Demographic and Family Differences in Use of Early Childhood Care and Education in Pennsylvania: A 2002 Baseline

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Studies show that Pennsylvania ranks below the national average in the percentage of preschool children enrolled in center-based programs. This is important because center-based care has been shown to better prepare children for entry into school. In 2002, we examined demographic and family influences in the use of early childhood care and education (ECCE) in a statewide random sample of 1005 Pennsylvania families with children under 6 years of age, providing a baseline of ECCE in Pennsylvania during a time when the state offered no public funding specifically for preschool. Our findings suggest that Pennsylvania children, particularly those from less educated and lower income families, may not have been well prepared to enter school in 2002. Policy changes since 2002 are described, and the likelihood of these policies to better prepare Pennsylvania's children to enter school ready to learn are considered.

In the era of the *No Child Left Behind Act of 2001,* when students' scores on standardized tests are used to determine schools' eligibility for federal support, it has become critical that children enter school prepared to learn. Yet, many children are not prepared to learn when they arrive at school. Nationally representative samples indicate that 20% of all kindergartners lag behind in cognitive skills and 31% of all kindergartners are behind in social and emotional development (Coley 2002; Lee and Burkham 2002).

Many of the children lagging behind are from poor and minority families (Wertheimer, Croan, Moore, and Hair 2003). While no specific data are available on the school readiness of Pennsylvania children, there is reason to believe that they confront similar difficulties.

Research shows that the best means for addressing the problem of differential preparedness is center-based educational intervention programs (Lee, Brooks-Gunn, Schnur, and Liaw 1990; Ramey and Campbell 1992; Ramey and Campbell 2002; Ramey and Ramey 1992). Even common child care/preschool experiences have been shown to help prepare children for school (National Research Council 2001). In many cases, the effects of center-based care on school readiness measures are more important than the effects of child characteristics such as age and temperament (Clarke-Stewart and Fein 1983) and family demographics such as ethnicity or family income (NICHD ECCRN and Duncan 2003). More specifically, children who have experienced center care or preschool demonstrate better verbal ability and academic skills, and in some cases, social skills, compared with children who experience child care with home-based providers, sitters, or their parents (Clarke-Stewart 1991; Magnuson, Meyers, Ruhm, and Waldfogel 2004; NICHD ECCRN 2004). These are the skills that contribute to children's ability to begin school ready to learn.

How prepared are Pennsylvania children to begin school ready to learn? In Pennsylvania, there are no public data available for school readiness per se, but the extent of center-based care or preschool use provides a barometer for the extent of school readiness among Pennsylvania's young children. Kids Count Census data show that in 2002, Pennsylvania had 251,000 children between the ages of 3 and 5 enrolled in nursery school, preschool, or kindergarten; in 2004, there were 252,000 enrolled. In 2004, this was 55% of the entire population of children in this age range. The national rate in 2004 was 57%, putting Pennsylvania slightly below the national average and well behind New Jersey, which had 72% of its children in this age range in nursery school, preschool, or kindergarten in 2004 (Kids Count Census 2005).

With only about half the population of Pennsylvania children in center care, it is important to examine the factors that predict which children are more likely to be in center care than other types of care. Data from the 1999 National Household Education Survey show

that among children whose mothers were employed outside the home, children from single parent families and children with more educated mothers were more likely to be enrolled in preschool or center-based education (NHES, Pew 2005). One wonders whether the situation in Pennsylvania mirrors these national statistics. Information on the characteristics of families benefiting most from the use of ECCE can be useful to Pennsylvania policy makers debating how and to what extent state policy should support the needs of its youngest citizens.

In this article, we analyze the influence of family and demographic characteristics on the type and amount of children's ECCE in a random sample of 1005 Pennsylvania families. In addition, because the Pennsylvania policy debate is currently focusing on providing center-based ECCE to preschoolers, we pay particular attention to the use of center care in preschool-aged children. We examine ECCE not only for children with employed mothers but for children from all families. Understanding state-level patterns of ECCE usage is vital to policymakers charged with forming ECCE policy and examining the impact of that policy. This study serves as a baseline against which future changes in Pennsylvania can be measured.

In the following sections, we review what is known about differences in the types of care provided to children, and we examine developmental differences in children's experiences of these different types of care.

Types of Early Childhood Care and Education

Children can be prepared for school entrance in a variety of ways. Parents can help children prepare for school, but many parents do not have the experience or knowledge to prepare children for literacy, numeracy, or social relations necessary for academic performance. For many children, much learning occurs during some type of nonparental experience.

Different ECCE settings offer distinctly different experiences. Children in center-based types of ECCE spend more time in structured, adult-directed activities and are more likely to experience planned, curricular-based activities than children in family or home based types of arrangements (Kisker, Hofferth, Phillips, and Farquhar 1991). Center-based settings tend to provide

more space and materials for the larger groups of children than do other settings, but often fewer adults are available in these settings to attend to individual children (Huston, Chang, and Gennetian 2002). By contrast, home-based types of ECCE, such as "family care" or "group home care," provide a familiar home environment in which free play is the most common activity (Kisker et al. 1991). Although home-based settings often lack the larger variety of toys and activities found in center-based ECCE facilities, children in home-based ECCE tend to receive more individual attention from adults (Clarke-Stewart, Gruber, and Fitzgerald 1994).

Relative care is a specific type of home-based ECCE. "Relative care" refers to care provided by grandparents, siblings, or other persons related to the child's family (Huston et al. 2002). Children who are cared for by relatives have the benefit of experiencing their family's culture and values full-time, and many parents feel more comfortable entrusting their children to relatives. However, grandmothers and other relatives are more likely to let children watch television and are less likely to provide them with learning activities, as opposed to caregivers in other ECCE types who consider themselves early childhood professionals (Kontos, Howes, Shinn, and Galinsky 1995, 1997). For this reason, relative care, often the least expensive nonparental care, may also be the least likely to prepare children for school.

National studies have shown that most families use home-based ECCE when their children are less than 3 years old (Burchinal, Ramey, Reid, and Jaccard 1995; Huston et al. 2002) and then transition to center-based arrangements for preschool-aged children (Erdwins and Buffardi 1994; NICHD Early Child Care Research Network 1997a).

Developmental Differences: Infants and Toddlers versus Preschoolers

Policy makers and parents both agree that differences are warranted in the use of nonparental child care settings before and after children are 3 years old. Before age 3, most ECCE is perceived as supporting maternal employment; after age 3, ECCE is viewed as preparing children for school. During the infant and toddler periods, many parents and policy makers are concerned that children receive too much nonparental care (Chira, 1998). After 3

years of age, during the preschool period, more and more parents and educators are eager to have children experience center-based types of learning settings away from their parents to help them develop academic and social skills in preparation for first grade. Hence, it is important to examine family and demographic differences in child care experiences as a function of child age.

Infants and Toddlers

The largest increase in ECCE over the last few decades in the U.S. has been with infants and toddlers, those children 3 years of age or younger. Phillips and Adams (2001) estimate that 56% of infants younger than 1 year with employed mothers regularly spend time in weekly nonparental care settings. One large nationwide study found that the majority of infants started using ECCE regularly before the age of 4 months and on average were enrolled for close to 30 hours per week (NICHD ECCRN 1997a). The increase in use of ECCE since 1975 for infants and toddlers can probably be attributed to increased maternal employment, changing economic conditions, changes in family structure, and new federal welfare regulations (Weinraub, Hill, and Hirsh-Pasek 2001). Across the country, children under 3 years of age are more likely to be in some type of ECCE arrangement if they have single, employed, and less educated mothers, and if they come from African-American families. Infants and toddlers are also are more likely to experience ECCE when there are fewer siblings in the family and when no other adults live in the home (NICHD ECCRN 1997b).

The rising incidence of nonparental care in infancy has alarmed some researchers and policy makers. One common concern has garnered support from data in the National Longitudinal Study of Youth, which showed that entry into any type of ECCE during infancy was related to increased aggressive behavior during the preschool period (Bayar and Brooks-Gunn 1991). Also, Hofferth (1999) reported elevated behavior problems for preschoolers who had entered an ECCE arrangement during the first year of their life, as well as for those who started an ECCE arrangement during their second year. Still, early entry into nonmaternal child care has not been shown to affect young children's attachment to their mothers, another common concern, except when low quality or unstable care

is also paired with insensitive mothering at home (NICHD ECCRN 1997c).

Preschoolers

Although parents and policy makers are concerned about the rising numbers of infants and toddlers in nonparental care, they are eager to provide *more* center-based experiences for preschool-aged children, especially for those from poor families. This is because the evidence suggests that quality early care and education can help counteract the deleterious effects of poverty on children's development (Caughy, DiPietro, and Strobino 1994; NICHD ECRN 1997b; Phillips 1991).

Compared to upper-income families, lower-income families are more likely to use relative care or group home care (Burchinal and Nelson 2000; Capizzano and Adams 2003; Kontos et al. 1997; NICHD ECCRN 1997a). Use of relative care is higher than use of other types of ECCE in families when mothers have low levels of education or are from ethnic minority groups (Kontos et al. 1995; 1997). Children living in rural areas are also more likely to be cared for by relatives than are children in urban areas (Lehrer 1983). The quality of home-based settings used by low income families is often much lower than the quality of home-based settings used by higher-income families (Coley, Li-Grining, and Chase-Lansdale 2003; Kisker et al. 1991; Kontos 1994; Kontos et al. 1997; Phillips 1995).

Not only are center-based settings related to increased cognitive and social outcomes, but also the quality of center-based settings experienced by children in lower and higher income families is more similar (NICHD ECCRN 1997a). Children are more likely to have center based ECCE experiences before kindergarten if their mothers are more educated (Hofferth and Wissorker 1992; NICHD ECCRN 1997a; Zaslow, Oldham, Moore, and Magenheim 1998), if they are not from an ethnic minority family (Kontos et al. 1995), if they live in urban areas (Atkinson 1994; Shoffner 1986), and if they come from smaller families (Hofferth, Brayfield, Deich, and Holcomb 1991; NICHD ECCRN 1997a).

Several states have sponsored programs to increase the participation of preschool aged children in center-based learning situations. Florida, Oklahoma, Massachusetts, and New York have attempted to design programs that provide quality programming for

children (Fiene 2005). Gormley (2005) has documented that the Oklahoma program for universal preschool programming has produced significant increases in preschoolers' school readiness.

Although center-based care is desirable for children, especially those from poorer backgrounds, some researchers and educators are concerned about having preschool children in *too many hours* in center care during the preschool period. Investigators from the NICHD Study of Early Child Care and Youth Development reported that spending more time in ECCE arrangements over the first four years of life, particularly more time in center care, was related to more externalizing problems and conflict in kindergarten (NICHD ECCRN 2003). Thus, while some center-based educational experience in ECCE may be desirable for preschool aged children, too many hours of care during this period may be detrimental.

Pennsylvania's Support for Early Childhood Care and Education

In the several years prior to 2002, many governors and state legislators worked to bring additional funding to early childhood educational services (General Accounting Office 1999). Hoping to bring Pennsylvania into line with most other states, then Governor Schweiker launched an Early Childhood Initiative in 2001 with the stated goal of "ensuring that Pennsylvania's children are healthy, safe and ready for school." By executive order in 2002, the Governor convened an Early Care and Education Task Force to prepare a comprehensive menu of evidence-based, cost effective strategies that would lay the foundation for the future of Pennsylvania's early care and education system. Several statewide studies were commissioned to aid in the Task Force's work, each focusing on different aspects of the existing early care and education services in the state. This article began as one of those commissioned studies.

From 2002 to 2003, Pennsylvania invested $1.85 billion on 65 programs designed to support children and families. Regulations allowed these funds to supplement all types of care: relative, family day care, in-home care, or center care. Thirty of Pennsylvania's 501 school districts provided K-4 (kindergarten for 4-year-olds), but the state did not fund any efforts beyond allowing the use of basic

education allocations (Governor's Task Force on Early Childhood Care and Education 2002).

This article provides a baseline that can help policy makers to compare enrollment in different types of child care before and after 2002, and to examine the extent to which those families most in need—low income and less educated families—are served.

The Current Study

This article describes the family and demographic predictors of different types of ECCE experiences in infants/toddlers and in preschoolers in Pennsylvania in 2002. From telephone surveys, we collected detailed family and demographic information that related to the amount of time young children spent in ECCE arrangements, focusing on family and demographic characteristics associated with ECCE usage. More specifically, we examined the family and demographic characteristics associated with the use of center-based ECCE, including center-based child care, preschool, nursery school, and Head Start versus home-based ECCE–care such as group home care and sitters. Enrollment in relative care, a type of home-based ECCE, was also examined because evidence suggests that children in relative care may be least likely to be prepared for school (Kontos et al. 1995, 1997; NICHD ECCRN 2001b).

Family characteristics that we examined included family income, maternal education, ethnicity, family size, single parent status, geographic location (urban vs. rural), and parents' availability at home. The variable indicating a parent's availability at home (both mothers and fathers) was based largely on the employment status of the parent or parents living in the home. We wanted to know whether there might be at least one nonworking parent who would be available to care for the child. Examining parent availability, rather than simply maternal employment, addressed the increases in many modern families of more neutral gender roles for parents and increasingly shared responsibilities in parenting. Therefore, we focused on whether either parent was free from employment obligations such that he or she would be available to be responsible during daytime hours for the care of the child. We consider this an innovative approach to the more traditional investigation of parent employment by past researchers.

In these analyses, we compare the incidence and amount of ECCE separately for infants and toddlers (0 to 3 years) and for preschool aged children (3 through 5 years) because the effects and desirability of ECCE may vary based on the age of the child and because state regulations differ for children at these different ages.

Method

The data for this study were collected in 2002 from a random sample of 1005 Pennsylvania households with children under 6 years of age. Respondents completed telephone interviews pertaining to their youngest child.

Table 1: Sample Characteristics Compared to Pennsylvania Families with Children under the Age of Six Years

Characteristics	Number of Respondents/Mean	Percent of Respondents/Range	Percent of PA Population
Child's Age			
Up to 3 years	531	53%	48%
3 to 5 years	474	47%	52%
Child's Ethnicity			
African-American	149	15%	13%
Caucasian	736	73%	79%
Bi-racial/Multi-racial	45	5%	3%
Latino/Hispanic	42	4%	6%
Other	28	3%	3%
Refused	5	< 1%	n/a
Respondent's Relationship with Child			
Mother	731	73%	n/a
Father	175	17%	
Grandmother	55	6%	
Other	44	4%	
Geographic Location			
Large Cities	520	52%	52%
Small Cities	360	36%	38%
Rural Areas	118	12%	10%

Respondent's Education			
Some high school	57	6%	Data not available specifically for families with children under the age of 6 years.
High school graduate/GED	311	31%	
Some college/vocational/2-year degree	257	26%	
College graduate	232	23%	
Post graduate	136	11%	
Other	7	< 1%	
Refused	5	< 1%	
Family Income (n=801)	M = 53,810 (SD = 39,908)	7,000 – 200,000	
Under 25,000	184	18%	16% of families are below the poverty level.
25,001 to 50,000	285	28%	
50,001 to 100,000	256	26%	
100,001 +	69	7%	
Refused to answer	81	8%	
Don't know	123	12%	

Sampling Design and Procedures

Households were selected using a list-assisted Random Digit Dialing (RDD) sampling procedure. Through a commercial database maintenance/retrieval system, 23,500 randomly selected telephone numbers throughout Pennsylvania were obtained.[1] Slightly fewer than 16,000 households were identified and 68% completed an eligibility screener (n = 10,760). Twelve percent of those contacted were eligible for the survey (n = 1,292) because they had decision-making responsibility for a child under 6 years of age living in their household. Seventy-eight percent of those agreed to be interviewed, resulting in 1,005 completed interviews. Non-English-speaking families were contacted a second time by a Spanish-speaking interviewer, resulting in a total of 13 Spanish-speaking respondents.[2]

Sample Description

The sampling method yielded a sample that accurately represented Pennsylvania's population according to 2000 census data. Table 1 shows the distribution of families across ethnic groups, geographic location, child's age, family size, and poverty level. The percentage of Pennsylvania families below the federal poverty level in our sample (13%) was slightly lower than the percentage in the census (16%). Like the state population, the sample included mostly Caucasian families (73%) who lived in large cities (52%).

Within the sample were 531 families with children less than 3 years old and 474 families with children older than 3 but under 6. Survey respondents were mostly mothers (73%); the others were either fathers (17%) or grandmothers (6%). Because respondents were often the child's parents, the word "parent" is used in reporting the results.

About three-fourths of the sample was composed of two-parent (or two-partner) households with an average family size of four. Forty percent of the sample had dual incomes, and the mean family income (before taxes) was $53,810 (*SD* =39,908). The highest level of education achieved by the greatest number of respondents was a high school degree (31%), with slightly fewer having some years of college (26%) or a four-year college degree (23%).

Survey Measure and Procedures

Trained, reliable interviewers contracted and supervised by the Institute for Survey Research at Temple University used computer-assisted telephone interviewing techniques (CATI) to conduct the interviews from May through July 2002. The telephone interview took approximately 25 minutes, and families were offered $20 for participating. If more than one child younger than 6 lived in the household, one was randomly selected to be the target child for the survey.

Families reporting any type of ECCE arrangement on a regular weekly basis were asked about the type of ECCE arrangement, the number of hours their child typically spent in this setting, the hourly cost, and the mode of transportation to the ECCE arrangement. If

the child was in more than one type of ECCE, the survey questions were focused on the one in which the child spent the most time.[3]

Family and Demographic Variables

Measures of family composition included the number of siblings and a binary variable of parents' marital/partner status (single = 1). "Partnered" was defined as two adults living in the home; single parents were separated, divorced, or widowed.

Geographic area was coded as a dichotomous variable (urban or nonurban), with the nonurban category including small cities, suburbs, and rural areas (urban = 1). Household location was geo-coded based on place definitions (e.g. rural, central city, suburb, etc.) from the U.S. Census Bureau.

Respondents reported their level of education: having some high school education, graduated from a high school, having some college or vocational experience, graduated from a four-year college, and having post-graduate education. This variable is referred to as maternal education because almost all the correspondents were mothers. Parents' minority status was measured as a binary variable (minority = 1). Minorities included all families that did not identify as white or Caucasian (see Table 1).

Parent availability was measured using a dichotomous variable that indicated whether or not there was a nonworking parent in the family available to care for the child on a full time basis (available = 1). Our measure of family income was total family income before taxes.

Definitions of Types of Early Childhood Care and Education

Terms used to describe ECCE settings were selected for the survey because they are terms that are meaningful to parents in describing their child's primary, or most used, arrangement. Based on the terms the parents used, children were placed into one of four mutually exclusive groups. Group 1 was composed of families not using ECCE. These children were not cared for by anyone other than their parents on a regular weekly basis, nor were they attending educational programming on a regular basis (n = 315). In Group 2 were children cared for by a relative (n = 240) or families in which

the mother was a family home care provider (n=44).[4] In Group 3 were the families using nonrelative, home-based ECCE. These children were cared for in their own home by someone other than a relative, or they were cared for in another home with or without other children such as a group or family home child care (*n* = 123). In Group 4 were the children in center-based ECCE (*n* = 283). This group included all arrangements for which parents provided the following terms: child care centers, day care, nursery school, preschool, Head Start, Early Head Start, pre-kindergarten, and kindergarten.[5]

Results

Analysis Plan

The analysis was designed to describe the use of child care more generally and the types of child care used by Pennsylvania families and to examine what family and demographic characteristics predict child care use (type of care used and number of hours in care). These analyses are presented separately for each of the two age groups: the infant/toddler group and the preschool-aged group.

We employed a logistic regression model to predict child care use because the dependent variable is dichotomous. We estimated three different equations to examine the incidence of differences in the types of ECCE use: (1) no use of ECCE (parental care only) versus any use of ECCE, (2) the use of relative care versus all other types of ECCE, and (3) the use of center-based ECCE versus all other types of ECCE. The independent variables in these analyses were respondents' education level, family income, number of siblings in the family, ethnicity, geographic area, single parent status, and parent availability (i.e., have a nonworking parent available at home). For the first equation, all subjects were included in the analyses. For the second two equations, only children in some form of ECCE were included. Thus, we are able to predict use of any type of ECCE, and, if any, use of relative care versus all other types of care, and use of center care versus all other types of care.

We employed ordinary least squares regression techniques to look at the effects of family characteristics on the number of hours of ECCE used. We estimated four different equations to look at the

effects of family characteristics on the number of hours per week children spent in any type of ECCE, the number of house spent in relative care only, the number of hours spent in any type of home-based care (including relative care), and the number of hours spent in center-based care, respectively. The independent variables were identical to those used in the logistic analysis.

Relations among Family and Demographic Variables

As could be expected, family and demographic variables were highly intercorrelated. These correlations are presented separately for infants/toddlers and preschoolers in Tables 2a and 2b. For both age groups, ethnic minority families were more likely than other families to be living in urban settings, headed by a single parent, and earning lower total incomes. For preschoolers, being from an ethnic minority was also associated with having lower maternal education. Infants who lived in urban areas were more likely to have single parents, higher family incomes, and more educated mothers than those living in rural settings. Parent availability was correlated with a greater number of siblings at both ages and with lower family income and lower maternal education for infants and toddlers. For preschoolers, having a single parent was associated with having fewer siblings. At both ages, single parents earned lower incomes and had less education than other parents. Family income and maternal education were highly correlated for both age groups.

Table 2a: Relations among the Characteristics of Families of Infants and Toddlers

Characteristics	Minority Status	Urban Setting	Parent Availability	Number of Sibs.	Single Parent Status	Family Income
Minority Status						
Urban Setting	.291**					
Parent Availability	.054	-.027				
Number of Siblings	.086	.055	.163**			
Single Parent Status	.353**	.165**	-.092	.044		
Family Income	-.251**	.120**	-.139**	-.027	-.358**	
Maternal Education	-.071	.100*	-.104*	-.083	-.186**	.416**

Listwise Pearson Correlations (n = 419); * p < .05, two-tailed; ** p < .01, two-tailed

Table 2b: Relations among the Characteristics of Families of Preschool-age Children						
Characteristics	Minority Status	Urban Setting	Parent Availability	Number of Sibs.	Single Parent Status	Family Income
Minority Status						
Urban Setting	.181**					
Parent Availability	.018	-.020				
Number of Siblings	.088	.011	.145**			
Single Parent Status	.278**	.017	-.191**	-.146**		
Family Income	-.226**	.098	-.066	.076	-.393**	
Maternal Education	-.191**	.099	-.095	.022	-.174**	383**

Listwise Person Correlations (n = 374); * p < .05, two-tailed;** p < .01, two-tailed

Rates of Early Childhood Care and Education Usage

Table 3 describes the number of children under the age of 6 who were not in ECCE, the number in ECCE overall, and the number of children in the three specific types of ECCE. Many infants (61%) were in some form of ECCE, and this care was primarily home-based (relative and home-based care, 45%) rather than center-based (17%). Almost a quarter of preschool-aged children (23%) were not in any type of ECCE, and only 41% of preschoolers were in center-based ECCE. Of the families who used some type of ECCE, relative care was used more for the younger children (168 out of 327, or 51%), but the number of preschool-aged children in relative care was also relatively high (116 out of 363, or 32%).

Table 3: Use of Early Care and Education (ECCE) for Total Sample and by Age					
Type of ECCE:	**No ECCE**	**Home-based Relative care**	**Home-based nonrelative ECCE**	**Center-based ECCE**	**Total in any ECCE**
Total sample (n = 1005)	315 (32%)	284 (28%)	123 (12%)	283 (28%)	690 (69%)
Infants & Toddlers (n = 531)	204 (38%)	168 (32%)	71 (13%)	88 (17%)	327 (61%)
Preschool-aged (n = 474)	111 (23%)	116 (24%)	52 (11%)	195 (41%)	363 (76%)

Note: These figures represent only the ECCE arrangement in which the child spent the most time (i.e., "Main Arrangement"). Supplemental types of arrangements are not represented and are excluded from this count. All groups are mutually exclusive.

Use of Early Childhood Care and Education by Family and Demographic Characteristics

Table 4 shows the percentages of ECCE usage based on family and demographic characteristics for each age group. For this table, relative and other types of home-based care are grouped together. Table 5 shows the percentages of ECCE usage across family and demographic characteristics grouping children into three groups: no ECCE, relative care, and all other home-based and center-based types of ECCE.

Table 4: Types of Early Childhood Care and Education (ECCE) Used for Each Age Group by Family and Demographic Characteristics (Shown are the percentage in each group with N's in parentheses)

Characteristics	Infants and Toddlers			Preschoolers		
	No ECCE	Home-based ECCE	Center-based ECCE	No ECCE	Home-based ECCE	Center-based ECCE
Geographic Location						
Urban Area	38% (102)	39% (106)	23% (62)	25% (62)	30% (76)	45% (112)
Rural & Small Cities	39% (100)	51% (130)	10% (26)	23% (51)	40% (89)	37% (82)
Household Income						
Under 25,000	36% (35)	50% (49)	14% (14)	23% (20)	41% (35)	36% (31)
Household Income						
25,001 to 50,000	37% (56)	53% (81)	10% (15)	28% (37)	40% (54)	32% (42)
50,001 to 100,000	36% (49)	42% (57)	22% (30)	18% (22)	28% (34)	53% (64)
100,000+	44% (15)	24% (8)	32% (11)	9% (3)	34% (12)	57% (20)
Child's Ethnicity						
Minority	29% (44)	44% (67)	27% (41)	14% (17)	42% (49)	44% (51)
Non-Minority	43% (162)	45% (170)	12% (47)	27% (96)	33% (117)	40% (144)
Family Composition						
Two-parent family	45% (185)	41% (172)	14% (58)	26% (94)	33% (123)	41% (150)
Single-parent family	18% (21)	56% (65)	26% (30)	18% (19)	40% (43)	42% (45)

Parent Availability						
Parent available at home	61% (151)	33% (80)	6% (14)	40% (84)	23% (48)	37% (77)
Parent not available	19% (52)	55% (155)	26% (74)	11% (29)	45% (117)	44% (116)
Respondent's Education						
Some high school	42% (15)	47% (17)	11% (4)	33% (7)	38% (8)	29% (6)
High school grad/GED	41% (65)	47% (75)	12% (19)	28% (43)	40% (61)	32% (48)
Some college	31% (43)	54% (73)	15% (20)	20% (24)	41% (50)	39% (47)
College graduate	41% (47)	41% (48)	18% (21)	23% (27)	22% (26)	55% (63)
Post graduate	42% (32)	29% (22)	30% (23)	20% (12)	31% (18)	49% (29)

Table 5: Use of Relative Care Compared to No Use of ECCE and All Other Types of ECCE by Family and Demographic Characteristics (Shown are the percentage in each group with N's in parentheses)						
Characteristics	**Infants & Toddlers**			**Preschoolers**		
	No ECCE	**Relative Care**	**Non-relative ECCE**	**No ECCE**	**Relative Care**	**Non-relative ECCE**
Geographic Location						
Urban Area	38% (102)	28% (75)	34% (93)	24% (62)	21% (52)	55% (136)
Rural & Small Cities	39% (100)	36% (92)	25% (64)	23% (51)	29% (63)	49% (108)
Family Income						
Under 25,000	36% (35)	44% (43)	20% (20)	21% (20)	34% (29)	44% (37)
25,001 to 50,000	37% (56)	38% (57)	26% (39)	28% (37)	33% (44)	39% (52)
50,001 to 100,000	36% (49)	26% (35)	39% (52)	18% (22)	16% (19)	66% (79)
100,000+	44% (15)	6% (2)	50% (17)	9% (3)	9% (3)	83% (29)
Child's Ethnicity						
Minority	29% (44)	38% (57)	34% (51)	14% (17)	33% (38)	53% (62)
Non-Minority	43% (162)	29% (111)	28% (106)	27% (96)	22% (78)	52% (183)
Family Composition						
Two-parent family	44% (185)	29% (120)	27% (110)	25% (94)	22% (80)	53% (193)
Single-parent family	18% (21)	41% (48)	41% (47)	16% (19)	34% (36)	50% (52)
Parent Availability						
Parent available at home	62% (151)	28% (68)	11% (26)	40% (84)	18% (38)	42% (87)
Parent not available	18% (52)	35% (99)	46% (130)	10% (29)	30% (77)	60% (156)
Respondent's Education						
Some high school	42% (15)	44% (16)	14% (5)	33% (7)	29% (6)	38% (8)
High school grad/GED	41% (65)	37% (59)	22% (35)	28% (43)	33% (50)	39% (59)
Some college	31% (42)	36% (48)	33% (45)	20% (24)	32% (39)	48% (58)
College graduate	41% (47)	27% (31)	33% (38)	22% (25)	11% (13)	67% (76)
Post graduate	42% (32)	16% (12)	43% (33)	20% (12)	10% (6)	70% (41)

Child age was related to type of ECCE used. Infants/toddlers were more likely than preschool-aged children to be cared for by a relative. Preschool-aged children were more likely than infants/toddlers to be in ECCE in general and in center-based ECCE in particular.[6] The remainder of the findings focuses on the use of ECCE for the two separate age groups.

Table 6 displays the results of three logistic regression equations conducted for each of the two age groups. B coefficients with standard errors are presented for each of the family and demographic characteristics thought to predict the use of ECCE in general (as compared to no ECCE), the use of relative care (as compared to other ECCE types), and the use of center-based ECCE (as compared to all other ECCE), respectively.

Table 6: The Effects of Family Characteristics on Child Care Use and Type of Child Care Used: Logit Analysis

	Infants & Toddlers			Preschoolers		
Characteristics	**All types of ECCE vs. no ECCE**	**Relative Care vs. all other types of care**	**Center-based ECCE vs. all other types of care**	**All types of ECCE vs. no ECCE**	**Relative Care vs. all other types of care**	**Center-based ECCE vs. all other types of care**
Family Income (In $10,000's)	-.005 (.37)	-.143* (.55)	.096* (.46)	.099* (.44)	-.163** (.57)	.071^{+} (.40)
Maternal Education	-.02 (.11)	-.19 (.14)	.26^{+} (.15)	.11 (.14)	-.42** (.15)	.26* (.13)
Minority Status Minority = 1 Non-Minority = 0	.73* (.31)	-.02 (.34)	.82* (.36)	1.50** (.42)	-.003 (.33)	-.07 (.30)
Number of Siblings	-.10 (.11)	-.02 (.13)	-.04 (.14)	-.27* (.12)	-.07 (.13)	-.09 (.11)
Parent Availability	-2.19** (.25)	1.17** (.33)	-.90* (.40)	-1.74** (.31)	-.34 (.30)	.61* (.28)
Single Parent Status	.96* (.38)	-.68^{+} (.35)	.54 (.38)	.38 (.44)	-.27 (.36)	.45 (.34)
Urban Setting	-.20 (.25)	-.17 (.30)	.49 (.33)	-.46 (.29)	-.47 (.28)	.53* (.25)

B coefficients are shown with corresponding standard errors in parentheses.
* $p < .05$, two-tailed; ** $p < .01$, two-tailed; $^{+}$ $p < .10$, two-tailed
Note: Analyses for Relative Care and Center-based ECCE are based on the subset of children who are using some type of early care and education arrangement.

Infants and toddlers

The first column in Table 6 illustrates that infants and toddlers were more likely to be in ECCE if they were of minority status, if they did not have a parent(s) available at home, and if they were living with a single parent.

The analysis for relative care included only children who were in some type of care (i.e., excluded the "Not using ECCE" group) and is shown in the second column of Table 6. For infants and toddlers, coming from a low-income family and having a nonemployed parent available at home made it more likely that they would be in relative care as opposed to other types of ECCE.

The third column in Table 6 presents the results examining the use of center-based ECCE for infants and toddlers. During the infancy/toddlerhood period, children from higher income and ethnic minority families were more likely than other children to use center-based ECCE over other forms of care. In addition, working parents (i.e., no parent available at home) were more likely to place their infants and toddlers in a center-based ECCE arrangement than were families with a parent at home.

Preschoolers

For older children, the right side of Table 6 shows the characteristics relating to use of ECCE. Compared to other preschool-aged children, preschoolers from higher income families, from ethnic minority families, from families with fewer children, and from families with no parent available at home were more likely to be in some form of ECCE rather than no ECCE.

Preschool-aged children from families with lower incomes and less educated mothers were more likely than other families to be in relative care.

Preschoolers with more educated mothers, from families with an available parent at home, and from urban settings were more likely to be in center-based ECCE than other types of ECCE settings.

Table 7 presents the number of hours spent in each type of ECCE. Infants and toddlers who were in nonparental care spent significantly more time in center-based ECCE than in home-based

ECCE (F (1, 323) = 15.0, p< .001). They spent less time in relative care (M = 24.05 hours) compared with other types of ECCE (F (1, 323) = 15.45, p < .001).

Table 7: Mean Number of Hours per Week in Each Type of Early Childhood Care and Education (ECCE) Arrangement by Child's Age

	Infants & Toddlers				Preschoolers			
Type of ECCE	**N**	**M**	**SD**	**Range**	**N**	**M**	**SD**	**Range**
Home-based ECCE (relative care included)	239	25.32	16.71	2-60	168	28.34	16.52	1-60
Center-based ECCE	88	32.89	13.22	4-55	195	23.12	13.94	1-50
Relative care only	168	24.05	17.50	2-60	116	29.26	17.40	1-60

Note: These figures represent only the arrangement in which the child spent the most time (i.e., "Main Arrangement"). Supplemental types of arrangements are not represented and are excluded from this count.

Preschoolers spent more time in some form of home-based ECCE compared with center-based ECCE (F (1, 359) = 10.58, p < .01). They spent more time in relative care (M = 29.26 hours) than other types of ECCE combined (F (1, 359) = 10.35, p < .01).

Table 8 shows the ordinary least squares (OLS) regression analyses that were conducted to examine family and demographic characteristics associated with more time spent in ECCE for the subset of children who were using some type of ECCE arrangement (n = 558). These analyses examine the effects of family characteristics on time spent in ECCE in general, time spent in relative care only, time spent in any type of home-based ECCE (including relative care), and time spent in center-based ECCE only.[7]

Table 8: The Effects of Family Characteristics on Hours of ECCE by Type of Care: Ordinary Least Squares Analysis

	Infants & Toddlers				Infants & Toddlers			
Characteristics	**General ECCE n=266**	**Relative Care Only n=137**	**All Home-based1 n=195**	**Center-based n=71**	**General Use n=292**	**Relative Care n=94**	**All Home-based1 n=135**	**Center-based n=157**
Family Income (in $10,000's)	.07	-.102	-.027	.226	.03	.205	.120	-.043
Maternal Education	-.13*	-.087	-.138	-.213	-.06	.038	.051	-.156*
Minority Status	.11	.010	.089	.074	.29**	.368**	.376**	.181**
Number of Siblings	-.05	-.060	-.070	.043	-.13*	-.041	-.062	-.156*
Parent Availability	-.25**	-.120	-.194**	-.446**	-.31**	-.007	-.112	-.486**
Single Parent Status	.23**	.280**	.209**	.264*	.15*	.341**	.207*	.110
Urban Setting	.01	.069	.007	-.036	.03	-.046	-.064	.124
F statistic *(df)*	6.25** (7,258)	3.26** (7,129)	3.94** (7,187)	3.29** (7,63)	14.09** (7,284)	3.93** (7,86)	4.57** (7,127)	16.11** (7,149)
Adjusted R^2	.122	.104	.096	.186	.239	.181	.157	.404

1. All home based ECCE includes home based ECCE of any type, including relative care.

Standardized beta coefficients are show expect where otherwise noted. * p < .05, two-tailed; ** p < .01, two-tailed

Infant and toddlers

As shown on the left side of Table 8, infants and toddlers spent more time in ECCE if their mothers had lower levels of education. Not having a parent available predicted spending more time in any ECCE arrangement and more time in home-based and center-based ECCE specifically. Infants with single parents spent more time in ECCE no matter what the type. Infants and toddlers spent more time in center-based settings when there was no parent available at home and if they lived with a single parent.

Preschoolers

As displayed in the four columns on the right side of Table 8, preschoolers with less educated mothers spent more time in center-based ECCE settings. Minority status was predictive of spending more time in ECCE in general, as well as the other three types of ECCE specifically. Preschoolers without a parent available at home spent more hours in ECCE in general and more hours in center-based ECCE. Preschoolers with single parents spent more time in all types of ECCE, with the exception of center-based ECCE. A closer look at the use of *center-based* ECCE shows that preschoolers spent less time in center-based settings if their mothers were more educated, if they were not ethnic minority, if they had more siblings, and if they had a parent available at home.

Conclusion

These data provide a baseline of ECCE in Pennsylvania in 2002 during a time when the state offered no public funding specifically for preschool. These data show that a substantial number of children under 5 years of age in Pennsylvania in 2002 were in some kind of nonparental care for a substantial amount of time each week: 61% of infants and toddlers and 75% of preschoolers were in some type of nonparental care on a regular weekly basis. For infants and toddlers, 51% of the children in care were supervised by relatives. For preschoolers, 32% of the children were in care with relatives. Only 41% of Pennsylvania preschoolers were in center-based

programs, the type of early childhood education that has been associated with school readiness.

This article documents geographic and social class differences between those children in center-based preschool programs and those who were not. Preschool aged children were more likely to be in center-based care if they were from families in urban areas with educated parents and one nonemployed parent at home with the child on a regular basis. Because they were in this type of center-based care for substantially fewer hours than infants and toddlers, and because many children were children of educated parents with one parent at home on a regular basis, it is likely that the type of care that they experienced may have been mostly part-time care of the type often referred to as *nursery school*. In contrast, preschool-aged children with less educated and low-income parents were more likely to experience relative care.

Researchers have shown that Pennsylvania home-based settings are of lesser quality than center-based settings such as Head Start, preschool programs, and child care centers (Fiene et al. 2002). These home-based settings are also less likely to prepare children for school (Kontos et al. 1995; 1997). So many researchers have shown that center-based center care for preschool-aged children fosters school readiness (Lee, Brooks-Gunn, Schnur, and Liaw 1990; Ramey and Campbell 1992; Ramey et al. 2002; Ramey and Ramey 1992; Head Start Report 2005; National Research Council 2001; NICHD ECCRN and Duncan 2003; Clarke-Stewart 1991, Magnuson, Meyers, Ruhm, and Waldfogel 2004; NICHD ECCRN 2004) that center-based center care for preschoolers is currently considered "best practice" education. Thus, more center-based ECCE is considered desirable because it helps prepare youngsters for kindergarten.

Children from families with more educated mothers and with a parent at home and from families in urban settings were more likely to experience center-based types of ECCE considered to prepare children for school readiness, while children from poorer families with less educated mothers were more likely to be in relative care, which is less likely to prepare children for school. These findings replicate those from national reports based on administrative data (NHES 2005) showing that children with more educated and higher income employed mothers were more likely than other children to

experience preschool programs aimed at increasing school readiness.

According to a 2005 report from the Pennsylvania Partnerships for Children, Pennsylvania currently ranks below the national average in the percentage of preschool children enrolled in center-based programs. In that report, which was based on state administrative records, the percentage of Pennsylvania children enrolled in nursery school, preschool, or kindergarten in 2004 was 56%, ranking Pennsylvania 30th in the nation. The national average was 57%, with New Jersey leading the nation at 74% of children in this age range enrolled in center-based ECCE in 2004. Although today Pennsylvania is still below average nationally, the percentage of the preschool population in child care may nevertheless be higher today than it was in 2002 when only 41% of such children were in center-based programs.

In 2004–05, the Office of Child Development was established to oversee Commonwealth efforts regarding ECCE. A prime goal of this office (Dichter 2005; OCD 2005) was to increase the availability and quality of ECCE to all children less than 5 years old. Specific initiatives in 2004–05 included (1) state investment in preschool through state funds to Head Start programs, (2) expansion of early childhood services using Education Accountability Block Grants to establish new or to expand existing pre-kindergarten services and increase full day kindergarten availability, (3) establishment of Early Learning Standards for pre-kindergarten children across all ECCE settings, (4) creation of Keystone STARS, a quality rating system aiming to improve the quality of ECCE programs, (5) introduction of reforms to increase ECCE teacher preparation, and (6) increases in the availability of child care subsidies to parents.

Administered by the Department of Public Welfare (DPW), Keystone STARS worked to boost quality by identifying standards and providing financial and technical assistance to programs participating in the Keystone STARS program. DPW simplified eligibility requirements and procedures for low income families to obtain and maintain child care subsidies. More state funds were budgeted for licensing and inspection of child care programs, professional credentialing and child care provider education and training, quality supports for home-based programs, and community-based training for practitioners. With these changes,

one might expect that Pennsylvania children should have greater access to the type of ECCE more likely to stimulate school readiness in 2006 than in 2002. Some administrative data suggests that this is the case.

This study can serve as a benchmark for the effectiveness of the current administration's efforts to increase school readiness of all Pennsylvania children. Is it true that the state's children are more likely to be in center-based ECCE settings and less likely to be in relative care in 2006 than in 2002? Are more children from low income families and families with less educated parents or families from small cities and rural areas more likely to be in center-based types of ECCE in 2006 than in 2002? Continued monitoring of families, examination of differential access to ECCE as a function of family income, and consideration of parental education and geographic location are warranted to answer these questions and to demonstrate the effectiveness of these public policy changes in Pennsylvania.

Notes

1. We were not overly concerned about biases due to telephone ownership because the number of families with accessible telephone numbers in Pennsylvania was nearly 98% according to Census figures.
2. During the second contact, the Spanish-speaking interviewers were able to identify households in which no English and no Spanish were spoken. Families who did not speak either English or Spanish were not able to be interviewed. The number of these families was less than 1% of the sub-sample contacted.
3. If the respondents reported that their use of ECCE for the target child differed in summer compared with other months, parents provided information about usage for the month of April, a month selected because it was part of the "academic" year.
4. Forty-four mothers in the sample worked in their homes as family/group home providers while also caring for their own child. These children were classified as Relative Care (total n = 284). Because the parent is considered employed and at their work place as a family/group home ECCE provider, we believed that this situation is disparate enough from that of a child being cared for exclusively (or with siblings) by a parent. Thus, it was decided to classify these children as being in a care arrangement with a relative, rather than in the "Not using ECCE" group.
5. Because the survey relied on parental report, we were unable to identify the extent to which a specific curriculum was utilized or if structured educational activities took place in any of the ECCE types.
6. To test for the significance of age effects, analyses described were conducted with the two age groups combined and included a dichotomous child age variable as an additional predictor.

7. These OLS regression analyses were also run using the two age groups together and included a dichotomous age variable as an additional predictor. A significant age difference was found only for the use of formal ECCE. Although preschoolers were more commonly in formal ECCE than were infants/toddlers, they spent *less* time in these formal educational settings than infants and toddlers did.

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