2016 Working in Early Care and Education in Iowa

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Child Care WAGE$® IOWA

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Table of Contents

List of Tables

List of Figures

Introduction

With the recent reauthorization of the Child Care Development Block Grant and increased media focus, early care and education has gained attention and prioritization from parents, communities, funders, and politicians. However, comparatively little research has been conducted in Iowa, specifically on a statewide level, on exactly what and who the programs and staff charged with caring for our young citizens each day look like. With funding from the W. K. Kellogg Foundation and in partnership with Iowa Association for the Education of Young Children (Iowa AEYC), Child Care Services Association (CCSA) conducted a statewide survey of the early care and education workforce in Iowa from January 2016 through July 2016. This study provides comprehensive data on directors and the licensed early care and education programs in which they work. The study further provides some basic information about teachers and assistant teachers in these programs.

Licensed centers in Iowa typically care for larger numbers of children than child development homes or child care homes and must fulfill a list of requirements. Programs receive at least one unannounced visit a year and their license must be renewed every two years[i]. Licensed centers include programs operated by public schools, for-profit entities, and not-for-profit entities, including Head Start and other public programs. For-profit programs include both single center and multi-center entities. Non-profits are sponsored by either community boards or faith communities. Though publicly funded programs are licensed, these programs have more stringent requirements and were thus removed from the study. The two other types of child care programs in Iowa, registered child development homes and non-registered child care homes, were not included in this study.

Methodology

Data for the center-based workforce report were collected through a survey of sampled (see Appendix A) licensed early childhood program directors conducted from January 2016 through July 2016 (based on Iowa licensing information as of November 2015[ii]). The data was cleaned and then weighted based on a number of factors as indicated below and in Appendix B. With input from Iowa AEYC, the data were analyzed to begin to paint a picture of the early childhood workforce in Iowa.

The survey was based on previous surveys used by Child Care Services Association to perform workforce studies in various states across the country. Modifications were made to more adequately reflect child care in Iowa as well as to gather basic information about the teaching staff in the state. The three-page survey asked primarily closed-ended questions (with room for write in options as appropriate) to ascertain characteristics of child care centers, program directors, and teaching staff. Center questions focused on staff turnover and wages and benefits; including both paid (such as leave time and health insurance) and nonpaid (such as personnel policies and orientation) benefits. Questions about teaching staff included salaries, education, and basic demographics. Finally, program director questions gathered information similar to teaching staff but also went into more detail in these areas and included questions regarding experience.

Beginning with the November 2015 Iowa center licensing information, all part-day preschools and school-age only programs were removed. Similarly, all public programs including public schools and Head Start programs were excluded. These programs fall outside the scope of this study. Once these programs were removed, 748 child care programs remained eligible to be selected for participation in the study. Because Iowa has a smaller population of early care and education programs than many states, the sample size was based on securing enough completed surveys to be confident in the results. Consequently, a stratified random sample of 48% of the eligible programs produced a sample size of 358. Stratification was based on a number of factors including Quality Rating System (QRS) levels (none, 1-2,

and 3-5), geographic characteristics (metro or non-metro[iii]), auspice (profit or non-profit), and size (small, medium, and large). See Appendix A for more details on sampling.

In January, 2016, an initial mailing was sent to all directors in the study. Included in the mailing was a survey with an introduction letter, a postage-paid, return-addressed envelope, a token "thank-you" gift for directors, and a drawing ticket. The drawing ticket entered directors in a drawing to win various prizes from gift cards to hotel accommodations. A reminder email was sent to those directors who had not yet responded in February. In March, a second survey was sent to all non-responding directors. For those directors who had still not responded by April, attempts were made by phone to secure responses. One final push was made in May/June to obtain final information from directors. Throughout the process, as surveys were received, follow-up phone calls were placed to clarify answers as needed. Useable surveys were obtained from 251 directors who constituted 70% of the sampled directors. This response constitutes about 34% of the population of all licensed early care and education centers serving children birth through five in the state.

Surveys received were checked and data were entered and cleaned as needed. Data were then weighted to reflect the statewide population of centers, adjusting for known program and community characteristics associated with response bias. These factors include the location, size, sponsorship, and QRS rating of a program. After analysis was completed, it was discovered that a small number of publicly funded programs inadvertently remained in the sample and responded to the survey. These program findings appear in this data, though, due to their small number, do not significantly alter the results. Most percentages and other values reported in text, tables, and graphs incorporate these sampling weights, permitting extrapolation to the population of centers (N=748) serving children birth through five.

The director survey contained questions specific to teacher education within each center. In order to gain a better understanding of teacher education on a statewide level, a file was constructed containing one case for each teaching staff member in each of the responding centers. The number of cases in each responding center corresponded to the number of teaching staff members reported on the director survey to create a file containing one record for each teacher employed in responding programs.

More information about data weights and population representation is contained in Appendices B, C and D to this report.

Throughout this report, the median value is usually reported as the measure of central tendency, e.g., for hourly wages and time intervals. As such, "average" is used interchangeably with "median" unless specifically noted otherwise.

Findings

Early Care and Education (ECE) Program Characteristics

QRS Participation. Iowa's Quality Rating System is a voluntary child care rating system for child development homes, licensed child care centers and preschools, and child care programs that are operated by school districts[iv]. As a voluntary program, there is no punishment for not participating. There is, however, a financial incentive, in the form of a bonus for participation and levels achieved. Statewide, just over half of all early care and education programs participate in the QRS program (55%). When programs participate, they are more likely than not to go the extra mile to achieve higher levels (three to five) with 39% of programs at one of these levels. The remaining 16% of programs, though they have elected to participate in the QRS program, remain at the lower levels one or two. See Table 1. Surprisingly, only 51% of programs that are accredited through the National Association for the

Education of Young Children (NAEYC) participate in the Quality Rating System, though all that participate achieve the higher QRS levels (3-5).

Table 1
Regional Distribution of Centers by QRS Level, Type of Organization, and Size

		QRS Level			Type of Organization		Size		
	Number of Programs	**None**	**Under 3**	**3 Or Higher**	**For-Profit**	**Not-For-Profit**	**Small**	**Medium**	**Large**
Statewide	748	45%	16%	39%	43%	57%	34%	39%	27%
Region 1	110	37%	16%	46%	35%	65%	51%	32%	17%
Region 2	138	24%	17%	59%	27%	73%	28%	36%	36%
Region 3	57	39%	21%	40%	42%	58%	53%	33%	14%
Region 4	219	50%	10%	40%	57%	43%	22%	44%	34%
Region 5	224	57%	19%	24%	48%	52%	36%	41%	23%

Source: Iowa Department of Human Services files and Survey data
Size based on enrollment numbers (s = 1-49, m=50-99, l=100 or more)

Despite the large numbers of programs that do not participate in the QRS, the greatest percentage of children are being served in programs that participate and are at the higher levels (45%). An additional 15% of children are enrolled in programs at the 1 or 2 level with the remaining 40% of children in licensed early care and education centers in programs who do not participate in the QRS. See Table 2.

CCR&R Regions. An important feature of the Iowa early child care workforce has to do with regional variation. The state's 99 counties are divided into five distinct regions of varying size. (See Appendix A for a list of regions.) Region 5, the largest region, has 224 early care and education programs (30% of all programs). Though Region 4 has slightly fewer programs (29%), this region boasts the highest enrollment of children at nearly 18,000 (35%). Conversely, Region 3 has just 57 programs with only approximately 4,000 children (6%) enrolled. See Tables 1 and 2.

Table 2
Regional Distribution of Birth-Five Enrollment by Star Level, Type of Organization, and Size

		Star Level			Type of Organization		Size		
	Total Enrollment	**None**	**Under 3**	**3 Or More**	**For-Profit**	**Not-For-Profit**	**Small**	**Medium**	**Large**
Statewide	59,073	40%	15%	45%	43%	55%	13%	35%	52%
Region 1	11%	29%	15%	55%	39%	61%	22%	35%	43%
Region 2	20%	16%	18%	65%	25%	75%	9%	27%	64%
Region 3	6%	28%	16%	56%	28%	72%	28%	41%	32%
Region 4	35%	50%	7%	42%	64%	36%	7%	33%	60%
Region 5	28%	53%	19%	28%	45%	55%	16%	38%	46%

Source: Iowa Department of Human Services files and Survey data
Size based on enrollment numbers (s = 1-49, m=50-99, l=100 or more)

QRS participation and levels also differ across regions. Region 2 shows the highest participation rate with 76% of programs volunteering to be rated. On the other hand, Region 5 programs are far less likely with less than half of programs involved with the process (43%). Similarly, the same pattern holds true for levels attained. Region 2 has the greatest percentage of programs achieving higher levels with 59% of programs at levels 3-5 (65% of enrollment). Region 5 has the lowest percentage, with just 24% of programs (28% of enrollment) at these higher levels. See Tables 1 and 2.

Geographic Areas. As would be expected, a greater percentage of programs are located in metropolitan areas (59%) compared to non-metropolitan areas (41%). Enrollment numbers in these programs reflect an even greater split between the two with 66% of children receiving early care and education in metropolitan areas and 34% of children in more rural areas.

Though fewer programs exist in non-metropolitan areas, these programs are more likely to participate in the QRS (68% in non-metropolitan areas versus 48% in metropolitan areas). Similarly, a larger percentage of centers in more rural areas achieve at least a level 3 with 46% of non-metropolitan programs at levels 3-5 and 36% of centers in metropolitan areas at these same levels.

Program Size. Early childhood programs range in size from small, with enrollments of 1-49 children, to medium (50-99 children enrolled), to large with at least 100 or more children enrolled. Small programs make up about a third of all centers, (34%) however, only about 13% of all children enrolled in licensed centers attend these programs. Medium early care and education programs comprise the largest percentage at 39% with an enrollment of 35% of children. Though large programs are smaller in number, 27%, this size program provides care to over half of all children enrolled in licensed centers in Iowa (52%). See Tables 1 and 2.

Large programs are both more likely to participate in the QRS (68%) and to achieve a higher level (56%) vs. small or medium sized programs. Small programs have the highest percentage of non-participation (56%) as well as the lowest percentage of programs at levels 3-5 (26%). Fifty-seven (57%) of medium programs participate in the Quality Rating System with 41% of all medium size programs at levels 3-5.

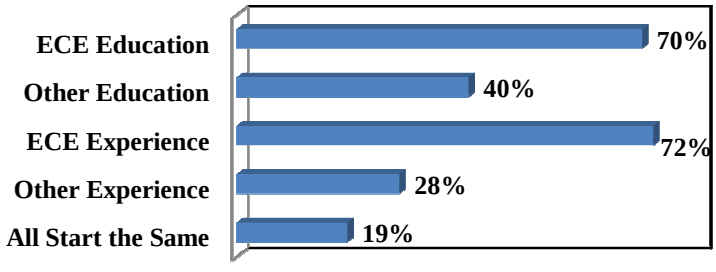
Organizational Sponsorship. Over half of all centers in Iowa are non-profit programs (57%). Enrollment is higher than this percentage with 61% of children enrolled in non-profit programs. Another 43% are for-profit centers (with 39% enrollment). See Tables 1 and 2. Breaking these two broad categories down further, non-profits with community boards represent 39% of programs (42% enrollment), non-profits with faith sponsorship are 17% of centers (14% of enrollment), single site for-profits account for 31% of programs (30% enrollment), and multi-site for-profit programs are 13% of the total (14% of enrollment).

Non-profit programs are more likely than for-profit entities to participate in the QRS (64% and 46% respectively). In addition to having the higher percentage of participating programs, non-profit early care and education programs also boast the higher percentage of programs attaining levels 3-5 with 47% of non-profits at one of these levels. For-profit programs have a lower percentage of centers at levels 3-5 with 29% of for-profit programs attaining one of these levels.

Working Conditions in Early Care and Education Programs

Wage Scales. Many factors determine salary levels for new employees. See Figure 1. Experience in the early care and education field was listed as a factor in setting salaries by nearly three-fourths of directors (72%). Similarly, despite relatively low education levels of teachers and assistant teachers, early childhood

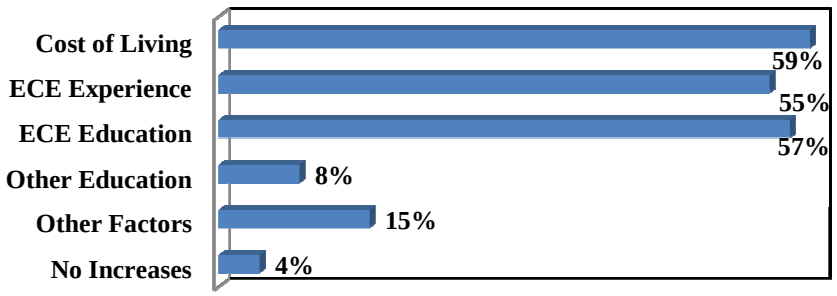
Figure 1
Factors Determining Starting Wages



education was listed by 70% of directors as a factor in determining starting salaries. Though other education (40%) and other experience (28%) also played a part for some directors, these characteristics were far less important. Nineteen percent (19%) of directors said that nothing was a factor in determining starting salaries because all employees started at the same wage.

Like starting salaries, wage progression is determined by a number of different factors as well. See Figure 2. Fifty-nine percent (59%) of employers said that, when budget allowed, employees were given cost of living raises. A close second, increased early childhood education (specifically college coursework) was listed as a reason to give teaching staff a raise by 57% of directors. Fifty-five percent (55%) of directors listed experience as a reason to give a raise, although this choice may have been confused with cost of living raises, since by virtue of continued employment, all employees gain experience. Nearly 4% of directors said that employees never get raises. Though not listed as a choice, many directors listed "performance" as a reason that employees receive raises. Because this option was not spelled out for all directors yet many wrote it in, future studies should be sure to include this option to ensure reflective response rates.

Figure 2
Factors Used to Increase Wages



Employment Benefits. Employment benefits offered by centers in Iowa are shown in Table 3. Less than half of programs provided some help with health insurance in 2016. Only 6% of programs fully pay for health insurance for their staff while a larger 37% pay some portion of health premiums. Program size relates to health insurance coverage with smaller centers being less likely than medium-sized and larger programs to at least partially pay for insurance (34%-small, 44%-medium, 50%-large). More programs offer support with child care costs for their employees, however. Free child care is offered by 13% of employers while staff in 73% of programs can expect to get at least some help with child care payments through reduced fees. Parental leave (likely unpaid) is offered in just over half of all programs (56%), retirement in just under half (43%), and disability insurance in about a fourth of all early care and education centers (26%).

Table 3
Employment Benefits in ECE Centers

Fully Paid Health Insurance	6%
Partially Paid Health Insurance	37%
Disability Insurance	26%
Protected Parental Leave	56%
Free Child Care	13%
Reduced Child Care Fee	73%
Retirement by Employer	43%
None of these	6%
Paid Sick Leave	59%
Paid Vacation	76%
Paid Holidays	79%
Other Paid Time Off	33%

Another benefit that many employees receive is paid time off. Child care providers in Iowa are no exception. In 2016, 79% of employers paid their staff for at least one holiday (51% paid for six or more holidays). About three-fourths (76%) of all programs paid for vacation days (43% paid for six or more vacation days). Child care employees were less likely to receive sick time with 59% of early care and education programs paying for this benefit (33% paid for six or more sick days). Fifty-four percent (54%) of programs offered both sick and vacation leave to their employees. Nineteen percent (19%) of child

care programs offered neither sick nor vacation paid time off.

Directors were also asked if they paid for other types of time off. About a third of programs (33%) said that they did provide this benefit. Though not asked, some directors wrote in the type of leave they were referring to in this category with answers such as funeral or jury duty. Others use this type of leave as flexible vacation/sick/personal leave. Twenty-two percent (22%) of directors said that they offered sick, vacation and "other" leave. Thirty-five percent (35%) offered two of the three; 27% offered just one of the three. Sixteen percent (16%) did not offer sick, vacation, or "other" leave to their employees.

Whether or not a child care provider receives any support with health insurance (as well as other benefits and their wages) relates to the organizational auspice of the program in which the teacher works. See Table 4. Those providers working in for-profits with multiple sites are more likely to receive full or partially paid health insurance with 59% of programs providing this benefit. It is likely the 2010 passage of the Affordable Care Act, which requires employers with 50 or more employees to provide health insurance, impacts many of these for-profit, multi-site programs. Though their median lowest wage of $8.93 per hour is one of the lowest, they can eventually hope to make a highest median wage of $13.00 per hour. Faring the worst overall, employees in non-profit programs directed by community boards have a median starting wage of just $8.90 per hour (typically having a top wage of $11.00) and only 41% receive support with employer offered health insurance. These types of centers are the most prevalent form of organization in the state; 39% of all centers in the state are community board directed, non-profit centers (representing 42% of enrollment).

Table 4: Health Insurance and Wages by Auspice

Type of Center	Pct Employers Who Offer at Least Partly Paid Health Insurance	Median Starting Teacher Wage	Median Highest Teacher Wage
Private For-Profit (single center)	28%	$9.00	$11.75
Private For-Profit (multi-center)	59%	$8.93	$13.00
Private Not-For-Profit (comm./board sponsored)	41%	$8.90	$11.00
Private Not-For-Profit (sponsored by faith community)	44%	$10.00	$12.61

While not a part of this study, national findings from the Government Accountability Office[v], reveal that while child care providers as a whole receive low wages, individuals working in publicly funded programs such as Head Start receive higher wages than their counterparts in private settings.

Professional Supports. Early childhood research has shown that higher education and compensation of early care and education providers can lead to positive outcomes for children. Programs such as the T.E.A.C.H. Early Childhood® scholarship program and Child Care WAGE$® salary supplement program have addressed some of the educational and financial needs of early care and education providers while lowering staff turnover. At the program level, child care centers offer staff opportunities to develop their teaching skills and professionalism through coursework and by creating a supportive work environment. The workforce survey included a number of questions on these professional support topics.

The T.E.A.C.H. Early Childhood® Scholarship Program. T.E.A.C.H. Early Childhood® IOWA provides programs and teachers a path towards increased education, compensation and retention, resulting in increased quality and stability for young children in care. According to Iowa center directors, 29% of centers had at least one staff member that had ever received a T.E.A.C.H. scholarship. Sixty-nine (69%)

of directors indicated that they had never had anyone participate in T.E.A.C.H., while 3% of directors indicated that they had never heard of T.E.A.C.H. Early Childhood® IOWA.

Other Center-Provided Support. Child care centers can support the professional development of staff without creating a significant financial burden on their programs. Seven key types of professional support that centers can provide staff are an orientation to the child care program, written job descriptions, written personnel policies, paid education and training expenses, paid breaks, compensatory time for training, and paid preparation or planning time. See Table 5. Nearly all programs (97%) offer their staff written personnel policies. Orientation and written job descriptions are provided in 92% and 91% of early care and education programs respectively. Paying for education/training, both for the education/training itself and for the time it takes to get this education is paid in only 81% and 76% of programs respectively. About two-thirds (67%) of programs offer planning or preparation time with just under half (48%) offering paid breaks.

Table 5
Professional Support Benefits

	2016
Written Personnel Policies	97%
Orientation	92%
Written Job Descriptions	91%
Paid Education/Training	81%
Time off for Training	76%
Planning/Preparation Time	67%
Paid Breaks	48%
Numbers of Professional Supports Provided	
0-3	7%
4	16%
5+	77%

The overall number of supports that programs give their staff is somewhat remarkable. Among the responding centers, 77% offered at least five of these seven types of support and only 7% offered three or fewer. Offering a more professional work environment may be a low-cost means for centers to reduce staff turnover.

Profile of the Early Care & Education Workforce

Program Directors. The child care center directors that participated in the survey represented a wide variety of positions in the early childhood field. Weighting those responses to represent the total director population yielded results that show titles such as director (68%), director/owner (26%), principal (2%), and other (4%) which included various other titles such as assistant or interim director, manager, and supervisor.

Table 6
Demographic Profile of ECE Directors

	2016
Median Age	42 yrs
Female	97%
People of Color*	3%
Have Children	85%
At Least One Child 0-18	54%
Single Parent w/Child 0-18	11%

*Includes Asian, African American, Bi-Racial, and American Indian/ Native American

Nearly all directors are female (97%), with very few directors being of Hispanic or Latina descent (1%). The overwhelming majority are white/Caucasian (97%). About 3% are American Indian. Less than 1% are bi-racial and less than 1% black/African American. These numbers do not reflect the population of Iowa where over 6% of children birth through five are African American[vi].

Directors span a wide range of ages with the youngest being around 24 years old and the most senior at about 73 years old. The median age, however, is 42. Given these ages, family status is not surprising, as over half of the directors (54%) have at least one child birth through 18, while 15% have no children at all. The remaining 32% of directors have children, but they are all over 18. Of the directors who have at least one child birth through 18, 11% have sole responsibility for their child(ren). See Table 6.

Teaching Staff. Far less information is available about the demographics of the center based teaching staff. However, directors were asked a few basic questions about their teachers and assistant teachers. Like their directors, teachers and assistant teachers are almost exclusively female (97%). Though a greater percentage is of Hispanic/Latina origin (4%), similar to directors, the vast majority (96%) are not. Also mirroring directors, the teaching staff in early care and education programs is primarily white/Caucasian (92%). About 3% are black/African American, 2% are biracial and 1% are Asian Americans. Less than 1% are American Indian. Though many directors indicated that some of their teaching staff (2%) did not fall into any of these racial categories, some indicated that the racial category of these teachers was Hispanic/Latina. No indication of the racial make-up of these teachers/assistant teachers was given, showing a lack of awareness by at least some directors differentiating between race and ethnicity.

Education of the Early Care and Education Workforce

The education of the early care and education workforce has been a critical factor influencing children's early learning opportunities and successes. With the recent release of the National Academy of Medicine report, "Transforming the Workforce for Children From Birth Through Age 8," it is clearer than ever before that our young children need a well-educated workforce. The report recommends that all lead teachers working with children from birth through age eight have a bachelor's degree in early childhood education as a necessary but not sufficient measure for building quality teachers[vii]. This section profiles the educational attainment of the workforce as expressed in the current Iowa workforce survey. See Table 7.

Table 7
Education of Center Directors, Teachers, and Assistant Teachers

Highest Education Completed	Directors	Teachers	Assistants
Bachelor's Degree or More in ECE/CD	23%	14%	2%
Bachelor's Degree or More in Other Field	39%	9%	4%
Associate Degree in ECE/CD	15%	9%	4%
Associate Degree in Other Field	4%	5%	2%
High School + Any College Courses	14%		
Early Childhood Specific College	na	9%	13%
Non-Early Childhood College	na	12%	20%
Child Development Associate (CDA)	na	7%	6%
High School Only	5%	33%	38%
Less than High School	0%	3%	10%
Ever Taken an ECE Course	84%	na	na
ECE Degree	39%	23%	6%
Currently Taking ECE/CD Courses	3%	na	na

Center Staff. Despite the research pointing to the benefits of teacher education, nearly one fourth (23%) of all early care and education programs do not have any hiring requirements for teacher education levels. For the remaining 77% of programs that do have a minimum education requirement, only 11% require a

similar level as the National Academy of Medicine report; a bachelor's degree in early childhood education. The largest majority of programs with a minimum education requirement for teachers only require a high school diploma or GED (53%). Only 23% of programs have education requirements for teachers at a college degree (associate degree or above).

A relationship does exist, however, between director education and teacher required education levels. More educated directors tend to have minimum education requirements for their teachers and these requirements trend upwards as director education levels increase. See Table 8. For example, 44% of directors with a high school diploma have minimum education requirements for their teachers compared to 67% of directors with an associate degree in early childhood and 82% of directors with a bachelor's degree in early childhood. For those directors with only a high school diploma that require specific education from their teachers, 100% require just a high school diploma. Directors at the associate in early childhood level require a degree in 20% of programs and at the bachelor's in early childhood level, a degree is required in 24% of programs.

Table 8
Teacher Ed Requirements by Director Education

Director Ed Level	Percent Directors With Required Teacher Education	Percent Programs with Specified Teacher Education Requirement
HS diploma	44%	100% High School diploma
Some college	78%	82% High School diploma
AA other	58%	64% High School diploma
AA ECE	67%	20% College level degree
BA other	78%	22% College level degree
BA ECE	82%	24% College level degree
MA other	85%	50% College level degree
MA ECE	100%	81% College level degree

Educational requirements for assistant teachers, as would be expected, are even lower than for teachers. Far fewer programs have any type of minimum education needed for hiring assistant teachers (56%). For those that do have minimal requirements, 82% simply require a high school diploma or GED. Just 5% of early care and education programs require some type of college degree (associate degree or above) at a minimum.

Directors were asked to report both their education levels as well as those of their teachers and assistant teachers. Not surprisingly, center directors have achieved higher levels of education than teachers or assistant teachers, though the totality of none of the groups match the minimum education requirements for teachers and administrators in public elementary, middle, and high schools. See Table 7. Currently 81% of directors, 37% of teachers, and 12% of assistant teachers have a degree in any field (i.e., AA, BA, or higher). Many of these professionals, (39% of directors, 23% of teachers, and 6% of assistants) have a degree specifically in early childhood or child development. For directors, though not all have a degree specifically in the field, 84% have taken at least one course in early childhood education with many having taken several courses. For teaching staff, though far fewer than half have a degree, an additional 21% of teachers and 33% of assistant teachers have taken at least some college coursework with 9% of teachers and 13% of assistant teachers' coursework specifically in the field. (Teacher and assistant teacher education levels should be interpreted with caution as directors were asked to report on their staff's education levels, instead of these individuals reporting their own education. While directors have knowledge of their staff's education, some information may have been omitted or misrepresented.)

Directors in NAEYC accredited programs have even higher levels of education than directors as a whole. Ninety-four (94%) of directors in NAEYC accredited programs have a degree compared to 80% in non-accredited programs. Further, these degrees for directors in accredited programs are more often in the early childhood field with 69% of directors in accredited programs having these degrees versus just 37%

in non-NAEYC accredited programs.

Education by QRS Level. Combined teacher and assistant teacher education levels in programs that do and do not voluntarily participate in the QRS program show surprising results. As part of the QRS system, programs striving to earn level 3 or above accumulate points based on a number of factors, one of which is teacher education levels. The more early childhood education that staff in a program has, the more points awarded. However, programs fail to capitalize on this. Similar levels of education (specifically in early childhood) are found in programs that do not participate in the QRS and those who do at the higher levels. See Table 9. Programs, specifically at levels 3 and 4, could likely move up were they to recruit and hire staff with more early childhood education. Similarly, programs that do not participate in QRS may qualify for higher levels than they realized with the help of their more educated staff. Additionally, those teachers and assistants who are already on the path to ECE degrees could be encouraged to complete their education to help increase QRS scores. Like teaching staff education, director education levels also impact QRS levels. With this group of employees, however, higher education levels can be found in higher QRS level programs. In levels 3-5 programs, 50% of directors have an ECE degree. In non-participating programs, only 30% of directors have a degree in the field.

Table 9
Teaching Staff ECE by QRS Participation

	ECE Degrees	Some ECE College
Non-participating	17%	10%
QRS Level 1 or 2	9%	5%
QRS Level 3-5	16%	13%

Education by CCR&R Region. Across the state, education levels of directors, teachers, and assistant teachers vary by region. See Table 10. Director education levels are a bit complex. Though Region 3 has one of the lowest percentage of directors with a bachelor's degree (48%), this region has the highest percentage of directors with an associate degree (40%) making it the region with the highest percentage of directors with some type of degree. Region 4, though slightly behind Region 3 in terms of overall degrees for directors, far outpaces this region in terms of directors with a bachelor's degree (72%). Region 1 has the lowest overall levels of education for directors with just 47% having a bachelor's degree and 30% having no degree at all. Specific to the field, Region 3 has the lowest percentage of directors with degrees specific to early childhood (28%), while Region 4 has the highest at 48%.

Table 10 Education Levels by Region

	Directors				Teachers/Teacher Assistants				
	Greater than AA degree	AA degree	Less than AA degree	*ECE Degree	Greater than AA degree	AA degree	Some College and/or CDA	High School or Below	*ECE Degree
Statewide	62%	19%	19%	39%	16%	11%	33%	41%	16%
Region 1	47%	24%	30%	32%	10%	8%	28%	54%	12%
Region 2	69%	16%	15%	36%	18%	10%	33%	39%	17%
Region 3	48%	40%	12%	28%	12%	12%	19%	58%	9%
Region 4	72%	15%	14%	48%	18%	12%	34%	36%	18%
Region 5	53%	20%	27%	36%	14%	10%	34%	42%	14%

*ECE degree includes associate, bachelor's, master's and PhD degrees in early childhood education or child development

Levels of education can be compared for teaching staff as well. See Table 10. Region 4 stands out with 30% of their teachers and assistants who have some type of college degree (18% bachelor's or above and 12% associate degree). Many (18%) of these degrees are specifically in the early childhood field. Though Region 1 has the lowest percentage of teaching staff with a degree, Region 3 has the highest

percentage of teachers and assistants with a high school diploma or less. Region 3 also has the lowest percentage of teachers and assistants with a degree specifically in the early childhood field (9%).

This same pattern holds true when examining teacher only degrees. See Table 11. Region 4 again has the highest overall level of education with nearly half (43%) of the teachers having some type of degree. Twenty-seven percent (27%) have that degree specifically in the early childhood field. Region 1 has the lowest percentage of teachers only with a degree (27%), however, Region 3 has the highest percentage of teachers only with a high school diploma or less (53%). Region 3 also has the lowest percentage of teachers only with a degree specifically in the early childhood field (13%).

Table 11 Teacher (only) Education Levels by Region

	Teachers 2016				
	Greater than AA degree	**AA degree**	**Some college and/or CDA**	**Less than AA degree**	***ECE Degree**
Statewide	23%	14%	28%	36%	23%
Region 1	16%	12%	27%	46%	19%
Region 2	27%	13%	24%	37%	25%
Region 3	16%	13%	19%	53%	13%
Region 4	27%	16%	31%	27%	27%
Region 5	21%	13%	26%	40%	21%

Education by Geographic Area. Not surprisingly, teachers and assistant teachers in metropolitan areas of Iowa have higher levels of education than those teaching staff in more rural areas. Forty-one percent (41%) of teachers in metropolitan areas have a degree of some sort while just 31% of teachers in non-metropolitan areas have a degree. Though the difference in assistant teachers with degrees between the two types of areas is much less (14% in metropolitan areas vs. 12% in non-metropolitan areas), a far greater percent of assistant teachers in metropolitan areas have some college level education (38%) than do their counterparts in more rural areas (23%). These same differences hold true for both teachers and assistant teachers in terms of ECE specific degrees with those working in metropolitan areas being more likely to hold these degrees than those in non-metropolitan areas. Like their teaching staff, directors in metropolitan areas are more likely to have degrees (83%) than in non-metropolitan areas (78%), however, directors show very little difference in ECE specific degrees between the metro and non-metro areas (39.6% vs. 39.1%).

Regional variation in educational levels of the workforce is likely affected by the wide geographic variation in the availability of educational resources and supports across the state. For many Iowa residents in rural communities, access barriers hinder the ability to obtain continuing education. At times, accessibility can be limited by distance, i.e. the excessive commute to an on-campus class. Other times, accessing higher education in rural areas can be limited by insufficient technological support or resources such as limited internet availability or only dial up access. Regardless of the reason, an applicant pool with lower levels of education results in the overall hiring of less educated staff in rural communities.

Education by Program Size. Differing education by size of programs shows most clearly between small programs and all others. For teachers and assistant teachers, little difference can be found among size of programs in terms of actual degrees. However, medium size and large programs have a greater percentage of teachers and assistant teachers who have at least some college coursework. For large programs, 52% of teachers and assistant teachers have some experience with college level coursework. Medium programs show 56% of teaching staff with this level of coursework. For small programs, however, less than half, 47%, of teachers and assistant teachers have taken any college coursework.

Directors show this same pattern when examining degrees specifically. For small programs, 78% of directors have a degree of any type; medium programs directors, 81% and large program directors, 84%.

A greater difference between small and all other programs can be seen when looking specifically at early childhood degrees. Both medium and large programs boast 44% of their directors with degrees specifically in the field. However, only 31% of directors in small programs have this type of degree.

Education by Organizational Sponsorship. Little difference can be found between teacher and assistant teacher education in non-profit and for-profit programs, though a larger percentage of teaching staff with a degree specifically in early childhood work in non-profit programs (17%) than in for-profit programs (13%).

Non-profit program directors are more likely than for-profit directors to have a degree (85% versus 74%). The same pattern is found with degrees specifically in the field as 41% of directors in non-profits hold a degree in the field and 35% of for-profit directors hold such a degree.

Earnings of the Early Care and Education Workforce

Center Staff. Workforce earnings in Iowa are low. See Table 12. The median director self-reported hourly wage of $17.07 (annualized to $35,506) in Iowa falls far short of the estimated average public school elementary teacher salary of $54,470[viii] despite the added responsibility and liability of running a business. However, the median director salary does compete with the 2015 Iowa average female, full-time, year-round salary of $36,522. (Average 2015 male, full-time, year-round salaries in Iowa were $47,202[ix].) Directors can boost their salaries substantially by working in an NAEYC accredited program. Median hourly wage in these programs for directors is $24.40. Thirteen percent (13%) of directors chose to not disclose their salary.

Table 12
Median Wage Scales in Centers by Region

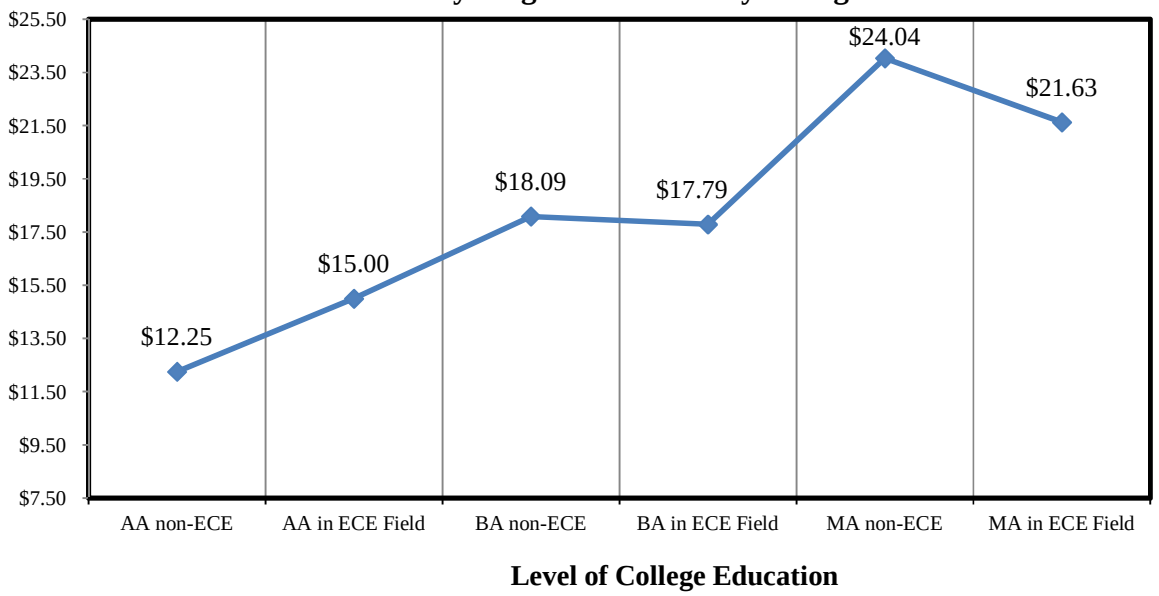
	Lowest Teacher Wage	Highest Teacher Wage	Lowest Assistant Wage	Highest Assistant Wage	Director Wage
Statewide	$9.00	$12.00	$8.00	$9.94	$17.07
Region 1	$8.75	$11.48	$8.00	$9.03	$15.63
Region 2	$9.00	$12.00	$8.00	$9.57	$15.00
Region 3	$7.50	$9.50	$7.25	$8.00	$13.12
Region 4	$9.50	$13.50	$8.50	$10.15	$20.00
Region 5	$9.50	$12.75	$8.50	$10.00	$19.04

*Region 3 data derived from a limited number of responses

Center directors reported compensation scales for center teaching staff that included low starting wages and limits on the highest wages paid to teachers and assistants. See Table 12. In 2016, the lowest paid teachers earned an hourly median of $9.00. The typical highest hourly wage for teachers was $12.00. However, the full wage range for teachers was $7.25 per hour to $30.00 per hour. The financial situation for assistant teachers was much lower with a median lowest hourly pay of $8.00 and a median highest wage of $9.94. For assistant teachers, salaries ranged from $7.25 per hour to $20.00 per hour. By and large, neither teachers nor assistant teachers can compete with public elementary school teachers who make on average an estimated $54,470[x]. Even the typical highest paid teachers (making less than $25,000) do not approach their public school counterparts' salaries though they all are charged with similar goals of educating our young children. More alarming, teacher and assistant teacher salaries fall short (and in many cases far short) of the single adult living wage in Iowa of $12.38 per hour (with public health insurance)[xi]. Teachers, at least as they gain some experience and education, do exceed this living wage in NAEYC accredited programs as highest paid teachers average $16.35 per hour. Highest paid assistant teachers, however, make just $12.00 per hour.

When director wages are examined by education levels, there is some fluctuation. Those with just a high school diploma or GED make more at $18.69 per hour than many directors with degrees. However, once directors begin a path towards higher education, the general trend is towards higher salaries with increased education. See Figure 3. At the lowest level, associate degree, those directors with a degree specifically in the early childhood field make more than those with the same degree but in another field ($15.00 per hour versus $12.25 per hour). This situation reverses itself at higher levels of education with those having degrees in field other than early childhood out earning those with degrees specifically in the field.

Figure 3:
Median Hourly Wage of Directors by College Education



Earnings by QRS Level. Further, there is a relationship between a program's participation in the QRS program and wages, though this relationship is complex. See Table 13. Primarily, those programs who do not participate in the QRS system have higher rates of teacher, assistant teacher, and director pay than those who do participate in the program. Non-participating programs have an average low hourly wage for teachers of $9.50 and a median highest teacher hourly wage of $13.00. The median lowest assistant teacher hourly wage is $8.50 in centers that are not in the QRS program and the median highest average hourly wage is $10.00. For those early care and education programs that participate in the QRS program, highest levels (3-5) result in average higher wages for both teachers and assistant teachers, but still not as high as in non-participating programs. Teachers in programs with a level 3-5 make a median low hourly wage of $8.94 compared to lower level programs where the compensation is $8.00 per hour. The median highest hourly wage for teachers in programs with a level 3-5 is $12.00 compared to teachers in lower level programs who make just $10.00 per hour. Similarly, assistant teachers in programs at levels 3 or above make an average low hourly wage of $8.00 compared to assistant teachers in programs with levels 1 or 2 who make a median low hourly wage of $7.25. Finally, the median highest hourly wage for assistant teachers in programs with levels 3-5 is $9.50 compared to just $8.50 for assistant teachers within lower level programs.

For directors, those who are not part of the QRS average $19.23 per hour. Regardless of level, participation in the system aligns with lower wages for directors, however, levels 3-5 hourly wages

($17.03) far outpace level 1-2 salaries ($12.79).

Delving into QRS participation and levels a bit further reveals a couple of additional factors impacting teacher, assistant teacher, and director wages. To begin, as reflected below, programs in metropolitan areas tend to pay employees higher wages than those in more rural areas. Metropolitan programs are also more likely to decline participation in the QRS. Programs in non-metropolitan communities tend to pay less and are more likely to be at levels 3-5 in QRS. Additionally, auspice plays a role in wages. Though non-profit programs tend to participate in QRS, those non-profits that pay more (those sponsored by faith communities) are more likely to not participate in QRS. Board sponsored non-profits, however, tend to pay less than their faith-sponsored counterparts and are more likely to be found in levels 3-5 of the QRS.

Table 13
Wages of ECE Teaching Staff

		Median Lowest Teacher Wage	Median Highest Teacher Wage	Median Lowest Asst Wage	Median Highest Asst Wage
Statewide	**All Programs**	$9.00	$12.00	$8.00	$9.94
Type of Organization	**For-Profit**	$9.00	$12.00	$8.00	$10.00
	Not-For-Profit	$9.00	$11.39	$8.00	$9.50
Location	**Metropolitan**	$9.50	$13.00	$8.50	$10.00
	Non-Metropolitan	$8.25	$10.45	$7.50	$9.00
QRS Rating	**Non-Participating**	$9.50	$13.00	$8.50	$10.00
	Under Level 3	$8.00	$10.00	$7.25	$8.50
	Level 3 or Higher	$8.94	$12.00	$8.00	$9.50

Earnings by CCR&R Region. Breaking the wage scales down by regions shows great variation in average lowest and highest paid teachers, assistant teachers, and directors. See Table 12. Teachers working in Region 3 can expect the lowest median hourly wage of $7.50 and are not likely to exceed $9.50 as their highest hourly wage. On the other end of the spectrum, in Regions 4 and 5, median hourly lowest compensation is $9.50 with wages peaking at $13.50 per hour in Region 4. Statewide, assistant teachers can expect hourly wages ranging from $7.25 to $10.15 depending on their location. Region 3 again reflects lower rates with Region 4 paying assistant teachers the highest overall wages. Likewise, directors follow the same pattern as teachers and assistant teachers with Region 3 paying the lowest at an hourly median $13.12 and Region 4 showing the highest compensation at $20.00 per hour.

Earnings by Geographic Area. Being employed in a metropolitan or non-metropolitan area can also affect wage scales for teachers, assistant teachers, and directors. See Table 13. In metropolitan areas, teachers average a low hourly wage of $9.50 and a high average hourly wage of $13.00. More rural areas reflect a median low hourly wage for teachers of $8.25 and top out at a median hourly wage of $10.45. Assistant teachers show this same pattern with an average low hourly compensation of $8.50 in metropolitan areas to an average high hourly wage of $10.00. In non-metropolitan areas these hourly wages drop to a median low of $7.50 to a high of $9.00. Likewise, directors in metropolitan areas receive higher median hourly wages than those in more rural areas at $19.12 versus $15.00.

Earnings by Program Size. In the early childhood field in Iowa, in terms of salary, size does matter. Though lowest median wages for teachers and for assistants shows no remarkable difference, highest

median wage increases as the size of the program increases. For smaller programs, the median highest hourly wage for assistants is $9.00, increasing to $9.50 in medium-sized programs and topping out at $10.15 for larger programs. Teachers follow a similar pattern with smaller programs paying an average highest hourly wage of $11.00, medium-sized programs paying $11.75 and large programs paying a median $13.50. Similarly, directors' salaries increase with program size as smaller programs pay directors on average $15.00, medium-sized programs pay $16.06, and larger programs pay a median director hourly wage of $19.91.

Earnings by Organizational Sponsorship. Despite these overall trends, there are important wage scale and wage progression differences for teaching staff depending on whether or not they work in a for-profit or non-profit program. See Table 13. Though there is no difference between starting wages, highest wages for teachers and assistants are impacted by auspice. Those in the non-profit sector fared worse financially with teachers making a median highest wage of $11.39 per hour and assistant teachers only making a median highest wage of $9.50 per hour. For-profit teachers saw higher hourly wages at the top at $12.00 than those teachers in non-profit programs. Assistant teachers followed the same pattern with those employed in for-profit centers receiving a median highest hourly wage of $10.00.

For directors, those in non-profit programs reported a median hourly wage of $16.83 and for-profit program directors averaged $16.00 per hour for director salaries.

Experience and Turnover of the Early Care and Education Workforce

Program Director Experience. Young children need an experienced, well-educated workforce with whom they can form close attachments over time. While teacher experience was beyond the scope of this study, directors reported that they had been in their centers for a median of 6.4 years and in the field for an average of 18.0 years. These tenure rates increase in programs that are NAEYC accredited with average time in centers at 10.0 years and 22.0 years in the early childhood field. See Table 14.

Table 14
Directors' Child Care Experience

	Years
Directors' Years in Current Position in Center	6.4
Directors' Years in Child Care Field	18.0

Center Staff Turnover. The current survey included data which can be used to examine two different measures of turnover: (1) for center-based teachers, the percentage of child care teachers and assistant teachers who left their centers during the previous year and (2) for individual directors, the percentage of workers who are planning to leave the child care field in the next three years. An aggregate separation rate can be constructed by summing the number of staff reported by center directors as working in their centers and dividing into the number they reported as having left employment in the previous year. See Table 15. For all teachers and assistant teachers, just over a fourth (27%) left their programs during the previous 12 months. For full-time employees only, the turnover rate drops a

Table 15
ECE Workforce Turnover

Statewide Separation Rates	2016
All Teachers and Assistant Teachers	27%
Full-time Teachers and Assistant Teachers	23%
Full-time Teachers	21%
Full-time Assistant Teachers	28%
All Teachers Only	26%
All Assistant Teachers Only	28%
Directors Leaving the Field in 3 Years	13%

bit to 23%. The separation rate for full and part time teachers only, was 26% and for full and part time assistants only, the rate was 28% in 2016.

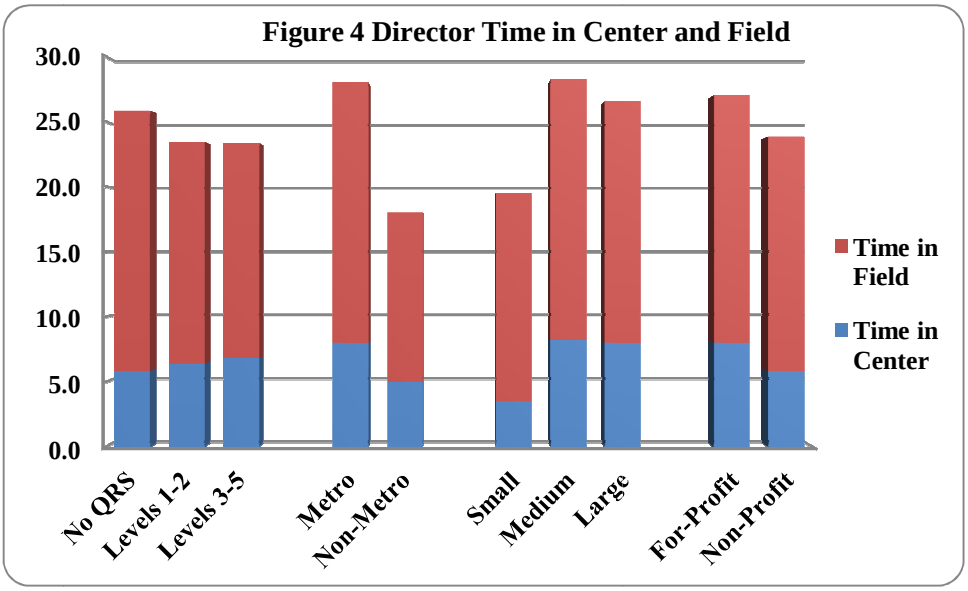
These same data can be used to calculate center specific separation rates. These rates varied substantially across centers and ranged from 0% to 138% of full-time staff. Thirteen percent (13%) of centers reported that they had no full-time staff turnover during the previous year while 3% of centers had turnover at or above 100% of current full-time staff.

Table 16
Factors Motivating ECE Directors to Stay in the Field

Motivator	Percent of Directors
Finding qualified teachers	57%
Working fewer hours	38%
Finding substitutes	37%
More pay	37%
Fewer money problems for center	30%
More administrative help	24%
More benefits	22%
Better working conditions	12%
Professional growth opportunities	7%

Directors were asked, as a measure of prospective turnover, whether or not they planned to still be in the field in three years. Most (87%) said that they either probably or definitely would remain in the field in three years. However, 13% said that they either probably or definitely would not still be in early care and education in three years. Survey respondents who indicated that they planned to leave the field within three years were then asked what would make them stay in the field. Having an easier time finding qualified teachers was checked by the largest percentage of directors (57%). See Table 16. Fewer hours per week was listed by 38% of directors followed by having an easier time finding substitutes (37%) and better pay (37%). Of note, 30% of directors who said they would likely being leaving the field in three years wrote in that there was nothing that could make them stay because they would be retiring.

Experience and Turnover by QRS Level. Interestingly, directors' total experience in the early care and education field is at its longest for directors who work in programs that do not participate in QRS (20.0 years versus 17.0 for programs at levels 1-2 and 16.5 for programs at levels 3-5). However, the opposite occurs when examining length of time in their current centers. Directors in non-participating programs have been in these centers for 5.8 years compared to directors in programs level 1-2 at 6.4 years and directors in 3-5 level programs at 6.8 years. See Figure 4.



As would be expected based on salaries, turnover rates in programs that, as a group, pay more,-those not participating in the Quality Rating System,-are lower than those programs that participate in the program and, as a group, pay less. Teaching staff turnover in non-participating programs was 23% in 2016 compared to 29% in those

programs at the 3-5 level and 32% in programs at the lower 1-2 level. Full time teachers left their non-participating in the QRS programs at a rate of 18% compared to those teachers in programs at the 3-5 level who left at a rate of nearly one in five, 19% and teachers in programs at the 1 or 2 level who left at a rate of 34%. See Table 17.

Experience and Turnover by CCR&R Region. Teacher and assistant teacher turnover varies across regions in the state. Overall, for part and full time teachers and assistant teachers, Region 3 has the highest turnover at 47%. (Caution should be used with this specific percentage as a low number of responses were used to calculate the turnover rates for Region 3.) Region 5 does a better job of retaining their staff with a turnover rate of just one in five (20%). However, when looking at just full time staff, Region 1 has the highest turnover rate at 29% while Region 5 again has the lowest rate of 19%.

Directors have a statewide average tenure of 6.4 years in their current position in their current center, but this varies across the state. The median years range from 4.5 years in Region 1 to 8.5 years in Region 4. Directors, as would be expected, tend to have relatively lengthy careers in the ECE field, just as they did in their own centers. Typically a child care center director in Iowa has been in the field for 18.0 years. Directors in Region 1 have had the shortest careers (13.0 years), while those in Regions 4 and 5 have been in the field for the longest period of time (20.0 years).

Experience and Turnover by Geographic Area. Across the state, directors have been in their present jobs and in the field for varying amounts of time. Directors in more rural areas have more instability with just 5.0 years in their present position in their centers and 13.0 years in the field. In metropolitan areas, however, directors stay longer in their positions and in the field at 8.0 years and 20.0 years respectively. See Figure 4.

Teaching staff in rural programs also show more instability. In metropolitan areas, 23% of teachers and assistant teachers left their programs in 2016 compared to 34% in more rural areas. When looking at just full time teachers, 18% left their metropolitan programs with 27% leaving in non-metropolitan areas. See Table 17.

Experience and Turnover by Program Size. Program size has a particular impact on director experience in smaller programs. In these programs, directors have been in their centers for 3.5 years and in the field as a whole for 16.0 years. Medium sized programs have the directors with the longest tenure at 8.2 years in their current programs and 20.0 years in the field. Falling in between the two sizes in terms of experience, though leaning far more towards medium sized programs, directors in larger programs have been in their current centers for 8.0 years and in the field as a whole for 18.5 years. See Figure 4.

Table 17
Turnover Rates of Teaching Staff

		Teachers and Assistants	Full Time Teachers Only
Statewide	**All Programs**	27%	21%
Type of Organization	**For-Profit**	26%	22%
	Non-Profit	28%	20%
Location	**Metropolitan**	23%	18%
	Non-Metro	34%	27%
QRS Rating	**No Stars**	23%	18%
	Under Level 3	32%	34%
	Level 3 or Higher	29%	19%

As a whole, programs seem to increase in employment stability as program size increases. Full time teacher turnover is at its lowest in larger programs at just 15%. This rate increases in medium size programs to 20% and peaks in smaller programs at 33%. When part time staff and teacher assistants are added to the mix, this same trend continues with larger programs seeing just under one in four staff leaving (24%) to small programs with 1 in 3 teachers and assistants leaving (33%).

Experience and Turnover by Organizational Sponsorship. Experience varies by organizational sponsorship. Directors of for-profit programs have been in their centers for 8.0 years (6.7 years in single center sites and 11.7 years in multi-site centers) and in the field for 19.0 years (20.0 years for single center sites and 17.1 years for multi-site centers). Non-profits directors average 5.8 years in their programs (5.0 years for programs sponsored by faith communities and 7.1 years for programs with a community board) and 18.0 years in the early care and education field (18.5 years for programs sponsored by faith communities and 18.0 years for programs with a community board). See Figure 4.

Overall, turnover in non-profit programs occurs at a higher rate than in for-profit programs. For all teachers and assistant teachers in non-profit programs, the turnover rate is 28% rate compared to 26% in for-profit programs. For full-time teachers, however, non-profit programs have a lower turnover rate of 20% compared to 22% in for-profit programs. See Table 17.

Conclusion and Recommendations

Iowa has put forth great effort in improving the quality of child care in the state. As the workforce study shows, great variability exists across the state, however, in programs' commitment to quality and the teachers that provide care and education to young children allowing for further opportunities to improve quality overall in the state and in targeted areas. Below are some recommendations to help in ensuring that, as a state, Iowa provides the best possible care and education to all young children as they begin their journey to becoming productive members of the state's economy and leaders in Iowa's communities.

1. Disseminate the findings of this study widely to the early care and education community. Presentations should encourage center directors to compare their policies and practices with Iowa providers to help them develop strategies to improve education, salaries, benefits, working conditions and retention.

2. Increase funding for and participation in T.E.A.C.H. Early Childhood® IOWA. As national research has shown, increased teacher education increases quality care for young children. T.E.A.C.H. Early Childhood® IOWA provides a low-cost, effective method to increase teacher education, decrease turnover and increase compensation. Further, by increasing teacher and director education, directors gain the knowledge and skills to effectively lead their programs and the gap between education levels of teachers and that of directors decreases, creating a real career pathway for teachers as directors leave or retire.

3. Increase funding for and participation in Child Care WAGE$® IOWA. The provision of salary supplements increases teacher salaries and encourages qualified teachers to stay in the field. In addition to the tremendous benefit that consistent early educators have to the quality of care for young children, directors listed "finding qualified candidates" as the number one way to prevent directors from leaving the field. If more teachers remain in their programs, directors will spend less of their time and energy having to find qualified teachers.

4. Require that all directors have at least an associate's degree (preferably in a related field) as part of the state's licensing requirements. Given that the majority of directors already have at least an associate's degree (81%), requiring that all directors obtain this level of education as part of the state's licensing requirement should be attainable. Providing the means to increase this education through incentives and educational funding could also be incorporated to help teachers increase their education as the first step towards degree attainment on their career pathway.

5. Encourage NAEYC accredited programs to participate in the QRS. Nearly half of all NAEYC accredited programs do not participate in the QRS despite already meeting the more strenuous qualifications to become nationally accredited. Participation in the QRS would provide a small financial bonus to these programs and would indicate their leadership in and support of Iowa's attempts to measure and improve quality for all young children. Given that these accredited programs are already meeting high standards, one way to foster this relationship would be for the state to award these programs an automatic QRS level.

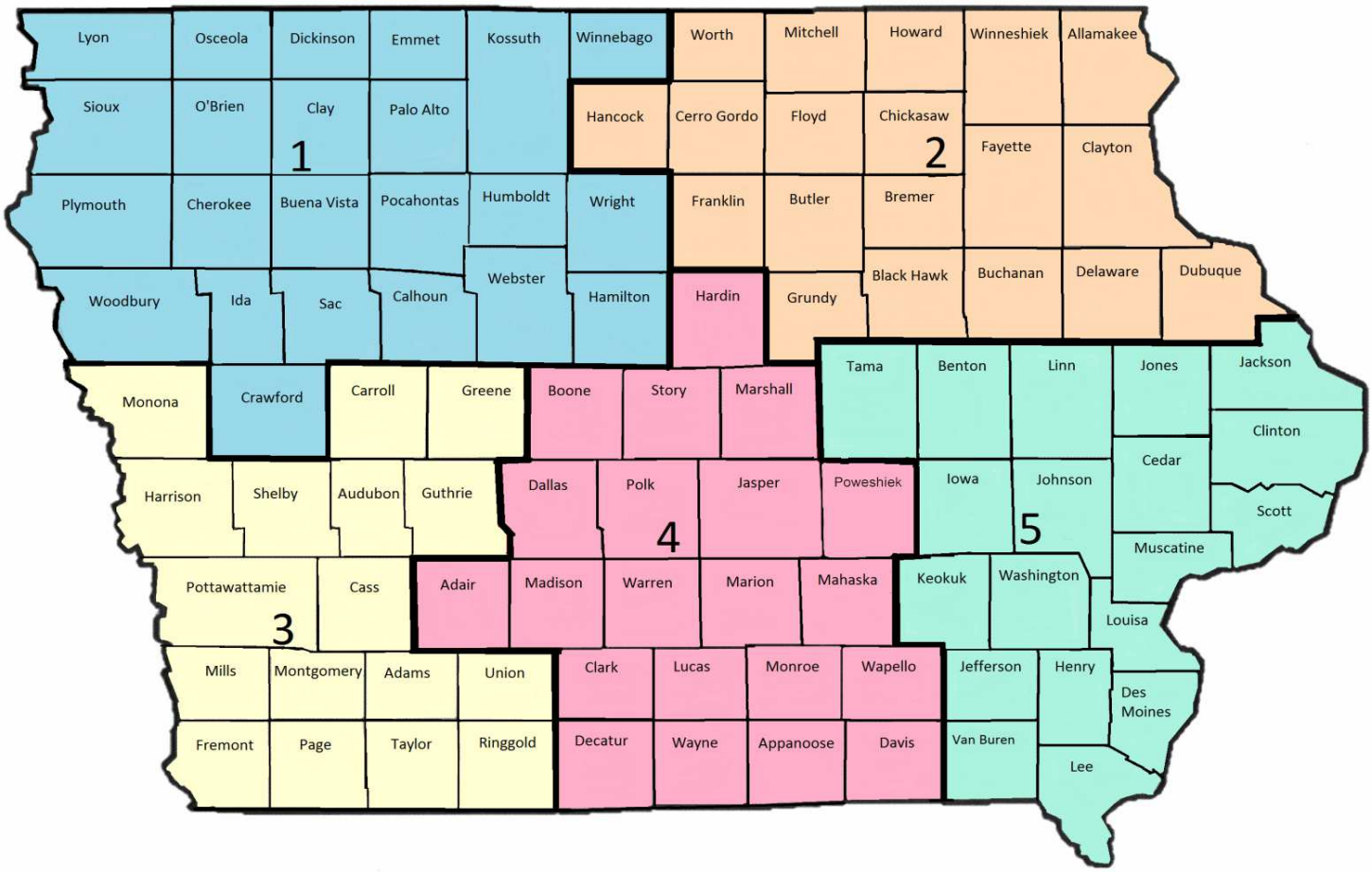
6. Create additional incentives, and increase funding for these incentives for QRS participation. While a small financial bonus helps, the currently funded fiscal rewards hardly compare to the additional costs required to provide high quality early care and education. Providing other incentives, such as qualification for grants or ability to participate in other publicly sponsored programs, could make the QRS a highly sought after endeavor for all programs in Iowa.

7. Increase the Child Care Assistance reimbursement rate allowing programs to increase staff wages. Given that most teachers and assistant teachers make below the living wage in Iowa, an increase in revenue by child care programs could begin to provide a mechanism to increase wages so that those charged with teaching our young children could focus on their important work, decrease turnover, and ensure greater stability in classrooms.

8. Commit funding to conduct a follow up study to this 2016 workforce study. The 2016 Early Care and Education Workforce Study provides some information about the child care workforce and working conditions within center-based programs. Follow-up studies, however, can delve more deeply into some of the more complex and/or perplexing results. A follow-up study could also focus more heavily on teachers and teacher assistants to gain a better understanding of their demographics, needs, and issues from their perspective. A number of children are educated and cared for in family child care homes. A study of this workforce could provide a fuller picture of early care and education in Iowa. Finally, a follow-up study could be used to show changes over time in the education, experience, and compensation of the early care and education workforce.

Appendix A

Iowa Child Care Resource & Referral Regions



Appendix B

Sampling Frame and Sample Selection Strategy

The selection of the sample was done in several stages. To begin, an overall targeted number of about 250 useable cases was planned for given previous experience with other surveys and the desired survey precision. Because survey implementation procedures assumes as a minimum a 70% response rate, a targeted number of selections was calculated (S=250/0.70 = 358). The design to be used required identifying four characteristics of ECE centers that were likely to be available in a sampling frame and which had been found to be associated with differential response patterns in previously conducted ECE workforce surveys (e.g., NC surveys). These factors are: (1) quality rating of center; (2) geographic location; (3) type of organizational sponsorship; and (4) size of program.

A list of all ECE centers in the state of Iowa current for the year 2016 was obtained from the Iowa Department of Human Services. This list was screened to eliminate centers that would be ineligible for survey (.e.g., those that did not minimum criteria in terms of hours and days of service; those that served school age only, etc.) The remaining centers were defined as *the entire population* of centers in Iowa (P=748). These centers were then arrayed in alphabetical order by name and assigned a preliminary ID number to be used throughout the rest of the study. A sampling fraction (F) was calculated which consisted of F=S/P=358= 0.4786; in effect this means that about 48% percent of all ECE centers in Iowa would be targeted for surveys with the expectation that 70% of those centers would yield valid survey responses for approximately 250 cases. Each case was then assigned a random number using the RAND function in Excel. Using the more stringent criteria of self-weighting stratified sampling, the sample was designed in such a way as to randomly sample 48% of the cases in <u>each</u> cell with the expectation that 70% of the cases in <u>each</u> cell would respond to the survey.

The sampling frame was then configured using information about the four variables to construct strata for drawing the actual sample. The quality rating of the center was measured using the QRS data available on the sampling frame. Information about this process is displayed in the first two columns of Table A1. QRS participation is effectively voluntary in Iowa, and almost half of the centers (N=334 or 44.7%) who do not participate in the system were give a score of zero. Although there are 5 QRS levels, given the distribution of cases, centers with lower ratings (1 or 2) were collapsed into a single category (N=119 or 15.9%). The remaining cases which had scores of 3, 4, or 5 were also collapsed (N=295 or 39.4%) (See Table A1a). Geographic location was indexed using the US Census definition of metropolitan versus non-metropolitan counties. Most centers (N=471 or 63%) were located in Metropolitan counties with the remaining centers in non-metropolitan counties (N=277 or 37%). See Table A1b. Next, centers were categorized according to their organizational form. The registration and license data specified that centers were either not-for-profit (N=320 or 43%) or for profit. The few centers with unidentified organizational forms were combined with the for-profits yielding 428 or 57% in that category. See Table A1c. Finally, the size categories were based on the number of children reportedly enrolled in the center, and where that number was unavailable; a proxy based on the number of children allowed under the license was used. Three size categories were employed. See Table A1d. About one-third of the centers were in the small category (under 50 children) about one quarter in the largest category (100 or more children) and the remaining 40% were in the medium sized category (50-99 children).

Four other characteristics of the centers were also examined. These variables were not used in constructing the strata for sampling, but nonetheless might be relevant to ECE workforce and policy issues. These were: (1) Participation in Child Care Assistance program; (2) accreditation by the leading national organization representing early childhood professionals (NAEYC); (3) current or previous participation in the T.E.A.C.H. Early Childhood scholarship program; and (4) current or previous participation in the WAGE$ program. Each of these variables was represented by a (1,0) dichotomous variable. See Table A2a through Table A2d. The first two columns of these tables display the distribution

of these four variables in numeric and percentage terms. . As can be seen, most centers are CCA participants: (Table A2a: N=657 or 88%). See Table A2a. Relatively few centers have NAEYC accreditation (N=46 or 6%), See Table 2b. Almost one third have participated in the IOWA T.E.A.C.H. Early Childhood scholarship program (N=238 or 32%) See Table A2c. On the other hand, only 53 or 7% have participated in the WAGE$ salary supplement program in Iowa. See Table A2d.

Constructing the Initial Sampling Strata

Cross-tabulating the categorizations of the four primary stratification variables (Quality rating, Community, Organization Type, and Size) yielded 36 cells (3 x 2 x 2 x3). The entire sampling frame was sorted according to this 36 cell scheme and centers with the lowest random number were selected for the sample. Although a target of 48% of each cell was attempted, because some cells were very small this could not always be achieved. The number of cases in each cell ranged from 1 to 23.

How effective was the attempt at randomization of sample selections

In order to ascertain whether or not the randomization was effective, the selected cases were compared to the population, for each of the four variables used in the stratification. The actual distributions of selected cases are displayed in the second two columns of Table A1. The final two columns in Table A1 provide the *absolute percentage difference* between the population and the sampled cases and the *relative percentage difference.* The *absolute percentage difference* is simply the percentage of sampled cases with a given characteristic minus the percentage of cases in the population with that same characteristic. The relative percentage difference is the absolute difference divided by the percentage of cases in the population with that characteristic. As can be seen from the entries in the last two columns, the *absolute* percentage difference for each of the four variables is invariably small--less than 0.2 of one percent. The *relative* percentage differences are also quite small. This fact confirms that the attempt to randomize the selection of cases yielded quite effective results. We can conclude that the sample selected quite consistently reflects the population distribution of the four characteristics incorporated into the stratification design population.

The situation for the four variables which were <u>not</u> used in stratification present a less uniformly representative situation. The last two columns in Tables A2a-A2d display the results. These suggest that there is some divergence in representation between the selections made and the entire population. The sample estimates the percentage of centers participating in CCA program at 88% while slightly underestimating the number of centers which had or currently are participated in the WAGE$ program (6.1% vs. 7.1%). However, the sample somewhat over represents centers with NAEYC accreditation 8% vs. 6% and those that have participated in the T.E.A.C.H scholarship program (34% vs. 32%). These discrepancies which apparently have occurred by chance and may affect estimates of some other variables, do not by themselves suggest that further sampling weight adjustments would be necessary.

Table A1. Effectiveness of Randomization of Selection: Impact on Estimates of Stratification Variables						
Table A1a	**Total Population**		**Selections**		**Percent Difference**	
Quality Rating	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
0: No QRS rating	334	44.7	160	44.7	0.0%	0.1%
1: QRS rating of 1 or 2	119	15.9	57	15.9	0.0%	0.1%
2: QRS rating of 3, 4, or 5	295	39.4	141	39.4	-0.1%	-0.1%
Total	748	100.0	358	100.0	0.0%	0.0%
Table A1b	**Total Population**		**Selections**		**Percent Difference**	
Community Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
Non-Metro	277	37.0	132	36.9	-0.2%	-0.4%
Metro	471	63.0	226	63.1	0.2%	0.3%
Total	748	100.0	358	100.0	0.0%	0.0%
Table A1c	**Total Population**		**Selections**		**Percent Difference**	
Organization Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
For Profit or DK	320	42.8	153	42.7	0.0%	-0.1%
Not for Profit	428	57.2	205	57.3	0.0%	0.1%
Total	748	100.0	358	100.0	0.0%	0.0%
Table A1d	**Total Population**		**Selections**		**Percent Difference**	
Size Category	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
1: Small (0-49)	255	34.1	122	34.1	0.0%	0.0%
2: Medium (50-99)	292	39.0	140	39.1	0.1%	0.2%
3: Large (100+)	201	26.9	96	26.8	-0.1%	-0.2%
Total	748	100.0	358	100.0	0.0%	0.0%

Table A2. Effectiveness of Randomization of Selection: Impact on Estimates of Other Structural Characteristics						
Table A2a	**Total Population**		**Selections**		**Percent Difference**	
CCA Provider	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**91**	**12.2**	**46**	**12.8**	**0.7%**	**5.6%**
YES	**657**	**87.8**	**312**	**87.2**	**-0.7%**	**-0.8%**
Total	**748**	**100.0**	**358**	**100.0**	**0.0%**	**0.0%**
Table A2b	**Total Population**		**Selections**		**Percent Difference**	
NAEYC Accreditation	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**702**	**93.9**	**329**	**91.9**	**-2.0%**	**-2.1%**
YES	**46**	**6.1**	**29**	**8.1**	**2.0%**	**31.7%**
Total	**748**	**100.0**	**358**	**100.0**	**0.0%**	**0.0%**
Table A2c	**Total Population**		**Selections**		**Percent Difference**	
Ever participated in T.E.A.C.H. program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**510**	**68.2**	**235**	**65.6**	**-2.5%**	**-3.7%**
YES	**238**	**31.8**	**123**	**34.4**	**2.5%**	**8.0%**
Total	**748**	**100.0**	**358**	**100.0**	**0.0%**	**0.0%**
Table A2d	**Total Population**		**Selections**		**Percent Difference**	
Ever participated in WAGE$ program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**695**	**92.9**	**336**	**93.9**	**0.9%**	**1.0%**
YES	**53**	**7.1**	**22**	**6.1**	**-0.9%**	**-13.3%**
Total	**748**	**100.0**	**358**	**100.0**	**0.0%**	**0.0%**

Appendix C
Response Weights

How did response patterns affect representativeness of the sample

Although there was no sampling bias associated with the *selection* of sample due to QRS rating, community location, or type of organization, there was *response* bias associated with each of these three important characteristics. In particular, centers with the following characteristics were *more likely* to respond to the survey (1) those with higher *quality* ratings (as opposed to those with lower QRS scores); (2) those located in *non-metropolitan* counties (as opposed to those found in metropolitan counties; (3) those centers which have a *non-profit status* (as opposed to those whose status is "for-profit" or "unknown"). There was no response bias associated with the *size* of the center. The discussion below provides more detail.

The pattern and extent of response bias associated with each of the stratification variables can be seen in Table A3a through A3d. Although about 45% of cases in the population had no QRS ratings (i.e., QRS =0), only 38% of responding cases had this QRS level. At the other end of the quality rating range, while 39% of the population was in the highest QRS category, over 45% of survey respondents were. See Table A3a. Similarly, although 37% of all Iowa's centers were located in non-metro counties, 41% of respondents were located in such communities. See Table A3b. Similarly although 43% of all Iowa centers were for-profits, only 36% of responding centers had this form of organizational sponsorship. See Table A3c. In marked contrast, the distribution of respondents by size category was remarkably similar to the population; the size distribution of the population and the responding centers differs by less than a percentage point See Table A3d.

Clearly, the sample of survey respondents over-represents centers with certain characteristics: higher QRS levels, community location in a non-metro county and being a non-profit center. This means that centers with these characteristics need to be "weighted-down" relative to centers with the converse characteristics to ensure generating estimates that are truly reflective of the population of Iowa Centers. However, because there is no response bias associated with centers' size, no weighting adjustments reflecting this variable seem necessary. This is fortunate as it allows simplification of the post-stratification application of weights by omitting size categories from the stratification process. This has the effect of reducing the number of cells with distinct weights from 36 to 12. In effect the 12 cells are constituted by cross-tabulating QRS categories (3 levels) with community type categories (2 levels) and organizational type (2 levels). Again this helps the estimation process, because the actual cases of respondents will be distributed across fewer cells thus ensuring greater stability in the estimates within each cell as well as the overall statewide estimates of the entire population of Iowa Centers.

Calculation of Post-stratification weights

The weights were calculated for each cell using the formula

$$W_i = P_i / R_i = (P_i / S_i) * (S_i / R_i)$$

Where:

W = the weight in a cell;
P = the number of centers in the population in that cell;
R= the number of responding centers in that cell;
S = the number of selections in in that cell; and
i= the particular cell, ranging from 1 to 12

The sum of the weighted respondent cases across all 12 cells is equal to the entire population. The number of respondent cases in a cell ranges from 4 to 47 while the number of centers in the population ranges

from 19 to 109. Because the sample is a relatively large percentage of the population – about one-third— the weights are relatively small across the different cells ranging from 2.21 to 4.75, and relatively similar.

How effective are the weights in generating accurate estimates

The impact of applying survey weights on estimates of sample distribution across the 12 cells constituting the primary sampling strata can be seen by examining Table 5. As expected, the cell numbers and percentage distribution of the 748 cases in the population and the responses which were weighted up to reflect that population are identical. Any other result would suggest computational error. This is in contrast to the distribution of the 251 unweighted responses. The impact of these differences can be seen by examining the relative differences in certain strata which one would expect to be most significantly under represented or over represented based on what we know about their characteristics as described earlier. We would expect to see a significant under-representation in responses from for-profit centers with lowest QRS rating that are located in metro areas. In fact, this is the case for a substantial number of centers in Iowa (N=142) constituting almost one out of every five centers in the state (19.0%). However, only about 15.1% of the survey respondents were in this category. If we examined the data without weights, we would underestimate the contribution of this slice of the sample by about 20%, so we have in effect weighted these cases more heavily to compensate for this under-representation. Conversely, we would expect substantial over-representation of respondents from non-profit centers in non-metro areas with higher QRS ratings. In fact 109 of all of the 748 centers in Iowa fit this profile, or about 14.6%. However, among the 251 survey respondents, 47 are of this type, which constitute 18.7% of the respondents. This means that these kinds of centers are over-represented in the sample by some 28%. Consequently our weighting procedure adjusts their contribution by "down-weighting" them relative to other types of centers in the population.

Table A6 Reports the distribution of the 251 weighted cases compared to the population and, as was the case in Table A5, the results of the weighting are identical to the actual population distribution in the case of the first three variables of QRS level (Table A6a), location (Table A6b) and type of organization (Table A6c) The originally designed weighting scheme also stratified the sample by size. There was no differential sampling bias by size, nor was there any response bias associated with size. Hence, size was not incorporated into the weighting scheme. However, because size might be associated with other variables like quality rating, location, or type of center, we examined the impact of weighting on estimates of the size distribution. The results are displayed in Table A6d. Both the weighted and unweighted estimates are remarkably similar to each other and to the known population distribution. Slightly more than one-third of the centers are "small" about 40 percent are "medium sized" and about one quarter are "large." The fact that the estimates generated by the weighted and unweighted estimates using the response data are so similar to each other and to the population measures indicates that the application of the proposed weights is not likely to distort our estimates. This also gives us more confidence that any size related characteristics in the survey data (e.g., staffing levels, enrollments) will be reflected in a relatively accurate manner and with some precision in the estimates generated from examination of the survey data.

Finally, we examined some other characteristics of the population including CCA participation, NAEYC accreditation and participation in two workforce development programs: the T.E.A.C.H. Early Childhood Project, and the Child Care WAGE$ Project. The results are summarized in Tables A7. It can be seen that the current weighting scheme works quite well for estimating CCA participation and involvement with the WAGE$ program. However, it appears to slightly over-estimate the proportion of centers with NAEYC accreditation and those involved with the T.E.A.C.H. Early Childhood Project in absolute terms, and somewhat more substantially in relative terms. This statistical effect should not affect overall examination of the population of Iowa Centers, but might be a cause of some concern if these data were used to focus specifically on either or both of these variables. Should that be the case, further re-calibration of the weighting scheme would be recommended

TableA3. Effects of Response Bias. Impact on Estimates of Stratification Variables						
Table A3a	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Quality Rating	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
0: No QRS rating	**334**	**44.7**	**96**	**38.2**	**-6.4%**	**-14.3%**
1: QRS rating of 1 or 2	**119**	**15.9**	**41**	**16.3**	**0.4%**	**2.7%**
2: QRS rating of 3, 4, or 5	**295**	**39.4**	**114**	**45.4**	**6.0%**	**15.2%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A3b	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Community Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
Non-Metro	**277**	**37.0**	**102**	**40.6**	**3.6%**	**9.7%**
Metro	**471**	**63.0**	**149**	**59.4**	**-3.6%**	**-5.7%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A3c	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Organization Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
For Profit or DK	**320**	**42.8**	**91**	**36.3**	**-6.5%**	**-15.3%**
Not for Profit	**428**	**57.2**	**160**	**63.7**	**6.5%**	**11.4%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A3d	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Size Category	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
1: Small (0-49)	**255**	**34.1**	**86**	**34.3**	**0.2%**	**0.5%**
2: Medium (50-99)	**292**	**39.0**	**98**	**39.0**	**0.0%**	**0.0%**
3: Large (100+)	**201**	**26.9**	**67**	**26.7**	**-0.2%**	**-0.7%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**

Table A4. Effects of Response Bias. Impact on Estimates of Other Structural Characteristics						
Table A4a	**Total Population**		**Unweighted Responses**		**Percent Difference**	
CCA Provider	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**91**	**12.2**	**31**	**12.4**	**0.2%**	**1.5%**
YES	**657**	**87.8**	**220**	**87.6**	**-0.2%**	**-0.2%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A4b	**Total Population**		**Unweighted Responses**		**Percent Difference**	
NAEYC Accreditation	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**702**	**93.9**	**230**	**91.6**	**-2.2%**	**-2.4%**
YES	**46**	**6.1**	**21**	**8.4**	**2.2%**	**36.0%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A4c	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Ever participated in T.E.A.C.H. program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**510**	**68.2**	**158**	**62.9**	**-5.2%**	**-7.7%**
YES	**238**	**31.8**	**93**	**37.1**	**5.2%**	**16.4%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**
Table A4d	**Total Population**		**Unweighted Responses**		**Percent Difference**	
Ever participated in WAGE$ program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**695**	**92.9**	**233**	**92.8**	**-0.1%**	**-0.1%**
YES	**53**	**7.1**	**18**	**7.2**	**0.1%**	**1.2%**
Total	**748**	**100.0**	**251**	**100.0**	**0.0%**	**0.0%**

Table A5

Impact of applying survey weights on estimates of sample distribution across primary sampling strata

Strata Definition			Stratum ID	Entire Population		Up-weighted Responses		Unweighted Responses		Difference with weighting	
QRS level	Community Location	Organization Type		N	Percent	N	Percent	N	Percent	Absolute Difference	Relative Difference
none	NonMetro	for-profit	000	36	4.8	36	4.8	9	3.6	-1.2%	-25%
none	NonMetro	non-profit	001	53	7.1	53	7.1	17	6.8	-0.3%	-4%
none	Metro	for-profit	010	142	19.0	142	19.0	38	15.1	-3.8%	-20%
none	Metro	non-profit	011	103	13.8	103	13.8	32	12.7	-1.0%	-7%
1 or 2	NonMetro	for-profit	100	19	2.5	19	2.5	4	1.6	-0.9%	-37%
1 or 2	NonMetro	non-profit	101	42	5.6	42	5.6	19	7.6	2.0%	35%
1 or 2	Metro	for-profit	110	28	3.7	28	3.7	8	3.2	-0.6%	-15%
1 or 2	Metro	non-profit	111	30	4.0	30	4.0	10	4.0	0.0%	-1%
1 or 2	NonMetro	for-profit	200	18	2.4	18	2.4	6	2.4	0.0%	-1%
3 to 5	NonMetro	non-profit	201	109	14.6	109	14.6	47	18.7	4.2%	28%
3 to 5	Metro	for-profit	210	77	10.3	77	10.3	26	10.4	0.1%	1%
3 to 5	Metro	non-profit	211	91	12.2	91	12.2	35	13.9	1.8%	15%
All Strata				748	100.0	748	100.0	251	100.0	0.0%	0%

Table A6. Effectiveness of Use of Survey Weights Impact on Estimates of Stratification Variables						
Table A6a	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Quality Rating	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
0: No QRS rating	**334**	**44.7**	**334**	**44.7**	**0.0%**	**0.0%**
1: QRS rating of 1 or 2	**119**	**15.9**	**119**	**15.9**	**0.0%**	**0.0%**
2: QRS rating of 3, 4, or 5	**295**	**39.4**	**295**	**39.4**	**0.0%**	**0.0%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A6b	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Community Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
Non-Metro	**277**	**37.0**	**277**	**37.0**	**0.0%**	**0.0%**
Metro	**471**	**63.0**	**471**	**63.0**	**0.0%**	**0.0%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A6c	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Organization Type	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
For Profit or DK	**320**	**42.8**	**320**	**42.8**	**0.0%**	**0.0%**
Not for Profit	**428**	**57.2**	**428**	**57.2**	**0.0%**	**0.0%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A6d	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Size Category	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
1: Small (0-49)	**255**	**34.1**	**263**	**35.1**	**1.0%**	**3.0%**
2: Medium (50-99)	**292**	**39.0**	**291**	**38.9**	**-0.1%**	**-0.3%**
3: Large (100+)	**201**	**26.9**	**194**	**25.9**	**-0.9%**	**-3.5%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**

Table A7 Effectiveness of Use of Survey Weights Impact on Estimates of Other Structural Characteristics						
	Total Population		Responses Upweighted		Percent Difference	
Participation in Child Care Assistance Program	657	87.8	649	86.7	-1.1%	-1.3%
NAEYC Accreditation	46	6.1	64	8.5	2.4%	39.0%
Ever Participated in T.E.A.C.H. Program	238	31.8	264	35.3	3.5%	11.0%
Ever Participated in WAGE$ Program	53	7.1	52	6.9	-0.2%	-2.2%

Table A7. Effectiveness of Use of Survey Weights Impact on Estimates of Other Structural Characteristics						
Table A7a	**Total Population**		**Responses Upweighted**		**Percent Difference**	
CCA Provider	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**91**	**12.2**	**99**	**13.3**	**1.1%**	**9.2%**
YES	**657**	**87.8**	**649**	**86.7**	**-1.1%**	**-1.3%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A7b	**Total Population**		**Responses Upweighted**		**Percent Difference**	
NAEYC Accreditation	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**702**	**93.9**	**684**	**91.5**	**-2.4%**	**-2.6%**
YES	**46**	**6.1**	**64**	**8.5**	**2.4%**	**39.0%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A7c	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Ever participated in T.E.A.C.H. program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**510**	**68.2**	**484**	**64.7**	**-3.5%**	**-5.1%**
YES	**238**	**31.8**	**264**	**35.3**	**3.5%**	**11.0%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**
Table A7d	**Total Population**		**Responses Upweighted**		**Percent Difference**	
Ever participated in WAGE$ program	**N**	**Pct**	**N**	**Pct**	**Abs**	**Rel**
NO	**695**	**92.9**	**696**	**93.1**	**0.2%**	**0.2%**
YES	**53**	**7.1**	**52**	**6.9**	**-0.2%**	**-2.2%**
Total	**748**	**100.0**	**748**	**100.0**	**0.0%**	**0.0%**

Appendix D

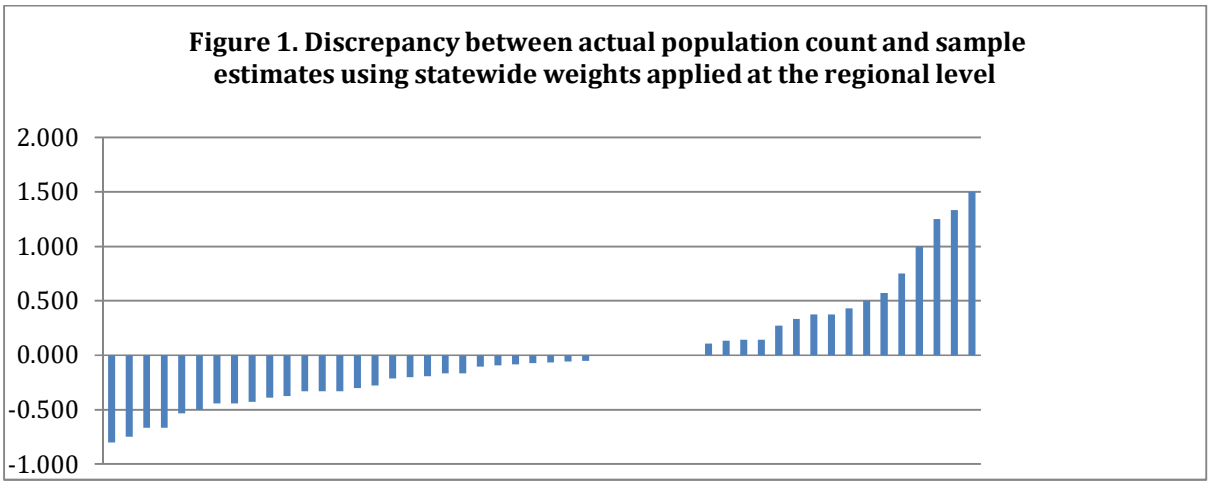
Construction and Testing Regionally Specific Sampling Weights

It was decided upon completion of the statewide study, that regional estimates for each of the five Iowa regions would be useful. However, the original study design involved plans only for estimates to be made at the statewide level, and sampling weights were constructed to be applied and interpreted only at this more global level. Because of variation in the distribution of population and sample across the five Iowa regions, as well as variation in response rate across those regions, it is unlikely that statewide sampling weights could be meaningfully applied to create estimates at the lower geographical level of the five multi-county regions of the state. Therefore it was appropriate to calculate weights which could be applied at the regional level.

Despite these limitations, however, the starting point for constructing appropriate regional estimates begins with the use of statewide weights. When statewide weights are applied to the sample, estimates of the count of centers can be generated for each region and each stratum and, hopefully, these should be close to the actual counts observed in the population. Thus for the five regions of Iowa and for the 12 strata used in the state wide sample, we should be able to generate 60 distinct estimates and compare or "test" them against the actual distribution of cases from the license file in each of these 60 possible cells. However, this situation is complicated somewhat by the fact that in three of the cells there were no cases in the population; and further, in seven additional cells there were no cases in the sample. Thus, the necessary adjustment of the weights for the cases in each region can only be done for 50 of the 60 potential cells.

We can tell how good estimates are for each region by calculating the ratio of the count of centers generated by these statewide weights to the actual counts in the 50 relevant cells that constituted the statewide sampling strata cross tabulated with the five Iowa regions were quite variable. If the estimates had been uniform the ratio in each cell would have been 1.00. However, these ratios diverged quite a bit from that ideal. The results of this distribution of divergences, i.e., the observed value minus 1,00 can be seen in Figure 1. This distribution suggests that reweighting would improve estimates substantially, and that not reweighting might lead to relatively poor estimates.

Figure 1. Discrepancy between actual population count and sample estimates using statewide weights applied at the regional level



The "missing cell" situation, described above, led to about a 5% underestimate of the statewide population when statewide estimates were applied at the regional level. Hence an inflation factor of about 1.05 was uniformly applied to all cells. The process was performed in two steps. The first

regional adjuster was used to correct for the maldistribution by region that occurs from applying the statewide weights across each of the five regions to reflect the differential distribution of cases in those regions according to the parameters incorporated into the construction of the statewide strata. A regional smoothing adjuster (about 1.05) was applied uniformly across the entire sample corrected for the underestimate in total population count that arises when statewide weights are applied to each region.

Next, regionally specific weights were calculated for each of the 53 cells where a value could be calculated from the existing data (including the three cells where there were no cases in the population). These weighting factors were then multiplied by the statewide weights in each of the applicable cells and the resulting combined weight corrected for the discrepancies shown above in the graph. The weights were tested against the overall distributions for each of the four structural variables one at a time. These included QRS rating, community type, organizational sponsorship, and size. For the first three variables, the divergence between the reweighted estimate and the actual population was minimal. This is not surprising as these three variables were built into the sample weighting design. However, when the regionally specific reweighted estimates were examined by different size categories, substantial divergences remained, with medium size centers over represented and larger and smaller centers underrepresented.

The sample was then further adjusted for the size distortions by using a method similar to the one used in previous adjustments. Population counts of centers were arrayed by region and size categories (i.e., 15 cells = 5 X 3). These values then were compared to the counts for those same cells that were generated using the regionally adjusted weights applied to the sample survey data cases. These ratios were then calculated. They were then compared again to the distributions by the remaining three structural variables, i.e., QRS rating, community type, and organization sponsorship. This process revealed that the discrepancies in the weighted sample versus population estimates were substantially reduced, but not eliminated. At this point, further efforts to rescale the weights were attempted, but resulted in minimal reductions in discrepancies. The final regional weights were applied to the SPSS file at this time.

Appendix E

Definitions of Terms

Child Care Centers: Typically care for dozens of children, are required to follow a list of requirements, receive at least one unannounced monitoring visit annually and must renew their license every two years.[xii] Centers may be found in community buildings, churches or synagogues, buildings built specifically for child care or in public buildings.

Child Care WAGE$® IOWA: This program provides salary supplements that are linked to the education level of participants and are paid every six months as long as participants remain in the same child care program. (http://www.iowaaeyc.org/wage.cfm)

Degree: either an associate degree, bachelor's degree, master's degree or Ph.D. from an institute of higher learning.

Degree in ECE: an associate, bachelor's, master's or Ph.D. in either early childhood education or child development.

Degree in other: an associate, bachelor's, master's or Ph.D. in a field of study other than early childhood education or child development.

For-profit centers: Child care centers ranging from single-classroom facilities consisting of a multi-age group of children and one teacher/director to multi-site facilities enrolling hundreds of children and employing a director, assistant director, lead teachers and assistant teachers that are operated as sole proprietorships, partnerships, or corporations with the goal of making a profit for their owner or stockholders.

Metropolitan and non-metropolitan geographic areas: Geographic areas as defined by the U.S. Office of Management Budget. These areas do not equate to traditional definitions of urban and rural as many of these areas contain a mixture of both types of locations. These areas are defined by both size and location to other geographic areas and can change over time. See Appendix E for a list of Iowa counties and their geographic area.

Median: one of three measures of central tendency; the number representing the case which has equal cases above and below it. Throughout this report, "average" is used interchangeably with "median".

Non-profit centers: Child care centers operated by a board of directors that govern the program, that is mission-driven and not operated with a goal of making a profit. These programs may be sponsored by community or faith-based organizations.

People of color: People who self identify as Asian, African-American, bi-racial, or American Indian/Native American.

Public (sponsored programs): Head Start sites, public school sponsored and other publicly funded programs.

Quality Rating System (QRS): a voluntary child care rating system for child development homes, licensed child care centers and preschools, and child care programs that are operated by school districts. The QRS

was developed: to raise the quality of child care in Iowa, to increase the number of children in high-quality child care settings, and to educate parents about quality in child care.[xiii] There are five levels in the QRS with level one being the lowest and level five being highest.

T.E.A.C.H. Early Childhood® IOWA: This program provides comprehensive educational scholarships that help pay the cost of tuition, books, and travel, and may insure paid release time, require compensation incentives and encourage retention for child care providers working on a credential or degree in early childhood education or child development. (http://www.iowaaeyc.org/teach.cfm).

Appendix F

Iowa Counties by Geographic Area

Adair	Nonmetropolitan	Floyd	Nonmetropolitan	Monona	Nonmetropolitan
Adams	Nonmetropolitan	Franklin	Nonmetropolitan	Monroe	Nonmetropolitan
Allamakee	Nonmetropolitan	Fremont	Nonmetropolitan	Montgomery	Nonmetropolitan
Appanoose	Nonmetropolitan	Greene	Nonmetropolitan	Muscatine	Nonmetropolitan
Audubon	Nonmetropolitan	Grundy	Metropolitan	O'Brien	Nonmetropolitan
Benton	Metropolitan	Guthrie	Metropolitan	Osceola	Nonmetropolitan
Black Hawk	Metropolitan	Hamilton	Nonmetropolitan	Page	Nonmetropolitan
Boone	Nonmetropolitan	Hancock	Nonmetropolitan	Palo Alto	Nonmetropolitan
Bremer	Metropolitan	Hardin	Nonmetropolitan	Plymouth	Metropolitan
Buchanan	Nonmetropolitan	Harrison	Metropolitan	Pocahontas	Nonmetropolitan
Buena Vista	Nonmetropolitan	Henry	Nonmetropolitan	Polk	Metropolitan
Butler	Nonmetropolitan	Howard	Nonmetropolitan	Pottawattamie	Metropolitan
Calhoun	Nonmetropolitan	Humboldt	Nonmetropolitan	Poweshiek	Nonmetropolitan
Carroll	Nonmetropolitan	Ida	Nonmetropolitan	Ringgold	Nonmetropolitan
Cass	Nonmetropolitan	Iowa	Nonmetropolitan	Sac	Nonmetropolitan
Cedar	Nonmetropolitan	Jackson	Nonmetropolitan	Scott	Metropolitan
Cerro Gordo	Nonmetropolitan	Jasper	Nonmetropolitan	Shelby	Nonmetropolitan
Cherokee	Nonmetropolitan	Jefferson	Nonmetropolitan	Sioux	Nonmetropolitan
Chickasaw	Nonmetropolitan	Johnson	Metropolitan	Story	Metropolitan
Clarke	Nonmetropolitan	Jones	Metropolitan	Tama	Nonmetropolitan
Clay	Nonmetropolitan	Keokuk	Nonmetropolitan	Taylor	Nonmetropolitan
Clayton	Nonmetropolitan	Kossuth	Nonmetropolitan	Union	Nonmetropolitan
Clinton	Nonmetropolitan	Lee	Nonmetropolitan	Van Buren	Nonmetropolitan
Crawford	Nonmetropolitan	Linn	Metropolitan	Wapello	Nonmetropolitan
Dallas	Metropolitan	Louisa	Nonmetropolitan	Warren	Metropolitan
Davis	Nonmetropolitan	Lucas	Nonmetropolitan	Washington	Metropolitan
Decatur	Nonmetropolitan	Lyon	Nonmetropolitan	Wayne	Nonmetropolitan
Delaware	Nonmetropolitan	Madison	Metropolitan	Webster	Nonmetropolitan
Des Moines	Nonmetropolitan	Mahaska	Nonmetropolitan	Winnebago	Nonmetropolitan
Dickinson	Nonmetropolitan	Marion	Nonmetropolitan	Winneshiek	Nonmetropolitan
Dubuque	Metropolitan	Marshall	Nonmetropolitan	Woodbury	Metropolitan
Emmet	Nonmetropolitan	Mills	Metropolitan	Worth	Nonmetropolitan
Fayette	Nonmetropolitan	Mitchell	Nonmetropolitan		

Endnotes

[i] Iowa Department of Human Services, website, dhs.iowa.gov/childcare/overview

[ii] Iowa Department of Human Services licensing information. 2015.

[iii] http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx.

[iv] Iowa Department of Human Services, website, http://dhs.iowa.gov/iqrs.

[v] US Government Accountability Office Report to the Chairman, Committee on Finance, US Senate, February 2012. "Early Childcare and Education. HHS and Education are Taking Steps to Improve Workforce Data and Enhance Worker Quality."

[vi] 2015 U.S. Census. http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

[vii] https://www.nap.edu/catalog/19401/transforming-the-workforce-for-children-birth-through-age-8-a.

[viii] *Ranking & Estimates: Ranking of the States 2015 and Estimates of School Statistics 2016.* Released May 2016. www.nea.org/assets/docs/2016_nea_ranking_and_estimates.pdf.

[ix] www.iowadatacenter.org/quickfacts, 2015.

[x] *Ranking & Estimates: Ranking of the States 2015 and Estimates of School Statistics 2016.* Released May 2016. www.nea.org/assets/docs/2016_nea_ranking_and_estimates.pdf.

[xi] http://iowapolicyproject.org/2016Research/160405-COL.html.

[xii] http://dhs.iowa.gov/childcare/overview.

[xiii] http://dhs.iowa.gov/iqrs.