements fall through, or providing direct assistance to parent-employees to help pay for program costs.

Economic benefits from investments to attract a skilled labor force to Massachusetts and educate the skilled labor force of tomorrow necessitate increased business involvement. While some business groups have publicly supported policy advances in child care and early education, greater involvement from more business leaders is critical.

Government Investment

Unlike K – 12 education, in which local, state, and federal governments primarily fund programs, or higher education, in which institutional funding and low- or delayed interest education loans or investment accounts are available, child care and early education lacks significant supports. Although government spending for child care and early education for low-income families has risen dramatically since welfare reform in 1996 required parents to work, many families who are eligible for assistance do not receive it and subsidy levels do not reflect the cost to the establishment. As a result, program quality suffers and investments do not have maximum returns.

ECONOMIC BARRIERS TO INCREASING PROGRAM QUALITY

The quality of the child care and early education labor force is significantly linked to program quality (see Section Three for more details). The workforce faces a number of systemic barriers to development, including:

- Low wages and poor benefits
- Lack of opportunities for consistent, intense training
- A complex governance and delivery system that is often unaligned

Wages and Benefits

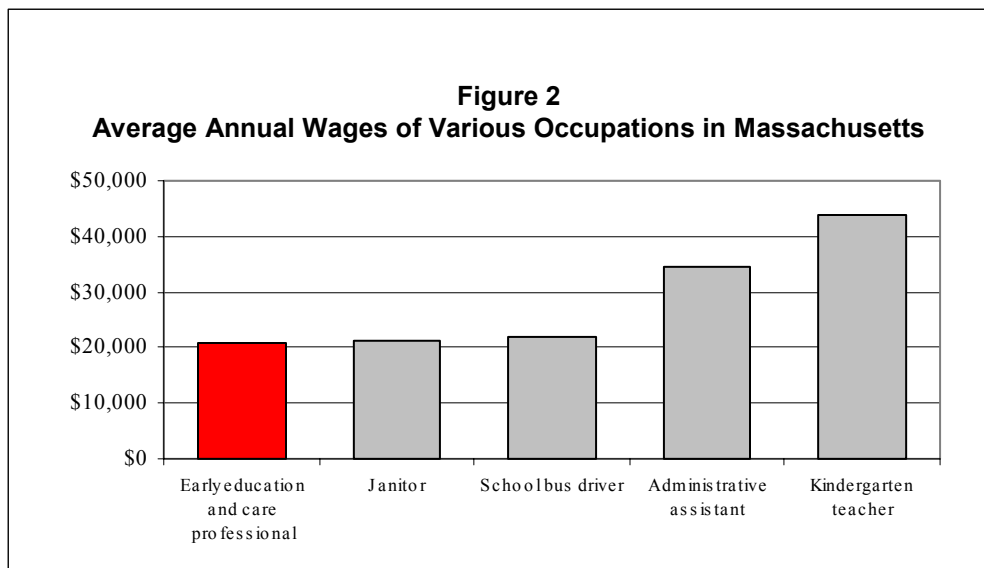
The average salary of an employee in the industry classified by “child day care services” in Massachusetts is \$20,332.¹⁴³ With the wage necessary to meet all of the basic needs for just one parent with one young child ranging from \$29,744 in the South Berkshires to \$49,762 in the western metro area, it is clear that wages do not fully support families of

¹⁴¹ A. Mitchell, L. Stoney, and H. Dichter. *Financing Child Care in The United States: An Expanded Catalog of Current Strategies*. Kansas City, MO: Ewing Marion Kauffman Foundation, 2001.

¹⁴² J. T. Bond, C. Thompson, E. Galinsky, and D. Prottas. *Highlights of the National Study of the Changing Workforce*. Families and Work Institute: Washington, D. C., 2003.

¹⁴³ Massachusetts Division of Employment and Training. *Employment and Wages by Industry and Area, fourth quarter, 2002*. Massachusetts Division of Employment, 2003. This does not include some self-employed family child care homes or employees in public schools.

child care and early education professionals across the state.¹⁴⁴ In addition, median annual wages for occupations with the same or even less stringent training requirements surpass those of child care and early education (see Figure 2).



Janitors (\$21,050), bus drivers (\$21,902), and administrative assistants (\$34,507) all make more, on average, than child care and early education workers, who may have special degrees in early childhood education and child development.¹⁴⁵ Early education professionals with teaching degrees who work in family-home or center-based establishments make far less than kindergarten or pre-school teachers in public school settings (\$43,900).

The average income of child care and early education professionals is lower than that of janitors, bus drivers, or administrative assistants. It is less than half that of a kindergarten or first-grade teacher.

Many child care and early education professionals also do not receive benefits. In centers in Massachusetts, only 21 percent of directors report offering health care benefits to both teachers and assistants.¹⁴⁶ Of those who are insured, half receive insurance through their own work, and the other half receive benefits through a spouse, government-sponsored program, direct purchase, or some other means.¹⁴⁷ Ten percent of employees in child care and early education centers have no health insurance at all. In family child care

¹⁴⁴ D. Pearce et al., *Self-Sufficiency Standard for Massachusetts*. The Metro west area includes parts of Middlesex, Norfolk, Plymouth, and Worcester counties and the South Berkshire area includes areas of Berkshire county outside of Pittsfield.

¹⁴⁵ Massachusetts Division of Employment and Training. *Employment and Wages by Industry and Area, fourth quarter, 2002*. Massachusetts Division of Employment, 2003. This does not include some self-employed family child care homes or employees in public schools.

¹⁴⁶ Mills & Pardee, Inc. *The Massachusetts Early Care and Education Staff Recruitment and Retention Study: Research and Recommendations*. Mills & Pardee, 2001.

¹⁴⁷ R. Wilson, E. Werby, D. Haig-Friedman. *Health Care Coverage: Are We Shortchanging Those who Care for Our Children? A Massachusetts Survey*. The Center for Social Policy in collaboration with the Center for Survey Research, for the United Way of the Massachusetts Bay Success by Six Initiative, 1999.



homes, one in six providers reports not having any health insurance, which is twice that of the general population.¹⁴⁸ The majority of those who do have insurance are insured through their spouse. Fifty percent of family-based providers report that concerns about health insurance have led them to consider closing their businesses.¹⁴⁹

Less than one in four child care and early education center directors report offering health care benefits to teachers and assistants.

Other benefits, such as paid vacation or parental leave, are also not prevalent in the child care and early education workforce. A recent survey of center directors indicates that one in five offers no paid personal vacation. Only 14 percent offer any paid parental leave.¹⁵⁰ Family-based providers indicate that 44 percent have paid personal vacation and 4 percent have paid parental leave through their business or membership in a family child care network system.¹⁵¹

Low wages and poor benefits lead to high turnover in the industry. Centers see an average of 31 percent turnover annually, and one-fifth of the centers report losing half or more of their staff within one year.¹⁵² In contrast, the annual turnover rate for public school teachers is approximately 14 percent.¹⁵³ Recruiting and training new providers who stay for a short period of time is not cost effective. In general, employee turnover is estimated to cost 1.5 times the annual salary of a salaried employee, and .75 times the annual wage income of an hourly employee.¹⁵⁴ Given the employment estimates in this report (29,555 full-time equivalent jobs) and the average income of an early education and care provider (\$20,332), turnover of 31 percent annually costs the industry a minimum of \$104 million per year (at 56 percent of the annual income, see Section Three).

Average turnover in a child care and early education center in Massachusetts is over 30 percent, costing the industry \$104 million per year.

Recruitment of new employees also costs establishments. One study found that centers, on average, spend about 7 percent of their annual budget on recruitment.¹⁵⁵ The many costs associated with high turnover channel much needed financial support away from activities such as professional development and other career services, and reduce overall ability to best serve children. The stability of a child's relationship with his or her provider is important to a child's social and emotional relationships and cognitive development.¹⁵⁶ Lack of stability may lead to increased aggression and possibly affect cognitive and social development.¹⁵⁷

¹⁴⁸ Ibid.

¹⁴⁹ Ibid.

¹⁵⁰ Massachusetts Department of Education Early Learning Services. *Community Profiles*. 2002.

¹⁵¹ Ibid.

¹⁵² Mills & Pardee, Inc., *Massachusetts Early Care and Education Staff Recruitment and Retention Study*.

¹⁵³ S. Barnett. "Low Wages = Low Quality: Solving the Real Preschool Teacher Crisis." *Preschool Policy Matters*, New Brunswick, NJ: NIEER, 2003.

¹⁵⁴ Personal Journal, December 1990, as cited in Bright Horizons Family Solutions, *Benefits of Employer-Sponsored Care*, www.brighthorizons.com.

¹⁵⁵ L. Vandell and B. Wolfe. *Child Care Quality: Does it Matter and Does it Need to Be Improved?* Institute for Research on Poverty, <http://aspe.hhs.gov/hsp/ccquality00/ccqual.htm#econ>, 2000.

¹⁵⁶ S. Barnett, "Solving the Real Preschool Teacher Crisis." C. Todd and D. Deery-Schmitt. "Factors Affecting Turnover Among Family Child Care Providers: A Longitudinal Study." *Early Childhood Research Quarterly*, vol. 11, p. 351-376, 1996.

¹⁵⁷ S. Barnett, "Solving the Real Preschool Teacher Crisis."

Turnover also results in lower education levels in the workforce. A survey of center directors in Massachusetts indicates that 40 percent of employees who left centers left the child care and early education field altogether and 48 percent of the new hires were less qualified than the teachers they replaced.¹⁵⁸ As discussed in Section Three, maximum benefits from investment cannot be recouped without ensuring program quality. One of the elements of quality programs is an educated workforce.

According to child care and early education center directors, 48 percent of new hires are less qualified than the individuals they replace.

Increasing demand in program quality also depends on educating consumers about the elements of quality and how to select the highest quality program that is affordable for children. Many parents do not know how to evaluate program quality which means that demand for quality suffers.

Professional Development Opportunities

Most industries provide financial incentive for a skilled workforce. The child care and early education industry, however, is limited in its ability to reward those with higher education degrees. Without achieving significantly higher remuneration, child care and early education providers do not benefit financially from seeking higher education degrees. Without that financial boost, they cannot afford to repay student loans and other higher education costs. Unless there is a significant investment from other stakeholders, such as business or government, the child care and early education industry will be unable to fully support its developed workforce.

Currently, Massachusetts' early education workforce in full-day center-based care for pre-schoolers, including directors, lead teachers, teachers and assistants 48 percent have a high school degree (with or without some college), 14 percent have an associates degree, 27 percent hold a bachelors degree, and 7 percent have a graduate degree.¹⁵⁹

Less than one half of the current center-based workforce has Bachelors' degrees.

More advanced professionals within the industry have higher levels of education (see Figure 3).¹⁶⁰ Fourteen percent of directors have some college and two-thirds have a Bachelor's degree or higher. Of teachers, 52 percent have some college, and 32 percent have a Bachelor's degree of higher. The majority of assistant teachers do not have higher education degrees.¹⁶¹

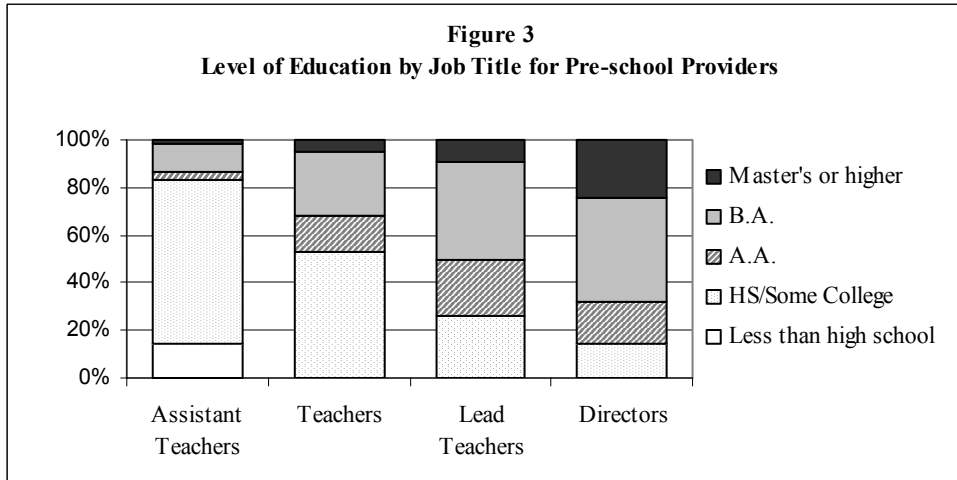
¹⁵⁸ N.L. Marshall et al., *Cost and Quality Preschool Classrooms*.

¹⁵⁹ Ibid.

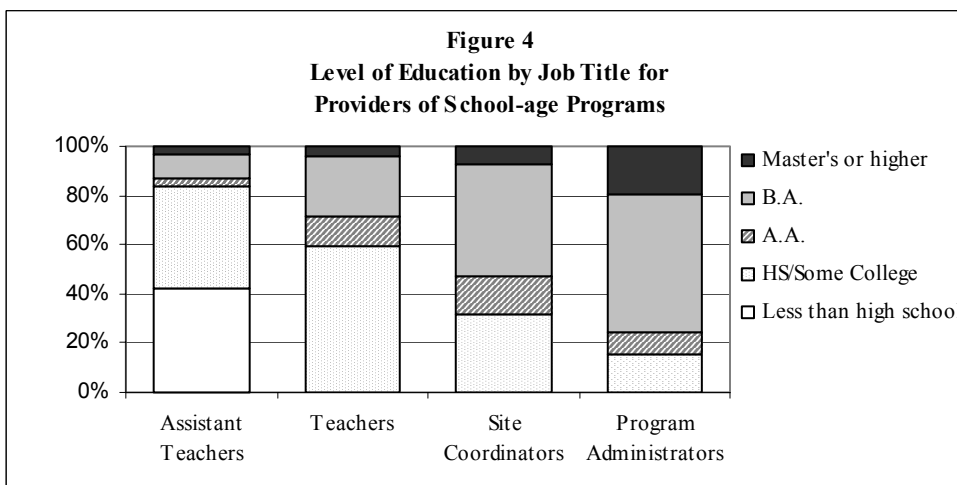
¹⁶⁰ The Massachusetts Child Care Resource and Referral Network. *Massachusetts Child Care Center & School Age program Salary and Benefit Report*. Boston: Massachusetts Office of Child Care Services, October 2000.

¹⁶¹ Ibid.





In school-age settings, many professionals do not have higher education degrees (see Figure 4).¹⁶² More than 80 percent of assistant teachers do not have a degree, and only 3 percent have a Master's or higher degree. Almost one-quarter of teachers have a B.A., but 70 percent have less than a B.A.



Ongoing professional development benefits or programs, such as trainings and conferences, are also difficult for child care and early education centers and family homes to provide because of tight budgets. Without outside grants or incentive systems, professional development benefits are not feasible.

Lack of professional development opportunities decreases quality and stability in the industry, which negatively affects the returns to the future labor force, current businesses, and the economy. As discussed in Section Three, teacher education levels are directly linked to returns on investment, particularly for public expenditures.

¹⁶² Ibid.

Child Care and Early Education Infrastructure

A number of different agencies provide the system of support for child care and early education providers. For example, the Office of Child Care Services licenses child care facilities and administers the majority of state and federal monies for a variety of programs including welfare-to-work Employment Services Program, income eligible services, supportive and teen parent care and services. The Community Partnerships for Children, funded through the Massachusetts Department of Education, provides training, professional development, and comprehensive services to children across the state. The Massachusetts Child Care Resource and Referral Network trains providers and refers potential enrollees to their programs. While innumerable other local, regional, and statewide public and private agencies are a part of the delivery system that makes up a complex and rich child care and early education system, these agencies need to work together to provide a seamless child care and early education system infrastructure. Seamless infrastructure also reduces inefficiency and decreases industry costs.

For parents, the child care and early education system and its integration with other human and social services is insufficient and difficult to navigate.¹⁶³ Strengthening and making the system more seamless would improve the infrastructure as a whole, and benefit parents who must navigate this system to access all available services.

Other quality standards increase operating costs, including lower staff-to-child ratios, smaller overall group sizes, and better facilities and materials. Passing these costs onto consumers is untenable in many cases. Higher quality regulations must be coupled with financing mechanisms to ensure that parent expenditures for programs do not increase above their ability to pay.

FINANCIAL BARRIERS OF CONSUMERS

While very low-income parents have government assistance programs to help cover the high costs of programs, the vast majority of families must find non-government sources of support.¹⁶⁴ As discussed in Section One, most families pay significant portions of the family budget for licensed child care and early education programs. For a family at the state's median family income (\$68,694), market rate costs for child care and early education programs without government assistance take up significant portions of the family budget.¹⁶⁵

Cost is consistently cited as a major barrier for parents who want to enroll their children in child care and early education programs.¹⁶⁶ In a survey of Massachusetts families with children from birth to twelve, 72 percent of respondees reported that they received no help to pay for child care and early education expenses, and the majority reported that the costs had an adverse impact on the family budget.¹⁶⁷ Of all parents with young children, including those who use exclusive parental care, informal care by friends, relatives, or neighbor, as well as licensed program options, 36 percent indicated that they

¹⁶³ Massachusetts Taxpayers Foundation. *Reforming the Commonwealth's \$2 Billion Purchase of Human Services: Meeting the Promise for Clients and Taxpayers*. Boston: Massachusetts Taxpayers Foundation: 2003.

¹⁶⁴ A. Mitchell, L. Stoney, and H. Dichter. *Financing Child Care in The United States: An Expanded Catalog of Current Strategies*. Kansas City, MO: Ewing Marion Kauffman Foundation, 2001.

¹⁶⁵ Office of Child Care Services, 2003.

¹⁶⁶ Massachusetts Department of Education, Early Learning Services. Community Profiles, Survey completed 2001-2002.

¹⁶⁷ Ibid.



were unable to save money, 21 percent indicated that they were unable to afford luxuries, 13 percent indicated that they had unpaid bills, and 12 percent reported that they had just the bare minimum for living expenses.¹⁶⁸ These financial pressures restrain choice and restrict demand even when preference and need for formal child care and early education exist.

When costs outweigh the benefits of employment, parents who are willing to work may decide to stay at home to care for children. As discussed in Section Three, this increases employee turnover and decreases the size of the labor force. Other parents may seek out informal and often less reliable arrangements which fall through more often,

Budget and credit constraints affect parents' abilities to make investments in their children.

increasing employee absenteeism and reducing productivity. All of these possible outcomes have negative effects for businesses and the economy overall. In his research on the economic value of investments in human capital for young children, economist James Heckman stated that budget

constraints and credit limitations both affect parents' ability to make investments in their children, even when they want to make these investments.¹⁶⁹ By creating mechanisms to address these constraints, the industry will see increased demand for child care and early education programs.

CONCLUSION

The child care and early education industry has grown rapidly in Massachusetts despite a number of challenges which threaten the strength and stability of the industry and its ability to meet the Commonwealth's needs. Given the links between child care and early education and the economy, these challenges also threaten the economic vitality of the state and the financial returns that the child care and early education industry offers.

¹⁶⁸ Ibid.

¹⁶⁹ P. Carneiro, F. Cunha, and J. Heckman. "Interpreting the Evidence of Family Influence on Child Development." Paper presented at *The Economics of Early Childhood Development: Lessons for Economic Policy* conference, Federal Reserve Bank of Minneapolis, October 17, 2003.

CONCLUSION AND RECOMMENDATIONS

This report shows that the child care and early education industry is an economic driver. The industry:

- Generates nearly 30,000 jobs and \$1.5 billion in gross receipts
- Ensures a strong future economy by preparing children to be skilled, productive workers who can meet future labor force demands
- Enables employers to attract and retain employees and increase productivity

Four main challenges constrain the child care and early education industry from growing and maximizing the impacts of investment by families, employers, and state and municipal governments:

- A lack of integration with economic development
- Insufficient investments from business and government
- Economic barriers to improving quality
- Financial limitations of consumers

The following recommendations are proposed to address these challenges and ensure that the industry meets the needs of the Commonwealth's economy. These recommendations cannot be implemented by any one stakeholder. This report has identified three key stakeholders whose partnership is critical:

- Government
- Business
- Child care and early education industry

Examples of specific low- and no-cost solutions and cost-effective policies for each of these stakeholders are mentioned as a starting point and to spark creativity. Other stakeholders, including higher education, communities, parents, labor unions, and financial institutions are also important, although specific examples for these groups are not discussed here.

Recommendation #1: Incorporate child care and early education as a formal economic development component in state and local planning

As an important industry for economic success and one with significant returns, the child care and early education industry should be involved or specifically targeted in formal economic development activities, such as neighborhood revitalization, community planning, and economic stimulation initiatives.

Government Examples

- Government planning officials can review existing planning documents, such as those governing zoning laws, to remove barriers to child care and early education and to add language about the importance of planning for the community's child care and early education needs.



- Regional Planning Councils can include child care and early education in community revitalization plans by conducting an assessment of community needs or offering a housing developer extra tax credits if it includes child care in its development.
- Government leaders and elected officials can broker public-private partnerships.
- City and town governments can establish a child care and early education coordinator whose main responsibility is to integrate child care and early education into other government policies and activities.

Case Example

The Jamaica Plain Neighborhood Development Corporation has requested the City of Boston’s Department of Neighborhood Development and Fair Housing Commission to allow the corporation to develop affordable housing units specially designed for family child care providers’ home businesses and to market the units to providers.

Business Examples

- Business leadership groups, such as the Massachusetts Biotech Council, the Massachusetts High-tech Council, the Associated Industries of Massachusetts, the Massachusetts Roundtable, and Chambers of Commerce can analyze the child care needs of businesses and employees and invite other child care and early education stakeholders to plan with them to meet those needs.
- Business leaders can initiate public-private partnerships to engage in short- and long-term community child care and early education planning.
- Business leaders can advocate for economic development activities and funding that ensure that their child care and early education needs are met.

Child Care and Early Education Industry Examples

- Child care and early education professionals can join state and local economic planning boards.
- Infrastructure leaders, such as resource and referral agencies and Community Partnerships for Children, can advance child care providers’ access to technical assistance, training, loan products and other resources for small businesses from the Small Business Development Corporation and the Small Business Administration.

Case example

The Commissioner of the Office of Child Care Services partnered with Senator John Kerry’s office and the Massachusetts Small Business Administration to write a business guide targeted to child care and early education providers, including resources for providers to write business plans and access loans.

Recommendation #2: Create incentives for employers to promote and support the child care and early education industry

Employers need to invest in the child care and early education industry by getting involved in everything from providing benefits to employees to engaging in long-term strategic planning around labor force development.

Government Examples

- Government agencies can bring businesses, especially small businesses, together to effect economies of scale and maximize the effectiveness of child care and early education investments.
- Government leaders can initiate public/private partnerships such as matched fund programs to provide investment funds for building the child care and early education industry infrastructure.

Business Examples

- Business partnerships can maximize investment impacts and reduce costs by pooling funds, for example, to build a near-by quality child care and early education center.
- Business leaders and membership organizations can advocate for incentives, such as matched funds or tax breaks that will effectively increase business investment in child care and early education.
- Human resource professionals can analyze the financial benefits to companies of improving child care and early education benefits. There are a wide array of low- and no-cost family-friendly benefits to provide for employees. At a minimum, businesses should provide resource and referral and Dependent Care Assistance Programs (DCAPs) for employees.
- Corporate philanthropic departments can prioritize child care and early education as an investment area for corporate gift-giving. For example, a company foundation could encourage an “Adopt a Child Care Center” program in the same way many have engaged in “Adopt a School” programs.
- Empowerment zone plans can include the development of child care and early education establishments.
- Businesses that have implemented successful child care and early education programs can act as an active advocacy voice within the business sector.

Case Example

Metropolitan Life Insurance Company, State Street Bank, and Harvard University are just three of the businesses that have invested in the Child Care Capital Investment Fund. Over the past twelve years, the fund has lent more than \$6.2 million to over 70 borrowers across the state, improving or creating more than 6,000 child care slots, 71 percent of which serve low-income children.

Child Care and Early Education Industry Examples

- Industry infrastructure leaders can provide local information to employers about child care and early education resources and needs.
- Providers and infrastructure agencies can encourage press coverage of businesses that promote and support child care and early education.
- Resource and referral agencies and organizations involved in public campaigns can educate employees about the importance of child care and early education.



Recommendation #3: Promote increased quality in the child care and early education industry

Improving quality increases the financial benefits of programs. Quality child care and early education helps ensure children's academic and economic success. This success, in turn, helps strengthen the future economy.

Government Examples

- Government leaders can invest public funds in scholarships, loan forgiveness programs, and retention incentives to make getting a higher education degree financially feasible for child care and early education providers.
- State higher education institutions can create an accessible professional development system including work-credit articulation agreements and apprenticeship programs which build on the parts of the system already in place.
- Government leaders can expand existing initiatives or develop new policies to increase professionals' earnings and benefits, particularly health care.
- Government leaders can increase funding to reimburse programs for low-income children enrollees at a higher rate. Approaches that minimize the effect of subsidies on market price for programs will help the industry. For example, government can incorporate a reimbursement system of direct payments to staff who increase education and skill levels and who serve low-income children.

Case Example

The *Advancing the Field* project has supported over 700 early childhood educators enrolling in college degree programs in partnership with 24 higher education institutions and community organizations.

Business Examples

- Individual businesses can ensure that employees have access to resource and referral systems and invite local child care experts to educate employees about quality in lunchtime sessions, staff meetings, or other forums.
- Business leaders and membership organizations can advocate for quality standards and initiatives to improve quality.
- Businesses can offer increased reimbursements for employees who use higher quality centers.

Case Example

The Early Education for All Campaign is co-chaired by two prominent business leaders who--along with a coalition of leaders from health care, religion, philanthropy, education and child care--are advocating for increased public investments in high-quality early childhood education for every Massachusetts three, four- and five-year-old.

Child Care and Early Education Industry Examples

- Establishments can participate in achieving and maintaining accreditation or other standardized quality indicators.
- Community Partnerships for Children, resource and referral agencies, family child care home networks, and the public schools can distribute information about curriculum

guidelines and quality standards, such as the Massachusetts Department of Education's *Guidelines for Preschool Learning Experiences* and *Early Childhood Program Standards for Three and Four Year Olds*.

- Infrastructure leaders can encourage child care and early education staff participation in national professional organizations.
- Infrastructure leaders can promote coordination of child care and early education curricula with the community school system and parent/child activities at home.
- Public education and advocacy campaigns can educate parents about the importance of quality programming in early education and after-school time and how to identify quality programs.

Recommendation #4: Increase accessibility to quality programs

Ensuring that children in all income brackets have equal access to quality programs strengthens the future economy. Given that the benefits of quality child care and early education are not limited to children and their families alone but communities as well, increased investment from other stakeholders is appropriate.

Government Examples

- Government leaders can initiate public/private partnerships for stakeholders to work collaboratively.
- Government leaders can allocate additional funding to eliminate waiting lists of families currently eligible for government assistance.
- Government leaders can create a sustainable funding base to ensure equal access to quality educational opportunities for children from birth through age fourteen in families in all income brackets.
- Government agencies can publicize what parents are expected to pay for quality programs and set eligibility standards for assistance to meet that level.

Case Example

Mayor Thomas Menino of Boston convened a task force on after-school time, which recommended forming a public-private partnership. The result, the After-School for All Partnership, has \$24 million in initial investments and fifteen partners, including representatives from philanthropy, business, government, and higher education, working together to expand access, increase learning opportunities and support efforts to financially sustain the after-school sector in Boston.

Business Examples

- Businesses can initiate or participate in public/private partnerships.
- Individual businesses can ensure that quality child care and early education is accessible to employees at all pay levels, through sliding scale fees or reimbursements or direct payments to nearby or on-site quality establishments.
- Business leaders and membership organizations can advocate for increased funds to eliminate waiting lists.
- Businesses can open up training sessions on budgeting, computer usage, and managing techniques to child care and early education professionals.



Child Care and Early Education Industry Examples

- Child care and early education providers can access business skills training to reduce operating costs and costs to parents.
- Child care and early education establishments can work with business to match education program hours with employee scheduling needs.
- Infrastructure leaders can coordinate local efforts to ensure local capacity needs for quality programs are met.

CONCLUSION

Given the comprehensive economic benefits of child care and early education for business, government, and the child care and early education industry, planning for and investing in a strong child care and early education industry in Massachusetts should not be the responsibility of parents and providers alone. A diverse group of stakeholders -- government, business, and industry leaders -- has a role in the vitality of the industry and must work and plan together to reach innovative solutions to industry challenges. This is the only way that they will be able to maximize the returns that the industry clearly has to offer. By engaging key stakeholders, partnerships may then be formed to successfully implement solutions that incorporate the interests and needs of each group.

APPENDIX A:

METHODOLOGY FOR CALCULATING GROSS RECEIPTS AND DIRECT EMPLOYMENT FOR CHILD CARE AND EARLY EDUCATION

The economic contribution of the child care and early education industry is significantly undercounted in traditional economic accounting techniques so alternate methodologies for collecting data are necessary. The methodology used in this report relies on comprehensive, timely data about current use of child care and early education establishments, maintained by the Massachusetts Child Care Resource and Referral Network. Each resource and referral agency (R&R) is required by Massachusetts law to maintain a database containing licensed child care capacity, average market rate costs, and vacancies. Each R&R updated their capacity and vacancy information in December 2002 and their cost information in June 2003. The information from those two updates was used for this report. Also incorporated in this report is information on public pre-school from the Massachusetts Department of Education and information about subsidies and Head Start from the Massachusetts Office of Child Care Services.

The estimates of gross receipts and direct employment represent a “snapshot” of the industry taken at a particular time. It is important to note that the estimates only capture the formal child care and early education sector, because enrollment and costs are difficult to measure for the informal education and care sector. Adding informal, legally unlicensed care would increase gross receipts and direct employment figures.

GROSS RECEIPTS

Gross receipts estimates for family child care homes, child care centers, public pre-schools, and before- and after-school programs for school-age youth ages 6 to 14, are based on this calculation:

$$\text{Full-time Equivalent Enrollment} \times \text{Average Cost/Year} = \text{Gross Receipts}$$

Gross receipts for Head Start equal the total budget spending in federal fiscal year 2002, as reported by the Massachusetts Office of Child Care Services. Enrollment numbers are derived from the statewide resource and referral database which tracks capacity and vacancy in licensed child care centers by children’s age groups (infants--birth through 15 months; toddlers--15 months through 2 years and 9 months; pre-schoolers--2 years, 9 months through 5 years; and school-age children--ages 5 through 14) as well as in licensed family child care homes and before-school and after-school programs. Enrollment was derived by subtracting reported vacancies from reported capacity in the December, 2002, R&R database update.

To calculate the average yearly rate for each type of care and each age group the June 2003 average market rate information from the statewide R&R was used. For center-based education and care programs, this was broken down into age groups (infants, toddlers, and pre-schoolers). Programs for school-age children were broken down by those operating before school and those operating after school. Because enrollment cannot be broken down by age in family child care homes, cost was averaged across all age groups.



Public pre-schools were separated into those students enrolled in special education and those who were not because of the cost difference between the two (see Table 1 for a list of statewide average rates).

| Table 1 Statewide Average Annual Costs for Child Care and Early Education Programs | | | |
|--|---------------------------------|--|----------------------------|
| Program | Total Full-time Capacity | Full-time Equivalent Enrollment | Average Annual Cost |
| Child Care Centers¹ | | | |
| Infant | 7,027 | 6,258 | \$12,735 |
| Toddler | 15,121 | 13,887 | \$11,420 |
| Pre-schooler ² | 87,407 | 81,514 | \$9,100 |
| Family Child Care Homes | | | |
| Ages 0 – 14 | 46,893 | 39,391 | \$8,268 |
| School-age Programs³ | | | |
| Before School (36 weeks) | 11,491 | 10,481 | \$1,438 |
| After School (36 weeks) | 58,922 | 42,633 | \$2,498 |
| Public Pre-schools⁴ | | | |
| Special Education | 4,126 | 507 | \$11,187 |
| Non-special education | 7,662 | 941 | \$3,236 |
| ¹ Includes licensed centers, Head Start programs, and part-day nursery schools ² Some of these programs, such as public pre-schools, nursery schools, and Head Start, may be part-day programs. ³ Full-time capacity for before and after-school programs is considered the maximum time before and after school, and not necessarily a full-day. ⁴ From the “Early Care and Education in Massachusetts Public School Preschool Classrooms,” which used a ratio of 35 percent special education and 65 percent non-special education applied to public preschool enrollment numbers from the Department of Education. | | | |

Pre-schools and before- and after-school programs were assumed to run the duration of the school year, 36 weeks. Because there is no certain information about what programs these children use during summer weeks, no enrollment in summer programs was estimated for these children, again making the estimate conservative, since it is likely that many of these children are in programs during summer months as well.

In addition, Child Care Food Program dollars from the United States Department of Agriculture were added, because they were a significant part of the direct service dollars coming into the industry. The average weekly food program dollars per Family Child Care provider is \$40.22 and the usage rate is approximately 83 percent.¹⁷⁰

¹⁷⁰ Community Profiles Survey, collected in two cycles 2000-2001 and 2001-2.

DIRECT EMPLOYMENT

Direct employment is an estimate of the total number of full-time equivalent (FTE) jobs available in the child care and early education industry. The number of people working in family child care homes was calculated based on licensing requirements. For most family child care licenses, one adult caregiver is required at all times. For group family child care licenses, two adult caregivers are required. Many R&R agencies surveyed the use of additional assistants, and that information is included in the employment estimate. For center-based programs, licensing ratios were used, according to Table 2. These were applied to FTE enrollment, which was estimated according to the method described above.

| Infant | Toddler | Preschooler | School-age child |
|--------|---------|-------------|------------------|
| 1:3 | 1:4 | 1:10 | 1:15 |

In addition, it was assumed that one additional full-time equivalent job for a director/administrator exists in each child care and early education center. There are 2,331 centers in Massachusetts. Head Start was assumed to have paid adult employment ratios of 2.5 FTEs for every 34 children enrolled (assuming children attend half-day programs). Before- and after-school programs were assumed to have one FTE for every 30 children enrolled (assuming children attend programs part time).



APPENDIX B:

INDIRECT AND INDUCED EFFECTS OF THE CHILD CARE AND EARLY EDUCATION INDUSTRY

Every industry, including child care and early education, is linked to the rest of the local economy in a number of ways, reflecting the fact that establishments purchase supplies from other businesses and the industry's employees spend their earnings in part on locally produced goods and services. The linkages of the child care and early education industry in Massachusetts can be measured using an input-output model and its associated multipliers, a methodology used by some economic development specialists. While the multiplier methodology is not without controversy, these estimates illustrate that child care and early education is an important integrated component of the Massachusetts economy, both through its direct employment and output, and through its economic linkages.

The estimates for the impact of child care and early education on indirect and induced earnings and other productivity effects are based on the application of the 1999 Massachusetts module of the IMPLAN Input-Output (I-O) model. Initially developed for use by the U.S. Forest Service, IMPLAN is now used in many fields. It relies on the same basic model structure and underlying economic data as the U.S. Department of Commerce Bureau of Economic Analysis Regional Impact Modeling System (RIMS).

I-O models use area-specific data on industrial and commercial activity to trace the linkages between industries. IMPLAN is based on a table of direct requirement coefficients which indicate the inputs of goods and services from various industries required to produce a dollar's worth of output in another, single industry. Standard economic "production functions"—the capital, labor and technology needed to produce a given set of goods—determine how changes in one industry's demand ultimately affect the demand for the inputs to that industry. For example, producing a ton of steel may require three workers and a particular set of equipment, which would not be required if the steel were no longer needed. Likewise, child care programs must purchase educational materials, facilities and professional staff services.

IMPLAN contains more than five hundred economic sectors, and uses economic census data to compile regional economic information. National data are adjusted for the industrial and trading patterns for the subject region. Based on this structure, IMPLAN estimates the regional economic impact that would result from a dollar change in demand of a particular industry.

The multiplier effect estimates the links between an industry and other areas of the economy. For this analysis, Type II multipliers, which exclude government spending, are used. Estimates for the impact of child care on the economy are based on three primary types of multipliers:

- Direct effects: Effects introduced into the state's economy as a result of spending on child care and early education.
- Indirect effects: Effects reflecting spending by the child care and early education industry.
- Induced effects: Effects on household spending by the child care and early education workforce. These effects reflect changes in the state's economy

caused by increases or decreases in spending patterns as a result of the direct and indirect activity.

For Massachusetts, the various multipliers for the child care industry are reported in Table 1.

| Table 1 | | | |
|--|----------|---------|---------------|
| Child Care Industry Type II Multipliers | | | |
| Massachusetts | | | |
| | Indirect | Induced | Total Type II |
| Output | 0.442 | 0.454 | 1.90 |
| Value-Added | 0.612 | 0.656 | 2.27 |
| Employment | 0.182 | 0.258 | 1.44 |
| Indirect Business Taxes | 1.75 | 2.27 | 5.01 |
| Labor Income | 0.436 | 0.443 | 1.88 |

These multipliers may be used to assess indirect and induced effects of these economic indicators. Based on a direct employment estimate of 29,555 jobs in licensed child care and early education, 5,375 indirect jobs are sustained by licensed child care. These include jobs in real estate (506 jobs), maintenance and repair services (501 jobs), personnel supply services (490 jobs), accounting and bookkeeping (397 jobs), computer processing (234 jobs), and advertising (47 jobs). In addition, 7,624 induced jobs are sustained by the licensed child care and early education industry. These include jobs in health care (1,348 jobs), restaurants and bars (819 jobs), colleges and universities (227 jobs), and even in commercial sports (6 jobs). In total, direct, indirect, and induced employment for the Massachusetts education and care industry totals 42,557 in this analysis.

Similarly, the model estimates that a direct effect of \$1.455 billion corresponds to \$631,535,000 in indirect output, including output in wholesale trade (\$40 million), banking \$18 million), real estate (\$106 million), and accounting (\$27 million). Gross receipts totaling \$1.42 billion also correspond to \$649,178,000 in induced output, including doctors and dentists (\$39 million), eating and drinking establishments (\$32 million), real estate (\$31 million), and banking (\$22 million). In total, direct, indirect, and induced industry output for the Massachusetts education and care industry totals \$2.71 billion.



APPENDIX C:

GROSS RECEIPTS AND DIRECT EMPLOYMENT COMPARISONS WITH INDUSTRIES IN MASSACHUSETTS

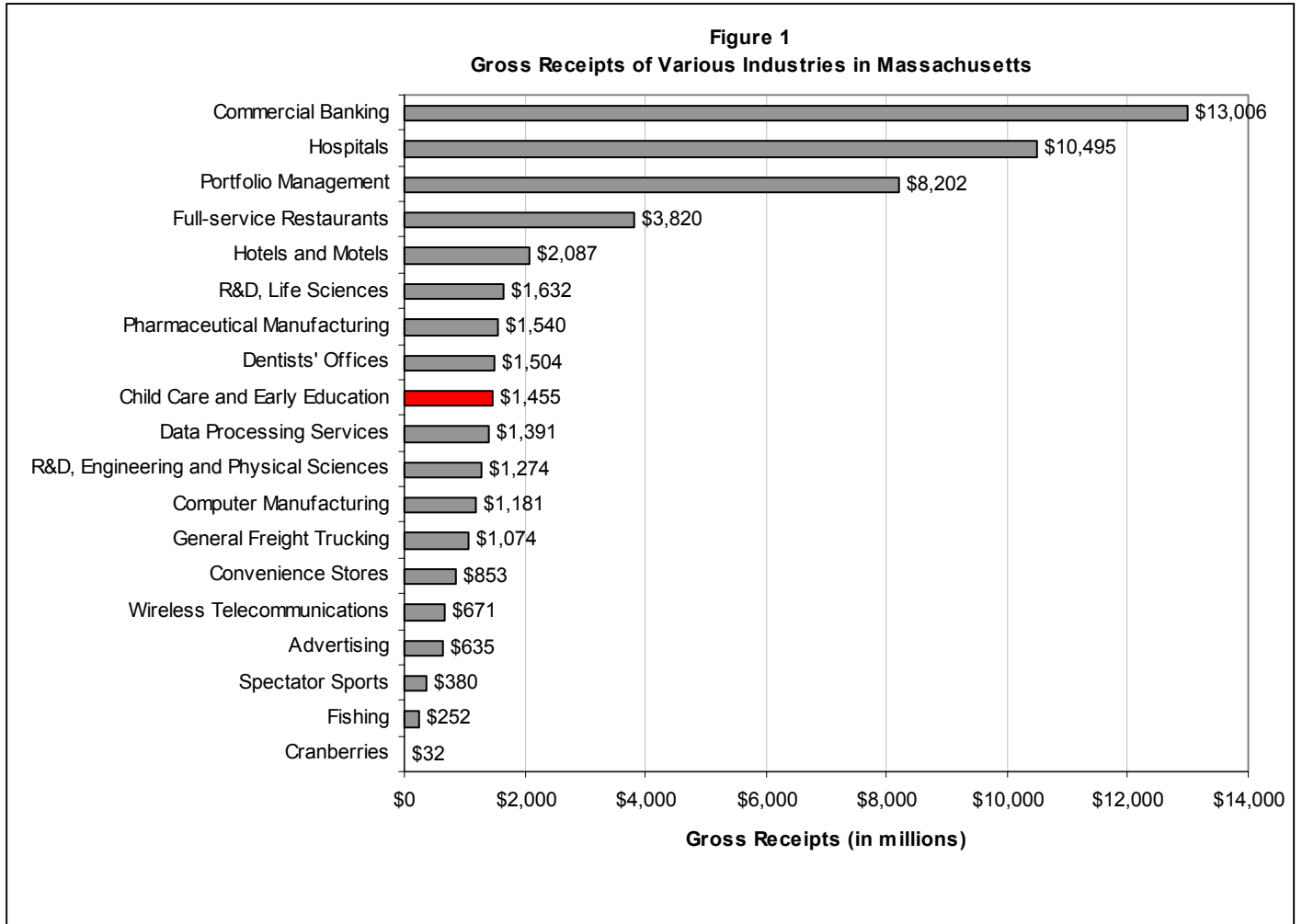


Figure 2
Employment of Various Industries in Massachusetts

