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# **Chemung County School Readiness Project 2011 Kindergarten Cohort Evaluation Report**

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**CENTER FOR HUMAN SERVICES RESEARCH**  
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# Chemung County School Readiness Project Preliminary Findings for 2011 Cohort

## Introduction

The Chemung County School Readiness Project (SRP) was launched in 2006 with the goal to significantly increase the percentage of children who enter kindergarten in Chemung prepared to learn and function successfully in school. Through grassroots, county-wide collaboration, organizers of the SRP aimed to create a comprehensive and coordinated array of services to meet the needs of children ages zero to five and their families. All activities associated with the SRP fall into four core service areas: early care and education; parent learning; healthcare; and home visiting. The key indicator of program impact is the readiness level of children entering kindergarten in the school districts of Elmira, Elmira Heights, and Horseheads.

During the 2006-2007 academic year, the SRP collaborative engaged in service planning and evaluation design. Formal service delivery began in 2007-2008. The primary focus of the SRP was on coordinating and expanding access to existing services, rather than on initiation of new programs. To address the complex and varied needs of children and families in Chemung, the following core partners were involved in project planning:

- School Districts (Elmira, Elmira Heights, and Horseheads) -- Providing public kindergarten and prekindergarten programs.

- Comprehensive Infant/Family Developmental Services (CIDS) – Offering a county-wide infant registry and home visitation programs, with an array of family counseling and parent education components.
- Early Child Care Council – Coordinating the local Head Start, early childhood education, day-care and child care programs with training and quality assurance monitoring for service providers.
- Parent Education Council – Providing parent education, awareness-raising and public relations programs.
- Pediatric and Health Care Centers and Clinics - Offering family, pre-natal and child health services.

To assess program effects, these stakeholders jointly adopted a longitudinal evaluation approach that included baseline and follow-up data collection. Results presented in this report focus on the follow-up study conducted with the 2011-12 kindergarten cohort in Chemung County. The methodology and instrumentation used for the 2007 baseline study were replicated at follow-up to the extent possible, but differences are noted in this report where relevant. The current research focus is to address whether school readiness levels of entering kindergartners in Chemung County changed between 2007 and 2011.

## Review of the Literature

This section contains a brief review of literature supporting the programs and priorities of the Chemung School Readiness Project. The review is divided into three sections: The first summarizes well established benefits of early education initiatives, the second reviews the importance of program quality and the last discusses the value of providing comprehensive family services beginning before birth.

### *Benefits of High-Quality Preschool Education*

Numerous well-designed, longitudinal studies have yielded evidence to confirm that young children are capable learners who demonstrate lasting social and academic gains from high-quality preschool experience (Barnett, 1998; Boocock, 1998; Campbell & Ramey, 1995; Reynolds, 2000; Schweinhart, 1993). These gains have been demonstrated in several randomized trials with economically disadvantaged children, some of which have followed children from preschool to adulthood (Barnett, 1996; Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Reynolds, 2000). These studies found long-term benefits of quality preschool to include: reductions in grade repetition and special education placement, increased achievement scores and graduation rates, increased adult economic and social success, less frequent smoking and drug use, and even reduced participation in crime and delinquency. While these findings are most pronounced among disadvantaged populations, a study of Oklahoma's state-funded preschool program found benefits in math and language learning for children across all races and from diverse income brackets (Gormley, Gayer, Phillips, & Dawson, 2004).

These social and academic benefits make high-quality preschool an economic development strategy with an exceptionally high payoff. Research conducted with the High/Scope Educational Research Foundation in Michigan, and the Chicago Child-Parent Centers in Illinois show returns of between \$10 and \$16 for each

dollar invested (Belfield, Nores, Barnett, & Schweinhart, 2006; Temple & Reynolds, 2007). Local and state costs related to schooling, crime and healthcare are decreased by addressing child and family needs before students fall too far behind.

### *Quality vs. Quantity*

Abundant evidence strongly indicates that high-quality, intensive early childhood programs produce larger, more persistent gains. While many types of preschool programs produce immediate effects on IQ and achievement, these effects generally fade out after entry to school. However, two model programs (Abecedarian in North Carolina and Perry Preschool in Michigan) that provided comprehensive educational childcare from the first year of life through age five found effects on IQ persisting well into adolescence (Barnett, 1998). In general, long-term benefits are associated with participation in the most intensive, earliest starting and longest lasting programs.

Findings from the Effective Provision of Preschool Education (EPPE) Project (Sammons et al., 2002) suggest that changes in preschool access (quantity) and changes in preschool quality may offer different types of benefits. While quantity was significantly related to children's cognitive development, data did not reveal similar effects on social-behavioral gains. Higher scores on specific subscales of the Early Childhood Environment Rating Scale-Revised (ECERS-R) (Harms, Clifford, & Cryer, 1998), however, were related to positive gains on social-behavioral measures. These findings suggest that program quality may exert a stronger influence over behavioral developmental gains than program quantity, although academic achievement is strongly related to instructional time. These data reinforce what early childhood literature has made clear – that access to preschool should not be expanded at the expense of program

quality. High standards, adequate funding, and ongoing evaluation can all contribute to sustained success.

#### *Comprehensive Service and Quality*

The provision of multi-faceted programs and services that address both academic and nonacademic domains is a hallmark of successful early childhood interventions (Ramey & Ramey, 2010). Since 1965, pioneered by the federal Head Start program, educators have widely endorsed the conceptualization of school readiness as a composite construct encompassing children's social, emotional, language, cognitive, and physical development. The assessment of readiness has thus expanded to include the ability of families, schools, and communities to meet the individual needs of children. Most effective programs partner with parents and acknowledge families as the primary source of support for child development (Bowman, et al. 2001; Frede, 1998). This partnership can involve parent education to promote their role as natural and continuous teachers, family health or referral for routine care and screenings, or provision of social services based on need.

Effective family-centered service provision can begin well before children are of preschool age, encompassing the prenatal, infant and toddler years. Programs such as the Nurse-Family Partnership and Healthy Families New York have demonstrated lasting positive effects and child and family well being. These programs offer prenatal and infancy home visiting by nurses or paraprofessionals and focus on low-income populations. The Nurse-Family Partnership has been evaluated through separate controlled trials conducted in Elmira,

New York, Denver, Colorado, and Memphis, Tennessee. In at least two of the three locations, the program produced positive results in improving prenatal health, reducing childhood injury, increasing maternal employment, and improving child language, cognitive and academic functioning (Olds, 2010). Sustained cognitive and academic effects are found only on children born to poor mothers with limited psychological resources.

The Healthy Families New York program provides home visiting by a trained paraprofessional. A randomized controlled trial was conducted to assess program effectiveness in preventing child maltreatment and promoting child development. Women who enrolled in the program were less likely to deliver low birth weight babies (Lee et al., 2009) and more likely to exhibit positive parenting behaviors (Rodriguez et al., 2010). Moreover, children who participated in the program were more likely to experience early school success (DuMont et al., 2010).

Programs that are embedded in engaged communities are more likely to offer successful comprehensive child and family services (Ramey & Ramey, 2010). Vigorous leadership and interagency commitment to monitoring can help maintain and expand programs of excellence, while at the same time improving or eliminating ineffective programs. This process should serve to inform educators, administrators, and parents about evidence-based early childhood practices while at the same time creating opportunities for professional mentoring and cross-program collaboration.

### Findings: Baseline Study – 2007 Cohort

Baseline data consist of indicators collected before project services are firmly established to be later used as comparison points for data collected after services have been in place for some time. For the SRP, program impact on child and family functioning is assessed by analyzing differences between pre- and post-intervention. In 2007, researchers from Teacher’s College at Columbia University recorded the levels of school readiness in a pre-intervention sample of kindergartners across the three Chemung school districts. A total of 305 students were identified for inclusion in the sample by selecting every third child from 2007-08 kindergarten rosters.

The three primary instruments used for data collection at both baseline and follow-up were:

- Child Observation Record (COR); completed by trained classroom teachers and includes subscales that measure Initiative, Language and Literature, Movement and Music, and Science. The subscales of the COR serve as cognitive indicators of school readiness.

- Teacher-Child Rating Scale (TCRS); captures non-cognitive indicators of school readiness in four subscales – Task Orientation, Behavior Control, Assertiveness, and Peer Social Skills.
- Parent Appraisal of Children’s Experiences (PACE); Provides parent reports of child and family background in terms of early care, education and health experiences.

As part of the baseline study, a comprehensive school readiness (CSR) indicator was derived using the 8 subscale scores from the COR and TCRS. For each subscale, children were considered “ready” if they scored above average (defined by the population mean) in that domain. “Ready” children were given a score of “1” and “unready” children were given a score of “0”, yielding a CSR indicator with a range of 0-8. Based on discriminate function analyses and evaluation of classification accuracy, a cut-off point of 5 on the CSR was used to dichotomize children into “ready” and “unready” groups. All survey indices were evaluated and met psychometric criteria for acceptable levels of validity and reliability.

### Findings: Follow-Up Study – 2011 Cohort

#### *Sample Procedure and Demographics*

No formal sampling was conducted for the SRP follow-up study. An effort was made to administer the COR and TCRS to all children in the 2011 kindergarten cohort and to conduct the PACE with their parents. In the spring of 2011, teachers in various early childhood care and education settings were asked to complete the COR and TCRS for children in their classrooms who would be entering kindergarten the following fall. Children who did not attend an early childhood program were assessed by kindergarten teachers during the fall. The assessment procedure differed at baseline such that all child measures were administered during the fall following kindergarten entry.

Despite this methodological discrepancy, a greater percentage of the 2011 sample had reached their 6<sup>th</sup> birthday. All 2011 PACE interviews were delivered at kindergarten registration in the spring.

The 2011 kindergarten cohort in Chemung County totaled 999 students. As shown in Table 1, 80 percent (N=801) of these children were included in the study sample. This figure reflects the number of children with valid COR data. TCRS data are available for nearly all of these children (N=789). Out of 640 completed PACE interviews, 551 can be paired with child data. In the other 89 cases, the parent who completed

the PACE did not have a child who was assessed.

Slightly more than half of the children in the 2011 sample were male (54%), and the considerable majority was racially identified as white (79%). Differences compared to the baseline sample include that a higher

percentage of children in 2011 were identified as racial minorities (21.4% compared to 12.3%), and a higher percentage had reached their sixth birthday. Statistics on parental education presented in Table 2 show that educational attainment of fathers and mothers did not change dramatically between 2007 and 2011.

**Table 1. Characteristics of Baseline and Follow-Up Samples**

| Demographic Variables      | Baseline (2007) |               | Follow-up (2011) |               |
|----------------------------|-----------------|---------------|------------------|---------------|
|                            | Frequency       | Valid Percent | Frequency        | Valid Percent |
| <i>Age in Years</i>        |                 |               |                  |               |
| Four years old             | 16              | 5.5%          | 1                | .1%           |
| Five years old             | 252             | 86.6%         | 641              | 82.9%         |
| Six years old              | 23              | 7.9%          | 131              | 17.0%         |
| Greater than six years old | 0               | 0%            | 0                | 0%            |
| Not identified             | 0               | ----          | 28               | ----          |
| Total                      | 288             | 100%          | 801              | 100%          |
| <i>Gender</i>              |                 |               |                  |               |
| Male                       | 148             | 50.9%         | 420              | 52.6%         |
| Female                     | 143             | 49.1%         | 379              | 47.4%         |
| Not Identified             | 0               | ----          | 2                | ----          |
| Total                      | 291             | 100%          | 801              | 100%          |
| <i>Race/Ethnicity</i>      |                 |               |                  |               |
| Non-Hispanic White         | 150             | 87.7%         | 603              | 78.6%         |
| Non-Hispanic Black         | 9               | 5.2%          | 100              | 13.0%         |
| Native American            | 2               | 1.2%          | 2                | .3%           |
| Asian                      | 2               | 1.2%          | 18               | 2.4%          |
| Hispanic                   | 1               | .6%           | 14               | 1.8%          |
| Other                      | 7               | 4.1%          | 30               | 3.9%          |
| Not Identified             | 0               | ----          | 34               | ----          |
| Total                      | 171             |               | 801              | 100%          |

*School Readiness Findings*

The percentage of students who were school ready at kindergarten entrance rose from 47.5 percent in 2007 to 68.6 percent in 2011, meaning that more than two-thirds of the 2011 sample scored above baseline means on

at least five of the eight subscales that comprise the CSR indicator. This increase is statistically significant ( $p < .01$ ), and nearly cuts in half the number of kindergartners considered unready for school in Chemung.



**Table 2. Parental Educational Attainment**

|                                | Baseline (2007) |               | Follow-up (2011) |               |
|--------------------------------|-----------------|---------------|------------------|---------------|
|                                | Frequency       | Valid Percent | Frequency        | Valid Percent |
| <i>Father's Education</i>      |                 |               |                  |               |
| Less than high school graduate | 29              | 17.9%         | 165              | 26.3%         |
| High school graduate           | 31              | 19.1%         | 129              | 20.6%         |
| More than high school          | 64              | 39.5%         | 200              | 31.9%         |
| College and beyond             | 38              | 23.5%         | 133              | 21.2%         |
| Don't Know/Missing             | 142             | ----          | 174              | ----          |
| <b>Total</b>                   | <b>304</b>      | <b>100%</b>   | <b>801</b>       | <b>100%</b>   |
| <b>Mother's Education</b>      |                 |               |                  |               |
| Less than high school graduate | 23              | 13.3%         | 108              | 17.0%         |
| High school graduate           | 32              | 18.5%         | 99               | 15.5%         |
| More than high school          | 74              | 42.8%         | 255              | 40.0%         |
| College and beyond             | 44              | 25.4%         | 175              | 27.5%         |
| Don't Know/Missing             | 131             | ----          | 164              | ----          |
| <b>Total</b>                   | <b>304</b>      | <b>100%</b>   | <b>801</b>       | <b>100%</b>   |

Source: PACE

The distribution of CSR scores is presented in Table 3. More than one-quarter (28%) of children at follow-up scored above baseline means on all eight subscales, and only 6 percent failed to score above baseline means on at least

one. As displayed in Table 4, summary statistics for the CSR subscales show improvement on all eight measures from baseline to follow-up.

**Table 3. Distribution of Composite School Readiness Scores**

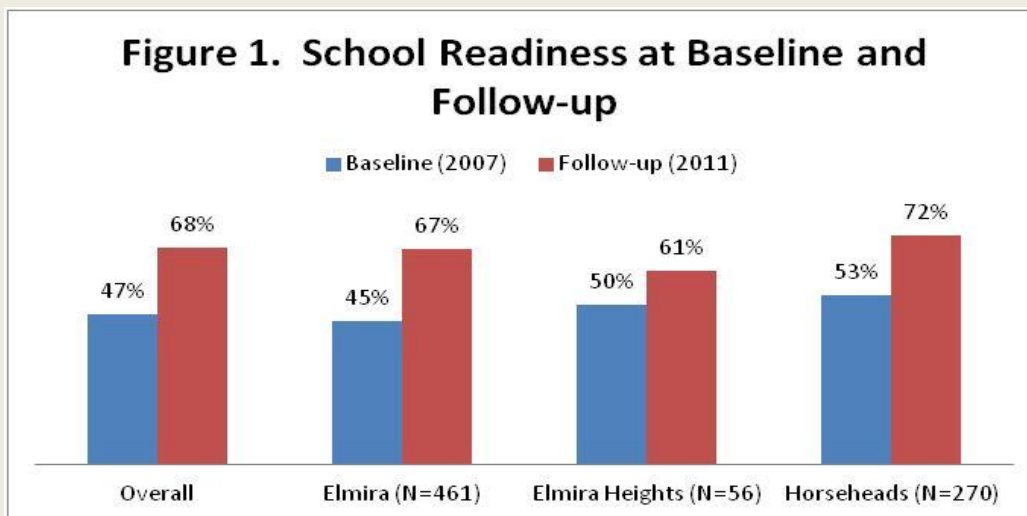
| Group            | Score | Baseline (2007) |              | Follow-up (2011) |              |
|------------------|-------|-----------------|--------------|------------------|--------------|
|                  |       | Frequency       | Percent      | Frequency        | Percent      |
| <b>NOT READY</b> |       |                 |              |                  |              |
|                  | 0     | 45              | 14.8%        | 46               | 5.8%         |
|                  | 1     | 26              | 8.5%         | 44               | 5.6%         |
|                  | 2     | 29              | 9.5%         | 44               | 5.6%         |
|                  | 3     | 28              | 9.2%         | 56               | 7.1%         |
|                  | 4     | 32              | 10.5%        | 58               | 7.4%         |
|                  |       | 160             | <b>52.5%</b> | 248              | <b>31.4%</b> |
| <b>READY</b>     |       |                 |              |                  |              |
|                  | 5     | 33              | 10.8%        | 77               | 9.8%         |
|                  | 6     | 36              | 11.8%        | 117              | 14.8%        |
|                  | 7     | 33              | 10.8%        | 124              | 15.7%        |
|                  | 8     | 43              | 14.1%        | 223              | 28.3%        |
|                  |       | 145             | <b>47.5%</b> | 541              | <b>68.6%</b> |
| <b>TOTAL</b>     |       | 305             | <b>100%</b>  | 789*             | <b>100%</b>  |

**Table 4. School Readiness Subscale Scores**

| Outcome Measures                             | Baseline (2007) |       | Follow-up (2011) |       |
|--|-----------------|-------|------------------|-------|
|  | Frequency       | Mean  | Frequency        | Mean  |
| <i>Cognitive, Pre-Academic Skills</i>        |                 |       |                  |       |
| Initiative                                   | 290             | 3.14  | 801              | 3.80  |
| Language and Literature                      | 291             | 3.53  | 801              | 3.66  |
| Movement and Music                           | 271             | 3.54  | 801              | 3.79  |
| Science                                      | 290             | 2.94  | 801              | 3.47  |
| <i>Non-Cognitive, Socio-Emotional Skills</i> |                 |       |                  |       |
| Task Orientation                             | 291             | 27.30 | 789              | 28.67 |
| Behavior Control                             | 291             | 28.33 | 789              | 29.29 |
| Assertiveness                                | 291             | 28.92 | 789              | 30.35 |
| Peer Social Skills                           | 291             | 30.65 | 789              | 32.01 |

Each of the three school districts independently contributed to county-wide gains in the CSR measure, as shown in Figure 1. The largest gains were found in Elmira (22.8% increase), followed by Horseheads (19.4%) and Elmira Heights (10.7%). While the increase in school readiness in Elmira Heights was less than half the magnitude shown in Elmira, the improvement is statistically significant. It is also worth noting

that the sample size in Elmira Heights is considerably smaller compared to the other districts. Additionally, Elmira Heights was the last of the three school districts to implement SRP programs, and offered half-day preschool while Elmira and Horseheads offered full-day programs. Whether these factors contributed to lesser improvements observed in Elmira Heights cannot be directly addressed by available data.



As shown in Table 5, substantial differences in school readiness were found within districts at the school level. These differences were most profound in Elmira, where readiness levels by school ranged from 47.5 percent at Parley Coburn Elementary to 91.7 percent at Broadway Elementary. All students in Elmira

Heights attended the same school (Cohen Elementary), and in Horseheads readiness levels across schools were more consistent, ranging from 67.7 percent to 77.0 percent. Schools with fewer than five participating students were not included in these percentages.

**Table 5. Overall Readiness by School**

| <b>School District</b> | <b>School Name</b>              | <b>Total Students Assessed</b> | <b>Percent Ready</b> |
|------------------------|---------------------------------|--------------------------------|----------------------|
| Elmira                 |                                 |                                |                      |
|                        | Broadway Elementary School      | 48                             | 91.7%                |
|                        | EOP Head Start                  | 10                             | 70.0%                |
|                        | Fassett Elementary              | 57                             | 50.9%                |
|                        | George M. Diven Elementary      | 68                             | 64.7%                |
|                        | Happy House Pre-K               | 6                              | 66.7%                |
|                        | Hendy Avenue Elementary         | 65                             | 70.8%                |
|                        | Parley Coburn Elementary        | 61                             | 47.5%                |
|                        | Pine City Elementary            | 43                             | 72.1%                |
|                        | Riverside Elementary            | 49                             | 79.6%                |
|                        | Thomas K. Beecher Elementary    | 52                             | 69.2%                |
|                        | YWCA/ESCD UPK                   | 1                              | 100%                 |
| Elmira Heights         |                                 |                                |                      |
|                        | Cohen Elementary School         | 56                             | 60.7%                |
| Horseheads             |                                 |                                |                      |
|                        | Big Flats Elementary School     | 75                             | 77.0%                |
|                        | Broad Street                    | 1                              | 0%                   |
|                        | Center Street Elementary School | 62                             | 67.7%                |
|                        | Gardner Road Elementary School  | 73                             | 71.2%                |
|                        | Ridge Road Elementary School    | 57                             | 71.9%                |
|                        | Sue Ungvarsky                   | 2                              | 50.0%                |
|                        | YMCA                            | 1                              | 100%                 |

For the 2011 cohort, child measures were administered in the spring for children who attended an early childhood care or education program, and in the fall for those who did not. A substantial difference in school readiness was found between these two groups, such that children assessed in the spring were 21.4 percent more likely to be school ready. In particular, children who participated in the public Universal Prekindergarten (UPK) program demonstrated high levels of readiness, with 80.4 percent of the 270 UPK attendees categorized as school ready. No meaningful demographic differences exist between the spring and fall assessment groups in terms of sex, race, or parent education.

Table 6 presents a breakdown of school readiness by demographic characteristics of students. Findings show that improvement in school readiness occurred across all levels of maternal education. Children with mothers in the highest educational category were the most likely to demonstrate readiness (84%), but overall, maternal education was not a significant factor in determining school readiness. The greatest gains were observed among children whose mothers had a high school education or less. For this group, readiness levels increased from 40 percent to more than 70 percent. This finding is consistent with literature suggesting that benefits of quality early care and education are seen most prominently among disadvantaged youth. The children least likely to be school ready were

those whose parents did not complete a PACE interview. Of these 248 children, 140 (56.5%) were categorized as ready. This may suggest some selection bias between families that participated in the PACE and those that did not. A possible interpretation is that lack of participation reflects a lower level of engagement with schools on the part of these families.

Analyses of readiness by gender show a larger increase in school readiness among males, but

also show that females were more likely to be classified as school ready at follow-up. The 24 percent discrepancy in readiness favoring females at baseline was decreased to 14 percent for the 2011 cohort. Results by race should be interpreted with caution due to small sample sizes for minority populations, particularly at baseline. Data from 2011 show no difference in school readiness between white and black students. The extent to which a racial achievement gap existed at baseline is unknown due to sample limitations.

**Table 6. School Readiness Levels by Maternal Education, Sex, and Race**

|                         | School Ready    |         |                  |         |
|-------------------------|-----------------|---------|------------------|---------|
|                         | Baseline (2007) |         | Follow-up (2011) |         |
|                         | Frequency       | Percent | Frequency        | Percent |
| <i>Mother Education</i> |                 |         |                  |         |
| Less than high school   | 23              | 39.1%   | 76               | 76.3%   |
| High school             | 32              | 40.6%   | 80               | 67.5%   |
| More than high school   | 74              | 52.0%   | 224              | 68.3%   |
| 4-year degree +         | 44              | 68.2%   | 159              | 84.3%   |
| Missing/Don't Know      | 140             | 40.9%   | 248              | 56.5%   |
| <i>Gender</i>           |                 |         |                  |         |
| Male                    | 147             | 38.8%   | 413              | 62.5%   |
| Female                  | 144             | 61.1%   | 375              | 75.2%   |
| <i>Race/Ethnicity</i>   |                 |         |                  |         |
| Non-Hispanic White      | 150             | 54.0%   | 595              | 69.9%   |
| Non-Hispanic Black      | 9               | 22.2%   | 98               | 69.4%   |
| Hispanic                | 1               | 100%    | 14               | 50.0%   |
| Asian                   | 2               | 100%    | 18               | 72.2%   |
| Native American         | 1               | 100%    | 2                | 50.0%   |
| Multi-Racial/Other      | 8               | 50.0%   | 29               | 51.7%   |

Categories are defined as follows: Less than high school includes mothers who did not complete high school as well as those who hold a GED; high school includes mothers who received a high school diploma but no further education; more than high school includes mothers who attended a technical school, some college, or received a 2-year degree; and 4-year degree + is defined as mothers who hold a 4-year, master's, or doctoral degree.

*Service Usage and School Readiness*

Table 7 presents results of a series of logistic regressions, which were run in order to determine the strongest predictors of school readiness. Logistic regression is used for predicting the outcome of a categorical criterion such as school readiness, based on one or more predictor variables<sup>1</sup>. SRP services were divided into four domains: Early Care, Education, Parent Learning, and Healthcare/Nursing. Results showed that utilization of early care programs, parent learning programs, and healthcare/nursing

programs were not statistically significant predictors of school readiness on any subscale, so they were excluded from subsequent analyses. To further examine the significant impact of participation in an early education programs, the final models included separate variables for each of the component programs: day care center, family day care, Head Start, nursery school, and universal pre-kindergarten. Specific programs included in each service domain are presented in Appendix A.

**Table 7. Coefficients from Logistic Regressions Predicting School Readiness**

|                                    | School Ready | Initiative | Language | Movement | Science | Task Orientation | Behavior | Assertiveness | Peer Social |
|------------------------------------|--------------|------------|----------|----------|---------|------------------|----------|---------------|-------------|
| Elmira                             | 1.27         | 1.49       | 1.79*    | 0.91     | 0.74    | 1.54             | 0.92     | 0.92          | 1.04        |
| Elmira Heights                     | 0.66         | 0.66       | 0.91     | 0.57     | 0.98    | 1.44             | 1.53     | 0.66          | 0.57        |
| Male                               | 0.46**       | 0.48**     | 0.6*     | 0.55**   | 0.98    | 0.5**            | .62*     | .52*          | .6*         |
| White                              | 1.08         | 1.46       | 1.09     | 1.23     | 1.31    | 0.83             | 1        | 1.47          | 0.79        |
| Father has 4-Year Degree or Better | 1.42         | 1.44       | 1.47     | 1.32     | 1.27    | 2.93**           | 1.84*    | 1.7           | 1.49        |
| Mother has 4-Year Degree or Better | 2.08*        | 1.61       | 2.07**   | 2.03*    | 2.15*   | 1.22             | .57*     | 1.74          | 1.38        |
| Participated in Day Care Center    | 0.84         | 0.7        | 1.07     | 0.89     | 1.16    | 0.79             | .5**     | 1.16          | 0.87        |
| Participated in Family Day Care    | 0.96         | 1.06       | 0.81     | 1.1      | 1.1     | 0.77             | 1.17     | 1.22          | 1.06        |
| Participated in Head Start         | 1.38         | 2.02       | 1.1      | 3.27**   | 3.7**   | 1.61             | 0.63     | 2.04          | 0.71        |
| Participated in Nursery School     | 1.34         | 1.2        | 1.94     | 1.6      | 2.15    | 1.06             | 1.2      | 1.15          | 1.48        |
| Participated in UPK                | 1.93*        | 1.73       | 1.8*     | 1.63     | 2.23*   | 1.93*            | 0.65     | 1.91*         | 1.37        |
| Pre-School Age 3                   | 0.64         | 0.71       | 0.55     | 0.53     | 0.59    | 0.63             | 0.72     | 0.61          | 0.78        |
| Pre-School Age 4                   | 1.07         | 1.1        | 0.95     | 0.83     | 1.03    | 1.12             | 2.93**   | 0.55          | 1.35**      |
| Constant                           | 2.43         | 2.37*      | 1.24     | 1.88     | 1.54    | 1.82             | 2.53*    | 2.24*         | 3.6**       |
| Chi-Square                         | 33.48**      | 25.91*     | 39.78**  | 32.46**  | 40.66** | 38.94**          | 40.1**   | 30.32**       | 25.66*      |

\* $p < .05$ , \*\* $p < .01$

<sup>1</sup> The initial models included the following variables: school district (Horseheads excluded as the reference category), gender (female as reference), race (non-white as reference), whether the father has a college degree (4-year or better), whether the mother has a college degree (4-year or better), pre-school attendance during age 3 or 4, utilization of early care programs, utilization of education programs, utilization of parent learning programs, and utilization of healthcare/nursing programs

Results in Table 7 identify the probability that children with each of the identified characteristics were classified as school ready overall as well as for each of the domains of the COR and T-CRS. These results should be interpreted as the odds that a child with the identified attribute was classified as school ready in comparison to other children in the sample. A value of 1 indicates there was no difference between students with the identified attribute (male, white, etc.) and those without the attribute. For example, the value of 0.46 for males in the School Ready column suggests that, within the context of all other predictors and their impact, males were 46 percent as likely as females to be identified as school ready. Each coefficient or value takes into account all of the predictors in the model and reflects the relative contribution of a particular variable.

The strongest predictors of overall school readiness were gender, mother's education and participation in UPK. Specifically, results show that male students were about half as likely as female students to be identified as school ready, whereas children with college educated mothers and children who participated in UPK were about twice as likely to be school ready.

Separate analyses were conducted to determine if predictors of overall school readiness were different from predictors of subscale-specific readiness. Each of the three predictors of overall school readiness also significantly impacted at least two of the four COR subscales (Initiative, Language, Movement and Science). Student gender and maternal education impacted three of the four, while participation in UPK was a significant predictor of two subscales (Language and Science). Other significant predictors for the COR subscales included participation in Head Start and attending school in the Elmira district. Although participation in Head Start was not significant for composite school readiness, Head Start

attendees performed significantly better than non-attendees on the Movement and Science subscales. Students who attended a school in the Elmira district were more likely to be categorized as ready on the Language subscale compared to students in other districts.

The strongest predictors of overall readiness also significantly impacted the greatest number of subscale domains. These variables were: gender (significant on seven subscales), mother's education (significant on four subscales), and participation in UPK (significant on four subscales). Results in Table 7, also demonstrate that some variables, such as participation in Head Start, did not predict overall school readiness but were significant in predicting readiness for specific subscale domains.

#### *Differential Impact Analyses*

Additional logistic regressions were run to test whether SRP service impact differed by specific demographic variables. Differential impacts were explored by gender, race and maternal education. Overall, results suggest that the relationship between service usage and readiness was fairly stable across demographic variables. Results by race and maternal education do not add substantively to overall findings.

Service impact, however, varied somewhat by child gender. A noteworthy finding from these analyses was that readiness of female students was predicted by paternal education, which was not the case among male students. Female children with college educated fathers were far more likely to be school ready on the composite measure, and also significantly more likely to be ready on the Movement and Task Orientation subscales. Also specific to females, participation in Head Start dramatically increased the likelihood of readiness on the Initiative and Assertiveness scales

## Summary and Conclusions

This report presents findings on school readiness levels of the Chemung County 2011 kindergarten cohort. Specific findings include:

- Due to a dramatic increase of 21 percent since 2007, two-thirds of entering kindergartners in Chemung were considered school ready in Fall 2011.
- An increase in school readiness was observed in all three school districts.
- Different interventions seemed to impact different areas of readiness. For example, Head Start was related to readiness in cognitive domains while participation in preschool or UPK seemed to primarily impact social-emotional skills.
- The strongest predictors of overall school readiness were gender, mother's education and participation in UPK.
- Available data did not reveal a statistically significant relationship between participation in early care, parent learning, or healthcare/nursing services and school readiness. However, only about one-quarter of SRP families reported involvement in a parent learning program, and fully implemented healthcare/nursing services were not available to approximately half of the 2011 kindergarten cohort. Next year, analysis of the 2012 cohort will offer a more comprehensive assessment of service impact based on more complete data.
- Participation in UPK and participation in preschool at age 4 each positively and significantly predicted readiness on two of the four T-CRS subscales. Involvement with Head Start, nursery school or family day care did not predict any of the T-CRS scores.
- Student gender and maternal education impacted three of the four COR subscales, while participation in UPK was a significant predictor of two subscales (Language and Science). Other significant predictors for the COR included participation in Head Start and attending school in the Elmira district.

Although participation in Head Start was not significant for composite school readiness, Head Start attendees performed significantly better than non-attendees on the Movement and Science subscales. Students who attended a school in the Elmira district were more likely to be categorized as ready on the Language subscale compared to students in other districts.

- Developing an array of new programs may not be necessary to improve educational outcomes. In communities where significant programs and resources are available, expanding access to and improving coordination among these services may be an effective approach.

It is important to note that data do not allow direct causal relationships to be drawn between SRP services and improved readiness levels and that this relationship may be impacted by unmeasured factors. Descriptive analyses of county level data collected from the U.S. Census Bureau's American Community Survey for the span of years from 2005-2009 were conducted in order to determine if the dramatic increase in school readiness could be explained by changes in the population at the county level. These descriptive analyses did not identify any substantial changes to the median household income, the percent college educated, or changes to the racial composition of Chemung County. It is possible, however, that analysis of trends at a lower geographic level such as zip codes or census tracts might identify population changes that could help to explain this relationship.

An additional limitation of the current analyses is that the cut-off used to classify children as "ready" was established by the performance of the 2007 kindergarten cohort, therefore this population serves as the reference for subsequent cohorts. The composite readiness

measure is a customized indicator created for use in this study. Thus, readiness levels of Chemung kindergartners are not measured against state or national criteria in this report. Given the magnitude of change that occurred, a logical next step of research inquiry is to attempt to map out and specify changes in service availability and usage between baseline and follow-up.

The 2011 follow-up evaluation will be replicated on the Chemung County 2012 kindergarten

cohort. This extension of the study was deemed necessary for two reasons: First, some of the SRP prenatal and infant services were not fully in place when the 2011 kindergartners were born. Thus, they may not have received the full array of programs and services available in subsequent years. Secondly, it would further validate the change in Chemung, and the potential impact of the SRP, if findings demonstrate that school readiness levels remain at or above the 2011 level.



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**Appendix A**  
**Service Utilization by Domain and Program**

| <u>Service Category</u>    | <u>Individual Service</u>                        | <u>Percent Utilized</u> |
|----------------------------|--|-------------------------|
| <b>Early Care</b>          |  | <b>78%</b>              |
|                            | Care Provided by Friend or Relative in home..... | 35%                     |
|                            | Care Provided at home by Caregiver/Nanny.....    | 18%                     |
|                            | Care provided at home by Parent.....             | 63%                     |
| <b>Education</b>           |  | <b>80%</b>              |
|                            | Day Care Center.....                             | 28%                     |
|                            | Family Day Care.....                             | 33%                     |
|                            | Early Head Start/ Head Start                     | 25%                     |
|                            | Nursery School.....                              | 17%                     |
|                            | Universal Pre-Kindergarten.....                  | 46%                     |
|                            | Pre-school Special Education.....                | 10%                     |
| <b>Parent Learning</b>     |  | <b>24%</b>              |
|                            | Parenting Workshop.....                          | 11%                     |
|                            | Parenting Website.....                           | 15%                     |
|                            | Parent Resource Center.....                      | 14%                     |
| <b>Healthcare/ Nursing</b> |  | <b>84%</b>              |
|                            | CIDS Development/ Screening.....                 | 35%                     |
|                            | CIDS Program.....                                | 28%                     |
|                            | Healthy Families.....                            | 17%                     |
|                            | Child Emotional Health Screening.....            | 16%                     |
|                            | Well Baby/Child.....                             | 80%                     |

## **About the Center for Human Services Research**

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## **The Evaluation Team**

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