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May 2016

Preparation and Retention of the Early Childhood Care and Education Workforce in Maryland

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IES 2012 SLDS Grant/Contract Number:

R372A120036

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Suggested Citation

Klein, E.L., Zheng, X., Sunderman, G.L., Henneberger, A.K., Stapleton, L.M. & Woolley, M.E. (2016). *Preparation and Retention of the Early Childhood Care and Education Workforce in Maryland.* Baltimore, MD: Maryland Longitudinal Data System Center.

Acknowledgement

This report was prepared by the Research Branch of the Maryland Longitudinal Data System Center (MLDSC) with assistance and feedback from the MLDSC team. This report was developed under a grant from the Department of Education in fulfillment of the Maryland State Department of Education 2012 SLDS Grant (Project 5.3: *Assessing the training and retention of the early childhood workforce in Maryland*). The content of this publication does not necessarily reflect the views or policies of the Institute of Education Sciences or the U.S. Department of Education, and you should not assume endorsement by the federal government.

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Executive Summary

Increasing awareness of the vital developmental implications of the care and education of young children has led to efforts in Maryland to advance early childhood care and education (ECCE). To that end, Maryland has consolidated ECCE services into one division of the Maryland State Department of Education (MSDE) and developed a number of innovative programs. These programs include a child care credentialing and rating system, increased availability of public prekindergarten, an early childhood comprehensive readiness assessment system, and provision of mental health services in early childhood settings. As of 2015, Maryland ranks 14th and 13th in access to preschool for three and four year olds, respectively, and 17th in spending. Additionally, in 2010 and 2014, Maryland successfully competed for federal funding awards to expand preschool programming.

Training and retaining a competent and effective workforce needed to staff Maryland's ECCE facilities is a critical factor in continuing this leadership in serving Maryland's young children and their families. The analyses in this report used data from the Maryland Longitudinal Data System (MLDS) to examine the workforce outcomes of students who earned associate degrees, bachelor's degrees, or certification in ECCE related fields. These data were linked to the wages earned in the first calendar year after earning the degree or certification. This report also examined the retention of these graduates in the Maryland ECCE workforce. Finally, we examined the workforce outcomes of Maryland high school students who worked in ECCE related fields. The report concludes with recommendations for future research on the preparation, employment, and retention of the ECCE workforce in Maryland.

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Introduction

Maryland is a national leader in early childhood care and education (ECCE). The consolidation of licensure and registration of child care and early childhood education services into one division of the Maryland State Department of Education (MSDE) in 2005 (Preschool for All in Maryland, 2007) demonstrated the state's commitment to a seamless and integrated approach to supporting both the care and education of young children and their families. The state has also developed innovative programs designed to improve the lives of young children, particularly those most vulnerable. These programs include:

1. a multi-level child care credentialing system;
2. a rating system (Maryland EXCELS) for child care programs;
3. before and after school care;
4. family child care homes;
5. public prekindergarten based on national standards of program quality;
6. an early childhood comprehensive readiness assessment system (Ready at Five, 2014);
7. Judy Center Partnerships; and
8. an initiative designed to provide mental health services (MSDE, 2011).

Growing understanding of the importance of early childhood experiences in shaping subsequent developmental and educational trajectories (Burchinal, Vandergrift, Pianta, & Mashburn, 2010; Yoshikawa et al., 2013; Zaslow et al., 2010) has heightened policy interest in factors that influence high quality early education, including the role of teachers and other ECCE professionals. Maryland initiatives have targeted the development and retention of a competent workforce as a high priority. ECCE professionals, in both child care and early education settings, meet the varying needs of families of young children with safe, high quality, and educationally rich settings for their children, whether or not parents work.

It is important to note that throughout this report, the term *preschool* is used to refer to early childhood education programs, which have as their primary purpose educational enrichment for young children, generally between the ages of three and five. The term *child care* is used to refer to programs (both center and home-based) which have as their primary purpose the daily care of children while parents are out of the home due to work or school obligations. Child care and preschool programs are not necessarily mutually exclusive; many child care programs have extensive, high quality educational curricula, and some preschool programs offer close to full-time care for working parents. Some preschool programs offer optional *wrap-around-care*, which provides additional hours. However, the licensure, staffing, and curriculum requirements are distinct for child care and preschool programs in Maryland. Much of the research background on the effects of early education on children's academic achievement and development discussed in this report are based on data collected in preschool settings.

Maryland ranks 13th in the country in access to preschool programs for four year olds and 16th for three year olds; while for overall state level spending Maryland ranks 17th

(Friedman-Krausse, 2015). Despite delays in implementation due to state budget constraints, initiatives such as *Preschool for All*, established in 2007 (discussed below), have included new approaches for the training and retention of qualified ECCE professionals. Maryland was one of the first nine states to receive funding through the federal Race to the Top Early Learning Challenge program in 2010, and an additional federal award for the Preschool Expansion Grants program in 2014. One of the priorities of both programs is to design, develop, and maintain the continued professional development of teachers in ECCE programs.

In the past, professionals in ECCE were often told that their career was a "calling" or that a "love of children" was sufficient expertise to work in early childhood settings. This implied that preparation was not necessary to work with young children, and in the process, diminished the professional components of education and specialized training for effective professional practice and a successful career in the field. Those days are long gone. Recent research supports the conclusion that high quality early education programs contribute to children's long-term health, developmental, and learning outcomes (Center on the Developing Child, 2007; Gormley, Phillips, & Gayer, 2008; McClelland, Acock, & Morrison, 2006; Phillips & Meloy, 2012). Teachers who are able to understand and support children's strengths, are knowledgeable about the risk and protective factors that influence development (e.g., Walker et al., 2011), can differentiate instruction to reach all children, and facilitate positive adult-child interactions will have the greatest influence on young children's learning and growth (Burchinal et al., 2008; Yoshikawa et al., 2013). Therefore, the ECCE workforce needs to be explicitly connected to training and professional development opportunities that equip these professionals to meet these goals.

The current range of early childhood service options across Maryland means there are likely wide variations in the experience, training, knowledge, and skills of the ECCE workforce. As Maryland increases access to publicly funded preschool, the need for a well-trained ECCE workforce will expand as well. In the past, we have known little about the Maryland ECCE workforce. This is beginning to change through the advent of quality rating and improvement systems (QRIS) and other mechanisms for gathering longitudinal data about ECCE across the state.

This report begins with an overview of ECCE policies in Maryland and reviews several national research studies that offer information relevant to training and retaining the ECCE workforce. We then use data from the Maryland Longitudinal Data System (MLDS) to link ECCE postsecondary degree earners to their workforce records. The ability to link data across state agencies enables us to provide information about the wages earned, industries worked, and retention status of ECCE professionals trained in Maryland colleges and universities. We conclude with recommendations for future research on the ECCE workforce in Maryland.

Early Childhood Care and Education (ECCE) in Maryland

Maryland has supported publicly funded preschool since 1980, when the MSDE established pilot preschool programs in Baltimore City and Prince George's County (Sunderman

& Titan, 2014). Since 2008, as part of the 2002 *Bridge to Excellence in Public Schools Act,* all Maryland local boards of education are required to provide preschool education to economically disadvantaged four-year old children. In 2007, the Governor's Task Force on Universal Preschool released its findings, calling for the implementation of publicly funded preschool for all four year olds in the state. The report, *Preschool for All*, recommended voluntary access, at the family's discretion, to free early childhood education programs in a variety of settings to all four year olds by 2014. Further, it recommended that such programs be of high quality and be staffed by professionally certified lead teachers with bachelor's degrees[1], with remuneration consistent with teacher salaries in the local school district. However, that recommendation is yet to be realized due to the 2008 recession and resulting budget constraints.

Although implementation of *Preschool for All* stalled due to budget restraints following the 2008 recession, the *Prekindergarten Expansion Act* of 2014 (Senate Bill 332) provided new resources through competitive grants for implementation and expansion of the poverty threshold for enrolling low-income children in preschool. This resulted in a modest increase of about 1,600 preschool aged children. In addition to *Preschool for All*, in 2010, Maryland received one of the nine Race to the Top Early Learning Challenge grants in the amount of $250 million. In 2014, the state received the Preschool Expansion grant in the amount of $15 million. These grants provided multiple opportunities to increase early preschool programs across the state, and develop and expand new approaches for securing and increasing a high quality ECCE workforce. By 2018, Maryland's goal is to increase the number of prekindergarten slots by 3,000 for families with children living at or below 300% of the federal poverty level through a combination of federal and state funds.

The Judith P. Hoyer Early Care and Family Education Centers (known as "Judy Centers") were established in 2000 through state law (Annotated Code of Maryland, Education Article, §5-215) to honor the legacy of Judith P. Hoyer, an early childhood education advocate and former coordinator of early childhood education in Prince George's County Public Schools (MSDE, 2011). There are 52 Judy Centers in Maryland, with one or more in each jurisdiction. The Centers provide comprehensive programs, which include a wide array of education and community based services for children birth through age five and their families, as supports to enhance school readiness before kindergarten. Each Judy Center is located in or near a Title I school. Judy Centers are typically open 7 to 12 hours a day, year round. Services include preschool programs (including Early Head Start and Head Start), before and after school care, adult and family literacy programs, health services, and early identification programs, such as Maryland Infants and Toddlers. In addition to state funding, federal, private, and local funding

[1] Level 6 of the Maryland Child Care Credential ladder was identified as an initial alternative credential for child care workers who were less likely to have teacher certification. It was anticipated that *Preschool for All* guidelines might result in certified teacher shortages, and the Level 6 credential was seen as an appropriate alternative.

helps to support the Centers. In 2014, over 13,000 Maryland children and their families participated in Judy Center programs and services (MSDE, 2014).

In 2005, MSDE consolidated all early childhood programs into the Division of Early Childhood Development within MSDE, including the Office of Child Care (OCC), which is responsible for licensing and inspecting all child care centers and family child care providers in Maryland. The OCC branches include the Licensing and Credentialing Branches. The Licensing Branch is responsible for all child care licensing activities. The Credentialing Branch maintains the state's Child Care Credentialing Program, which is a voluntary credentialing program that recognizes six staff credential levels and four administrator levels based on a child care provider's professional development/education, years of experience, and professional activities.

In addition, the Excellence Counts in Early Learning and School-Age Care (EXCELS) program, which is Maryland's Tiered Quality Rating and Improvement System (TQRIS), was a primary project of the state's 2010 Race to the Top Early Learning Challenge grant. The rating system is designed to improve the quality of child care programs and providers by awarding ratings through five progressive check levels that define a pathway to excellence. Information is available on http://marylandexcels.org/ for families and others searching for high quality programs.

Defining the ECCE Workforce Nationally and in Maryland

There is significant variability in the location of ECCE programs and the characteristics of the ECCE workforce nationally. This variability is due in part to a lack of cohesion about how to define ECCE and what to call ECCE (i.e., nursery school, preschool, prekindergarten). Historical views and practices (e.g., the nursery school movement of the 1920's and 1930's and the early intervention movement of the 1960's and 1970's) also play a role in the variability of ECCE programs and the ECCE workforce (Shonkoff & Meisels, 2000). This variability is apparent with respect to regulations that address standards and licensing requirements for the ECCE workforce. To address this issue, Maryland has integrated child care and early childhood education at the state level.

As preschool and prekindergarten education programs have become more aligned with, and in many cases, a part of the public school system, early childhood professionals in these programs are required to have the minimum of a bachelor's degree coupled with an early childhood education certificate. Because of both the location in which these individuals provide services and their level of education, they are commonly referred to as teachers. However, in child care settings that are neither aligned with, nor part of, the public education system, the inconsistent pattern of regulation, licensure, and credentialing across states leads to significant differences in what these service providers are called. These titles range from child care workers, child care or day care providers, and in some states, teachers. As a result, these titles may or may not be reflective of the individual's professional preparation and training. Thus, the

composition of the workforce ranges from those with little to no formal training providing primarily custodial care, to those with specialized postgraduate degrees providing educational programming and all levels in between (Institute of Medicine and National Research Council, 2012).

There has been considerable discussion about the multiple challenges being experienced by the ECCE workforce. In the latest Institute of Medicine report, Allen and Kelly (2015) reviewed the titles, roles, and responsibilities of ECCE positions. They were able to identify over 20 different roles being used in the field. Others have studied the delineation of preparation, including, training and professional development pathways (Rhodes & Huston, 2012; Snow, 2013; Whitebrook & Ryan, 2011). Others have examined issues related to a worthy wage, as large portions of the workforce remain chronically underpaid and turnover rates are high (NSECE, 2013; Maryland Family Network, 2015; Snow, 2013; Whitebrook, Phillips, & Howes, 2014). As a result, concern for the quality of the ECCE workforce has deepened, especially in light of the importance of early learning for future development (Allen & Kelly, 2015). These issues have led to calls for solidifying, consolidating, and strengthening the professional skills of the ECCE workforce (Barnett, 2013; Whitebrook, Phillips, & Howes, 2014; Whitebrook & Ryan, 2011).

With the exception of Head Start programs[2], states determine the level of education and training standards for ECCE professionals. In the 2007 *Preschool for All* report, Maryland recommended that *all* ECCE professionals, regardless of whether they work in child care or preschool based settings, have bachelor's degrees with certification in early childhood education (MSDE, 2007). Acknowledging that it would be difficult to elevate all higher education programs to meet the needs of current child care staff, the report recommended that child care professionals meet Level 6 of the state's Child Care CredentialingProgram. This voluntary credentialing system does not require a bachelor's degree or certification (although that is one pathway), and is intended to support continued professional development of the child care workforce in Maryland above and beyond state licensing requirements. Financial incentives ranging from one-time amounts of several hundred dollars, all the way up to $1,000 per year for Level 6, are built into the system, as are opportunities for tuition remission. The credentialing system encompasses 6 domains of core knowledge: child development, curriculum, health and safety, community, special needs, and professionalism. In addition, each level includes expectations for professional development and activities (MSDE, 2009). There is also a different credentialing system for child care center administrators.

[2] Head Start programs, even though delivered through state and local agencies, have federal requirements for teaching staff. As of September 2013, at least 50% of Head Start teachers nationally are required to have a "baccalaureate or advanced degree in Early Childhood Education or a baccalaureate or advanced degree in any subject, and coursework equivalent to a major relating to early childhood education with experience teaching preschool-age children" (Office of Head Start, 2012). In Maryland, some Head Start programs are a part of the public school system, and all teachers are required to have at least baccalaureate degrees and certification.

The MSDE outlines requirements for certification in Early Childhood Education, which conform to the professional development standards for initial teacher certification of the National Association for the Education of Young Children. Institutions of higher education (IHE) offer teacher preparation programs that adhere to, at a minimum, these standards, which consist of extensive coursework and field-based experiences, including a 100 day internship in a professional development school as the culminating practicum. Some IHE's offer more extensive and specialized programs, such as the dual certification in early childhood education and early childhood special education recently started by the University of Maryland. As part of the Race to the Top Early Learning Challenge initiative, MSDE established the Task Force on Teacher Education in Early Childhood Education, convened to review and make policy recommendations to increase access to early childhood teacher training and improve the quality of teacher education programs in the state (MSDE, 2014). Recommendations were made for pre-service education, professional development, and continuous improvement of those in the ECCE workforce. Among its recommendations, the task force called for pre-professional training, which included knowledge about the Maryland Early Learning Standards and core competencies and field experiences with English language learners and children with disabilities. The task force also acknowledged the need for professionals with dual certification in early childhood and early childhood special education.

Characteristics of the ECCE Workforce

Wages and Turnover

It is well-documented nationally that low levels of education, wages, and stability characterize the ECCE workforce (Bassok, Fitzpatrick, Loeb, & Paglayan, 2012; Institute of Medicine and National Research Council, 2012; U.S. Government Accountability Office, 2012; Whitebrook, Phillips, & Howes, 2014). In Maryland in 2014, a teacher in a child care or preschool center earned an average of $25,770, and a family child care provider earned an average of $32,287; the average yearly income for a public school teacher (which would include public school prekindergarten, including Head Start when located in public schools) was $64,546 (Maryland Family Network, 2015). It is important to note that this is the average salary across all levels of experience and education (and for public school teachers, across all grade levels).

ECCE professional turnover rates have decreased over the past decades, with an average turnover rate of 15% nationally, as compared to 25% in 1990 (Whitebrook, Phillips, & Howes, 2014). However, the turnover rate varies by ECCE setting (child care vs. preschool; for-profit vs. non-profit; public vs. private) and the ECCE professional's level of education (Whitebrook et al., 2014). This decrease in turnover appears to be consistent with trends for other non-farm occupations nationally, with a general decrease in job separations and job departures of between seven and ten percent (U.S. Bureau of Labor Statistics, 2014).

Workforce Characteristics and Learning Outcomes for Children

There is increasing evidence that the skills and knowledge of ECCE professionals, including the quality of interactions between staff and children, directly affect children's development, learning, and social-emotional adjustment (Burchinal et al., 2008; Center on the Developing Child, 2007; Horm, Hyson, & Winton, 2013; Phillips & Meloy, 2012; Pianta, Hitz, & West, 2010). For example, research evidence suggests the quality of interactions that take place between teachers and students is related to children's academic and social outcomes and is a primary mechanism through which children learn (La Paro, Pianta, & Stuhlman, 2004; Mashburn et al., 2008). Simply put, students learn more and are more likely to participate when teachers interact with them in stimulating and emotionally supportive ways (Diamond, Justice, Siegler, & Snyder, 2013).

The impact of teacher preparation and training on child educational outcomes has been examined with varying results. In some research, knowledge and skills of staff, rather than particular training characteristics such as educational and credential attainment, have been identified as having the most impact on student outcomes (Early et al., 2006; Early et al., 2007; Mashburn et al., 2008; Pianta et al., 2014). Yet, a meta-analysis on the impact of teacher education programs on outcomes in center-based early childhood programs found significantly better child outcomes in programs with higher numbers of teachers with bachelor's degrees (Kelley & Camilli, 2007).

Taken together, this body of scholarship suggests that ECCE programs are likely to have greater impact when there are strategic investments in the training, recruitment, and retention of ECCE professionals. Researchers are now studying how ongoing professional development may be used to improve instruction in early education, and initial reports suggest that classroom instruction is enhanced when relevant professional development opportunities are provided (Diamond et al., 2013). The improvement of educator preparation and continued professional development has been identified as an important goal in Maryland, as reflected in the report from the Maryland Task Force on Teacher Education in Early Childhood Education (MSDE, 2014). Recent legislation approved in the last session of the General Assembly and signed by Governor Hogan, Chapter 377 (Senate Bill 677) 2015 Laws of Maryland calls for a workgroup to develop a "master plan" for the professional development of teachers and providers of ECCE to: 1) address the critical shortage of ECCE professionals in the state, 2) create dual certification programs (early childhood education and early childhood special education, similar to the program at the University of Maryland), and 3) implement a continuum of professional development activities for ECCE professionals.

Using Data from the MLDS to Examine the ECCE Workforce in Maryland

The workforce outcomes of Maryland postsecondary students were examined using data from the MLDS that linked postsecondary degree earners with their wage data. Specifically, we focused on postsecondary students who graduated from a Maryland college or university in a discipline or field of study related to ECCE. We started with all associate and bachelor's degree earners across all years from the 2008-2009 to the 2012-2013 academic year. These students received degrees in one of the following four programs: 1) *Elementary Education and Teaching*[3] (Classification of Instructional Programs [CIP] code 13.1202); 2) *Kindergarten/Preschool Education and Teaching* (CIP code 13.1209); 3) *Early Childhood Education and Teaching* (CIP code 13.1210); or 4) *Child Care Provider/Assistant* (CIP code 19.0709).

Table 1 and **Figure 1** display the wages earned in the first calendar year after earning a degree, for five years of degree earners. In addition, **Table 1** and **Figure 1** display the number and percentage of students who returned for further postsecondary education. Over 40% of ECCE degree earners were employed for all four quarters in an industry related to ECCE[4] in the subsequent calendar year. An additional 5 to 7 percent of ECCE degree earners were employed for one to three quarters in ECCE. A very small percentage of degree earners (between 4 to 7 percent) were found with Maryland wages in all four quarters but not in the ECCE industry. The remaining degree earners (about 36 to 46 percent) were either re-enrolled in postsecondary education, not found in the wage data[5], or received wages for less than four quarters and not in the ECCE industry.

Table 2 displays the demographic characteristics of ECCE degree earners from 2008-2009 to 2012-2013. The degree earners were predominantly white (79%), Non-Hispanic (91%), and female (92%).

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[3] Students receiving degrees in *Elementary Education and Teaching* may be prepared to teach children above the upper age considered to be early childhood. It should be noted that the preparation of students in this degree program is distinct, but was included in this report because some students receiving degrees in this program area do teach children in age ranges overlapping with early childhood.

[4] The determination of ECCE industry was made using the North American Industry Classification System (NAICS) codes of the organizations from which the employee received wages. The NAICS codes included as ECCE industries for this report were: 611110, 611620, 611691, 624110, 624410, and 721214. Individual job position and duties information is not available in the MLDS data files. To be considered working four quarters in the ECCE industry, the employee did not have to be in the same ECCE organization for all four quarters.

[5] Individuals not found in the wage data may be: (a) employed in another state, (b) unemployed, or (c) federal employees, military employees, or independent contractors (data for these employees are not included in the Maryland State Unemployment Insurance data, which is the source of the MLDS wage data).

Table 1: ***Status of ECCE Postsecondary Graduates One Year after Graduation by Degree Year***

Status	2008-2009		2009-2010		2010-2011		2011-2012		2012-2013	
	Number	%	Number	%	Number	%	Number	%	Number	%
Total Number of Graduates	1,016	100	1,026	100	1,154	100	1,198	100	1,086	100
4 Quarters in ECCE Industry	511	50	429	42	499	43	528	44	473	44
<4 Quarters in ECCE Industry	78	8	75	7	64	5	67	6	71	7
Re-enrolled in Higher Ed	220	22	245	24	278	24	329	27	306	28
4 Quarters in Non-ECCE Industry	60	6	69	7	58	5	61	5	42	4
<4 Quarters in Non-ECCE Industry or No Wages	147	14	208	20	255	22	213	18	194	18

Figure 1: ***Status of ECCE Postsecondary Graduates One Year after Graduation by Degree Year***

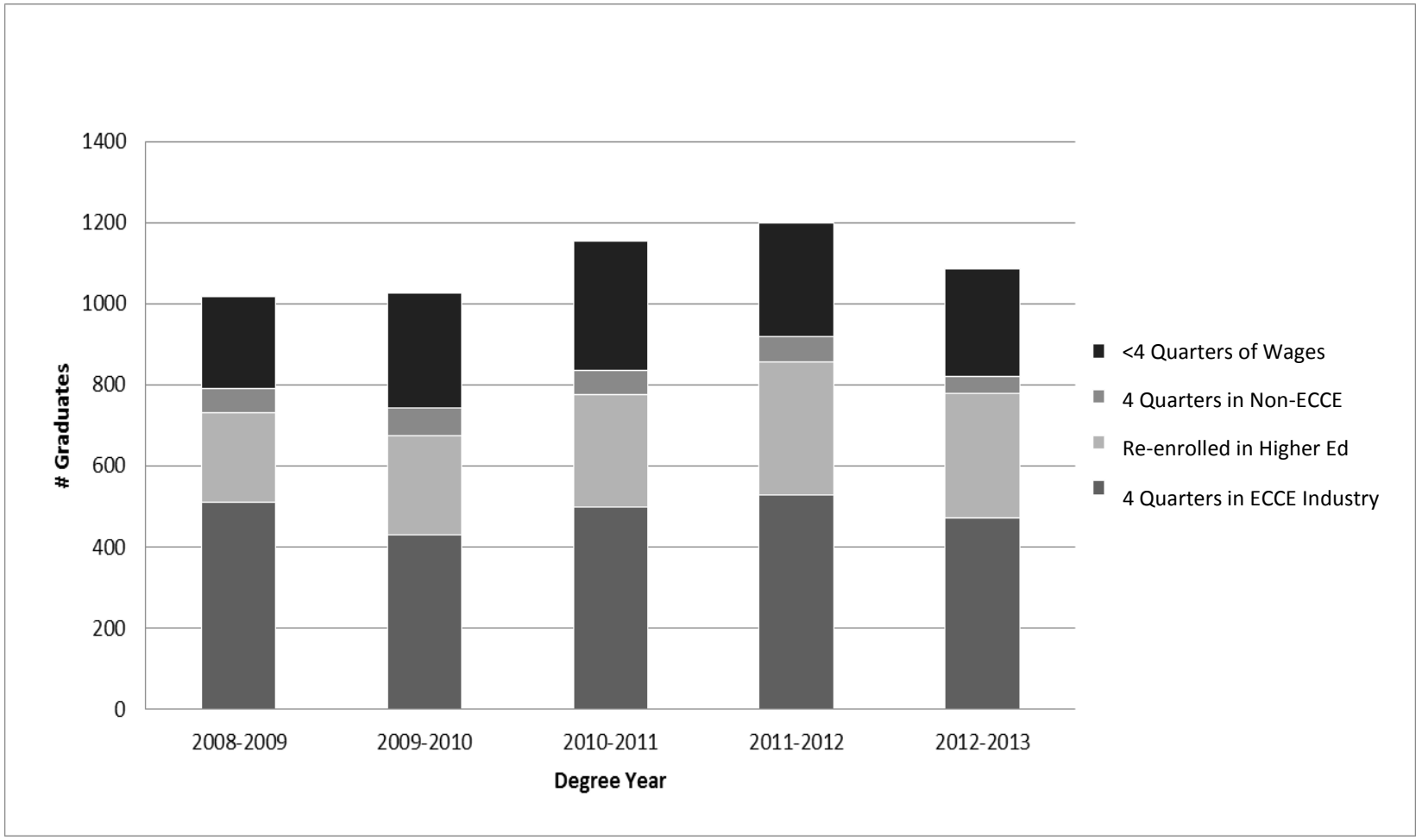

Table 2: ***Demographic Characteristics of ECCE Postsecondary Graduates, 2008-2009 to 2012-2013 Combined***

Gender		Number	%
	Female	5,021	92
	Male	346	6
	Unknown	113	2
Race			
	Asian	184	3
	Black	602	11
	White	4,321	79
	Other *	133	2
	Unknown	240	4
Ethnicity			
	Hispanic	224	4
	Non-Hispanic	5,008	91
	Unknown	248	5
Total		5,480	100

Note: *The "Other" race category includes: Hawaiian, Native American, and two or more reported races.*

Table 3 displays the wages for the postsecondary degree earners who entered the workforce in the calendar year subsequent to earning their degree (i.e., for whom four quarters of wages were available). Of those with four quarters of wages in the Maryland workforce, about two-thirds were found solely in the ECCE industry. The median wages earned of these individuals rose only slightly (just over $1,000) from the 2010 to 2014 calendar year. Approximately 25 percent of the four quarter wage earners were found in an ECCE industry, but, with additional wages from an employer from another industry. In general, the extra earnings from the industry outside of ECCE were limited, with the median additional earnings being approximately $2,500 annually. These extra earnings may have been earned prior to joining the ECCE industry during the first quarter of the year (or leaving in the last quarter of the year) or might have been from a second position, held concurrently with the ECCE industry position. For the 10 percent of four quarter wage earners who were not employed in the ECCE industry, the median annual wages were substantially lower at approximately $20,000.

Table 3: ***First Year Wages for ECCE Postsecondary Degree Earners with Four Quarters of Wages***

4 Quarters in ECCE Industry					
Degree Year	Graduates with 4 Quarters of Wages	%	Median	25th Percentile	75th Percentile
2008-2009	571	66%	$43,237	$32,757	$46,137
2009-2010	498	59%	$42,353	$29,482	$44,716
2010-2011	557	60%	$43,203	$30,638	$46,086
2011-2012	589	64%	$44,294	$36,998	$46,798
2012-2013	515	65%	$44,389	$40,956	$46,448

4 Quarters in ECCE Industry and Wages in Another Industry						
Degree Year	Graduates with 4 Quarters of Wages	%	Median	25th Percentile	75th Percentile	Median (Extra Earning)
2008-2009	571	23%	$41,156	$23,888	$44,110	$2,640
2009-2010	498	28%	$32,731	$23,259	$43,718	$2,479
2010-2011	557	29%	$38,600	$22,015	$45,139	$2,681
2011-2012	589	26%	$42,402	$26,670	$45,478	$2,491
2012-2013	515	27%	$43,305	$30,684	$46,114	$2,520

4 Quarters in Other Industries					
Degree Year	Graduates with 4 Quarters of Wages	%	Median	25th Percentile	75th Percentile
2008-2009	571	11%	$20,304	$11,829	$31,614
2009-2010	498	14%	$23,460	$15,182	$29,846
2010-2011	557	10%	$23,178	$16,360	$30,111
2011-2012	589	10%	$22,109	$11,588	$30,958
2012-2013	515	8%	$21,945	$10,676	$29,645

Table 4 displays the types of employment organizations employing postsecondary graduates between 2008-2009 and 2012-2013 who received wages in all four quarters of the next calendar year**.** These data are reported separately for associate and bachelor's degree types. The type of organization is defined by the North American Industry Classification System (NAICS). Sixty-five percent of organizations employing graduates who received bachelor's degrees in ECCE were elementary and secondary schools. This was followed by entertainment, accommodations, and food services (10%) and services related to education, health care assistance, social services, and public administration (9%). The primary organizations employing graduates who earned an associate degree included child day care services (33%) and elementary and secondary schools (22%).

Table 4: ***Organizations Employing ECCE Postsecondary Degree Earners (2008-2009 to 2012-2013)***

NAICS Code	NAICS Name	Associate Degree	Bachelor's Degree
ECCE Employers			
611110	Elementary and Secondary Schools	22%	65%
624410	Child Day Care Services	33%	5%
611620	Sports and Recreation Instruction	<10%	<5%
611691	Exam Preparation and Tutoring	0%	<5%
624110	Child and Youth Services	0%	<5%
721214	Recreational and Vacation Camps	0%	<5%
Other Employers			
61, 62, 81, 92	Services related to Education, Health Care Assistance, Social Services, Public Administration	13%	9%
71, 72	Entertainment, Accommodation and Food Services	12%	10%
51-56	Financial Information and Management	<10%	<5%
42, 44, 45	Retail and Wholesale Trade	10%	5%
11, 23, 31-33, 48-49	Other	<10%	<5%

Table 5 displays the wages earned for the postsecondary degree earners receiving four quarters of wages for the calendar year following graduation by program name and degree earned. Graduates who received bachelor's degrees earned higher median wages when compared to graduates who received associate degrees. Additionally, of those who earned an associate degree, those who earned a degree in the child care provider/assistant program earned higher wages than graduates in the other programs.

Table 5: ***Wages for Four Quarter Earners - Year after ECCE Degree by Program Name and Degree (2008-2009 to 2012-2013)***

	Bachelor's				Associate			
Program Name	*N*	Median	25th Percentile	75th Percentile	*N*	Median	25th Percentile	75th Percentile
Elementary Education and Teaching	1,637	$43,462	$31,422	$46,456	75	$20,260	$12,688	$28,950
Kindergarten/Preschool Education and Teaching	226	$44,962	$36,790	$46,813	---	---	---	---
Early Childhood Education and Teaching	704	$42,071	$26,793	$45,757	47	$21,273	$17,960	$25,368
Child Care Provider/Assistant	---	---	---	---	29	$27,253	$21,441	$33,448

Tables 6a and **6b** display the status of all ECCE postsecondary degree earners in the ECCE workforce who earned wages in the four quarters in the calendar year following their graduation. After one year, about 80% of these employees were still earning wages in the ECCE field. By four and five years after graduation, a little over half of the employees were still earning wages from ECCE organizations; about one-third of degree earners were re-enrolled in higher education after four to five years.

Table 6a: ***Retention Status of ECCE Postsecondary Degree Earners—Bachelor's, Associate, and Certificate—Who Worked Four Quarters in the ECCE Workforce in the Calendar Year after Graduation***

Degree Year	Number of Employees	Status	Years after Graduation				
			1 Year	2 Years	3 Years	4 Years	5 years
2008-2009	511	% 4Q in ECCE	100%	85%	64%	56%	53%
		Median 4Q Wage	$43,200	$44,328	$45,100	$46,536	$48,476
		% re-enrolled in Higher Ed		10%	26%	33%	33%
		% 4Q in other employment		6%	9%	12%	14%
2009-2010	429	% 4Q in ECCE	100%	81%	65%	56%	.
		Median 4Q Wage	$41,814	$44,228	$45,437	$46,776	.
		% re-enrolled in Higher Ed		12%	26%	32%	.
		% 4Q in other employment		7%	9%	12%	.
2010-2011	499	% 4Q in ECCE	100%	81%	64%	.	.
		Median 4Q Wage	$42,973	$45,705	$46,759	.	.
		% re-enrolled in Higher Ed		11%	22%	.	.
		% 4Q in other employment		8%	13%	.	.
2011-2012	528	% 4Q in ECCE	100%	81%	.	.	.
		Median 4Q Wage	$44,272	$45,957	.	.	.
		% re-enrolled in Higher Ed		11%	.	.	.
		% 4Q in other employment		9%	.	.	.
2012-2013	473	% 4Q in ECCE	100%	.	.	.	.
		Median 4Q Wage	$44,940	.	.	.	.
		% re-enrolled in Higher Ed		.	.	.	.
		% 4Q in other employment		.	.	.	.

Note: 4Q = four quarters; . = data not available for this time period.

Table 6b: ***Retention Status of ECCE Bachelor's Degree Earners Who Worked Four Quarters in the ECCE Workforce in the Calendar Year after Graduation***

Degree Year	Number of Employees	Status	Years after Graduation				
			1 Year	2 Years	3 Years	4 Years	5 years
2008-2009	499	% 4Q in ECCE	100%	85%	65%	56%	52%
		Median 4Q Wage	$43,251	$44,407	$45,152	$46,615	$48,585
		% re-enrolled in Higher Ed		10%	26%	33%	34%
		% 4Q in other employment		5%	9%	11%	14%
2009-2010	414	% 4Q in ECCE	100%	82%	66%	57%	.
		Median 4Q Wage	$42,158	$44,253	$45,532	$46,797	.
		% re-enrolled in Higher Ed		12%	27%	33%	.
		% 4Q in other employment		6%	8%	10%	.
2010-2011	473	% 4Q in ECCE	100%	81%	63%	.	.
		Median 4Q Wage	$43,587	$45,172	$47,063	.	.
		% re-enrolled in Higher Ed		11%	25%	.	.
		% 4Q in other employment		8%	11%	.	.
2011-2012	508	% 4Q in ECCE	100%	81%	.	.	.
		Median 4Q Wage	$44,494	$46,046	.	.	.
		% re-enrolled in Higher Ed		10%	.	.	.
		% 4Q in other employment		8%	.	.	.
2012-2013	454	% 4Q in ECCE	100%	.	.	.	.
		Median 4Q Wage	$45,128	.	.	.	.
		% re-enrolled in Higher Ed		.	.	.	.
		% 4Q in other employment		.	.	.	.

Note: 4Q = four quarters; . = data not available for this time period.

Finally, although this report was primarily focused on the outcomes of postsecondary degree earners in ECCE, a good portion of the ECCE workforce do not have postsecondary degrees. Thus, **Table 7** displays the retention and median wages of recent high school graduates who were working in an ECCE industry for four quarters in the calendar year following graduation from high school.

Table 7: ***Retention Status of High School Graduates Who Worked Four Quarters in the ECCE Workforce in the Calendar Year after Graduation***

Degree Year	Number of Employees		Years after Graduation				
			1 Year	2 Years	3 Years	4 Years	5 years
2008-2009	456	% 4Q in ECCE	100%	60%	46%	40%	33%
		Median 4Q Wage	$9,325	$11,984	$13,332	$17,147	$19,802
		% enrolled in Higher Ed		24%	26%	22%	17%
		% 4Q in Other Employment		16%	28%	38%	50%
2009-2010	404	% 4Q in ECCE	100%	65%	51%	43%	.
		Median 4Q Wage	$9,731	$13,059	$15,113	$17,552	.
		% enrolled in Higher Ed		14%	20%	19%	.
		% 4Q in Other Employment		21%	29%	39%	.
2010-2011	427	% 4Q in ECCE	100%	64%	45%	.	.
		Median 4Q Wage	$9,223	$12,247	$16,472	.	.
		% enrolled in Higher Ed		18%	23%	.	.
		% 4Q in Other Employment		19%	32%	.	.
2011-2012	484	% 4Q in ECCE	100%	58%	.	.	.
		Median 4Q Wage	$9,248	$11,985	.	.	.
		% enrolled in Higher Ed		24%	.	.	.
		% 4Q in Other Employment		17%	.	.	.
2012-2013	426	% 4Q in ECCE	100%	.	.	.	.
		Median 4Q Wage	$9,774	.	.	.	.
		% enrolled in Higher Ed		.	.	.	.
		% 4Q in Other Employment		.	.	.	.

Note: 4Q = four quarters; . = data not available for this time period.

Future Research on the ECCE Workforce in Maryland

The research to date suggests several important areas where data on the ECCE workforce can inform decision-making in the arenas of practice, programming, and policy. First, as previously noted, it is well-documented that low levels of education, low wages, and instability characterize the ECCE workforce nationally. Improvements in these areas are likely to trigger an increased ability to attract and retain qualified professionals into ECCE fields where shortages exist. Credentials help to professionalize the ECCE workforce and are tied to higher wages, which in turn would predict greater stability in the workforce. Maryland already requires publicly funded preschool programs to hire teachers with at least a bachelor's degree, a pre-kindergarten specialization, and 15 or more hours of in-service teacher training (Barnett, Carolan, Squires, Clarke Brown, & Horowitz, 2015). It will be important to track the credentials and educational attainment of ECCE professionals in center or home programs where quality is likely to be more variable, and several mechanisms are in place that will help to provide this information, including the Maryland Child Care Credentialing System and Maryland EXCELS.

The analyses provided in this report are a snapshot of the ECCE postsecondary to workforce transition in Maryland. As the Center's data system builds and collects more years of data, more in depth preparation and retention analyses can be completed. This will provide more extensive information to inform policy and programing on both the postsecondary institutions preparing these professionals and the education and childcare agencies that employ them. Newly emerging data collections on the part of MHEC and MSDE will allow future ECCE workforce reports generated by the MLDS Center to include data on early education programs housed in Maryland school districts. Additionally, the Center will be able to examine characteristics of the child care providers and the students served. Furthermore, linking information about ECCE programs, teachers, and professionals to information about the students they serve will allow analyses examining the impact of the Maryland ECCE workforce on student outcomes. The ability to link this data would provide important information about:

1. the distribution of ECCE professionals across different ECCE settings (e.g., center- or home-based, private or public, etc.), ages of children served, and occupational roles (e.g., directors, lead teachers, teaching assistants, aides, specialists);
2. the characteristics of ECCE teachers and caregivers (e.g., demographics, qualifications, conditions of employment, compensation and benefits, tenure on the job and in the field);
3. the characteristics of ECCE workplaces (e.g., distribution of staff, supports and professional development offered, turnover, finances, working conditions); and
4. the relationship between characteristics of the ECCE programs and ECCE professionals and future student outcomes.

Finally, it will be important to go beyond solely tracking measures of educational attainment or certification when examining ECCE workforce training. This may require collecting additional data. Currently, there is a disconnect between what researchers have learned about factors that contribute to positive learning and social outcomes for children and

how the field conceptualizes ECCE workforce skills. That disconnect might be addressed by conducting research on the knowledge and skills of those working in ECCE industries and the quality of interactions between staff and children. In addition, there has been little research on the content of training or teacher preparation programs to determine how well these programs prepare individuals with the knowledge, practices, and skills that have been shown to be effective. This research will help to provide a more accurate and authentic picture of the ECCE workforce in Maryland.

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