

Performance Outcomes Measurement System Report

The School Link Project: Laying The Foundation for Long-Term Evaluation of School Readiness Programs

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Executive Summary

The Performance Outcomes Measurement System (POMS) Team of the Children and Families Commission of Orange County (the Commission) has conducted a pilot project called School Link to assess the feasibility of linking Commission Core Data Outcomes Module (CDOM) data with school district data. The long-term goal of the project is to provide a mechanism for determining whether children receiving Commission-funded services do better in school.

To carry out the School Link project, the POMS Team partnered with two school districts, Newport Mesa Unified School District and Anaheim City Elementary School District to determine the steps necessary to allow data sharing. Completion of the project involved development of Memoranda of Understanding between the Commission and the districts, a parent consent form specific to this project, and an agreement between one district and the Commission's independent evaluator. It also was necessary to ensure that data could be downloaded from the districts in a format compatible with the statistical software used by the evaluator.

Once these hurdles were overcome, data from CDOM and the two school districts were successfully merged, allowing for preliminary analysis of the relationships between family characteristics in the CDOM database and developmental assessment results in the district databases. Although the sample sizes were too small for statistical reliability, there were some interesting findings, including the demonstration of significant growth among the students in the school readiness programs, as measured by teacher ratings using the Desired Results Developmental Profile (DRDP). There also appeared to be a significant relationship between insurance coverage and annual family income with the DRDP scores measured at the end of the school year.

Based on the intriguing preliminary results presented in this report, the School Link project is expanding to additional school districts so more students can be added to increase the sample size and the likelihood of obtaining statistically significant results.

Introduction

One of the overarching, fundamental questions about the California Children's and Families Act (Prop. 10) is whether children who receive services funded through Prop. 10 do better in school. Although this seems like a simple question, the route to answering it requires forging new partnerships and developing new data sharing processes in an era of increasing protections of individuals' information. To this end, the POMS Team has pursued a project called School Link to determine the feasibility of linking Commission data with school district data, which will be required if this question is ever to be answered in Orange County. This report documents the first attempt to link Commission data with data from two school districts and presents the results of that effort.

Rationale and Method

The Children and Families Commission of Orange County (the Commission), in partnership with the First 5 California Commission, funds preschool services at 13 school districts. These districts, in accordance with the Commission's Confidentiality and Data Sharing Protocol, collect demographic and other family characteristics data on the individual children they serve and enter this information into the Commission's database (Core Data Outcomes Module, aka CDOM). The districts also assess the school readiness of the preschool students at the beginning and end of the school year using an assessment tool called the Desired Results Developmental Profile (DRDP). The results of these assessments, as well as attendance records, are entered into the school districts' databases. The initial goal of the School Link project is to determine whether it is possible to link information in CDOM with information in the schools' databases to allow for a better understanding of the affect of early childhood programs on academic performance. Assuming this data linkage works, the long term goal will be to assess the impact of early childhood programs on the subsequent academic performance of children through grade 12.

In 2004, the Performance Outcomes Measurement System (POMS) Team partnered with two school districts (Newport Mesa Unified and Anaheim City Elementary) that have State School Readiness (SSR) grants jointly funded by the Commission and First 5 California. Both districts offer preschool programs through their SSR grants and use the DRDP to assess children's developmental progress in a variety of areas. Before district data could be shared with the Commission, the POMS Team and the districts addressed concerns about confidentiality, parent consent, and information technology compatibility.

This report documents the data sharing efforts in three major sections: 1) the identification and meeting of administrative and technical requirements for the merger, 2) preliminary results of the study, and 3) a summary of the findings and lessons learned.

Identifying and Meeting Administrative and Technical Requirements for the Merger of School District Data with Commission Data

The initial pilot of School Link was limited to two school districts for two reasons. First, recognizing the individuality of school districts, it was believed, rightly, that the confidentiality and data sharing requirements would be different at each district. Therefore, in order to keep the pilot manageable, only two districts were selected for participation – Newport Mesa Unified School District and Anaheim City School District. Second, because it was unknown whether the pilot would be successful, and given the amount of work that would be involved, it was felt best to keep the initial effort small to maximize the likelihood of success.

The POMS Team and representatives of the two school districts held a series of meetings to identify and address the administrative and technical requirements for the data merger. The discussions turned around what school-readiness outcome data were available and when, whether the data were collected in a uniform manner, whether district computer systems could export the data in a format suitable for merging with CDOM, as well as other administrative requirements that needed to be met in order to protect the children's information.

Administrative Requirements. As an outgrowth of these meetings, and through consultation with district personnel, it was determined that the administrative requirements varied by school district. Both districts required a Memorandum of Understanding (MOU) between the Commission and the district (Attachment 1) specifying the responsibilities of each partner and describing how conflicts would be resolved. However, the districts varied in the amount of review required before the MOU could be signed and one of the districts needed to have their school board approve it.

Because the data analysis would be carried out by the Commission's independent evaluator, who is not a member of the Commission's staff, one of the districts had the evaluator complete a no-cost independent contractor agreement. The other district did not require this type of agreement.

The districts also varied in their requirement for parental consent specific to the School Link project. One district would only include children in the study whose parents had signed a specific consent for School Link (Attachment 2). The other district felt their existing consents covered this project.

A protocol for the study was submitted to and approved by the County's Human Subjects Review Committee (HSRC) to ensure the protection of human subjects. One reason this was done was because in order to match the data from the two data systems, a unique identifier needed to be created using the student names and birthdates. As a result, the districts needed to release names and birthdates along with the DRDP results and attendance records. In the future, as the districts adopt new statewide identification numbers for pre-kindergarten students and that number is added to CDOM, it will not be necessary to use student names and birthdates to match data.

Technical Requirements of the Data Merger. The outcome measure employed in this study was the Desired Results Developmental Profile (DRDP). Through meeting with the participating districts, the POMS Team learned that some effort would be required to make the DRDP uniform in both districts. One district used a version of the DRDP required by Head Start, while the other's version of the test did not include the Head Start items. In the end, the Head Start items were omitted from the analysis of data for the study.

Communication between the evaluators and information technology personnel in both districts demonstrated that both districts used computerized databases that could export data in Excel format, which is easily imported into the data analysis software currently used by the POMS Team (SPSS). This circumstance greatly simplified the data merger and eliminated any need to re-enter data from either of the two districts, a step that would make the cost of future studies prohibitive as the number of districts and students increases.

Once the districts' data were provided to the evaluator, minor editing of the data was required to successfully merge data from the two districts into a single file. These changes involved ensuring that the 55 individual DRDP items in the databases all had the same field names and were spelled the same. In addition, a unique identifier for each child was constructed from the child's name and birth date. These early attempts to use district data helped identify more detailed specifications (not reported here) for how to prepare data for the merger. Those steps were reported to district representatives to simplify future data transfers.

On the Commission side, the unique identifier was also constructed to match the merged district databases. Then, because virtually all of the fields in CDOM became available for the study once the data were merged, the selection of a few key variables was simplified by choosing fields with fairly well known relationships to academic outcomes. They were: the mother's age at the birth of this child, her education level and marital status, when she began prenatal care, the family's annual income, the child's health insurance coverage, the primary language spoken in the home, and the frequency with which parents read to their children during the week. Only these fields and children attending the state school readiness programs from the two collaborating districts were saved in the final dataset created especially for the project.

Many of the questions administered to parents as part of the CDOM interview concern a family's status, and that status can change from one six month period to the next. Therefore, families whose children continue to receive Commission-funded services are interviewed every six months (the six-month snapshot) to track changes. The snapshots pertain especially to children who attend school readiness programs because they receive services for at least nine months. Therefore, for this study, and for the first time, data from CDOM that were merged with the district data were restricted to the *most recent* interview about the child's family. The complex programming steps required to extract the most recent interview will be documented elsewhere.

When the merger of CDOM and district data was finally attempted it was by and large successful. However, some problems of a temporary sort remained. In spite of special care taken to make the linking field (unique identifier) uniform in both data sources, information for some 20 to 30 students was not found in CDOM. Most of these students were just not located in CDOM in spite of extensive electronic searching. A few others were present in CDOM and were

located with an electronic search but were still not matched to the district data. While all the reasons for the failed linkup in these cases were not identified as of this writing, the observation should not deter future efforts to merge data. The problems experienced in this study are likely to be temporary and related to the concatenation of name and birth date used to create the unique identifier. Once the standard student identification number is regularly used for preschool age students, and is also entered into CDOM, the steps required to bring CDOM and district data together should be much simplified.

Study Results

The study results can be broken down into three major components:

- A review of CDOM elements used in the study
- A review of DRDP results from the school readiness programs
- Results from an analysis of CDOM and DRDP results together

CDOM Data. This discussion begins with a review of the eight CDOM elements used in the study: the mothers' age, her education and marital status, when she began prenatal care, the family's annual income, the child's health insurance coverage, the primary language spoken in the home, and how often parents are reading to their children each week.

Figure 1. CDOM Data for Mothers' Age, Education and Marital Status

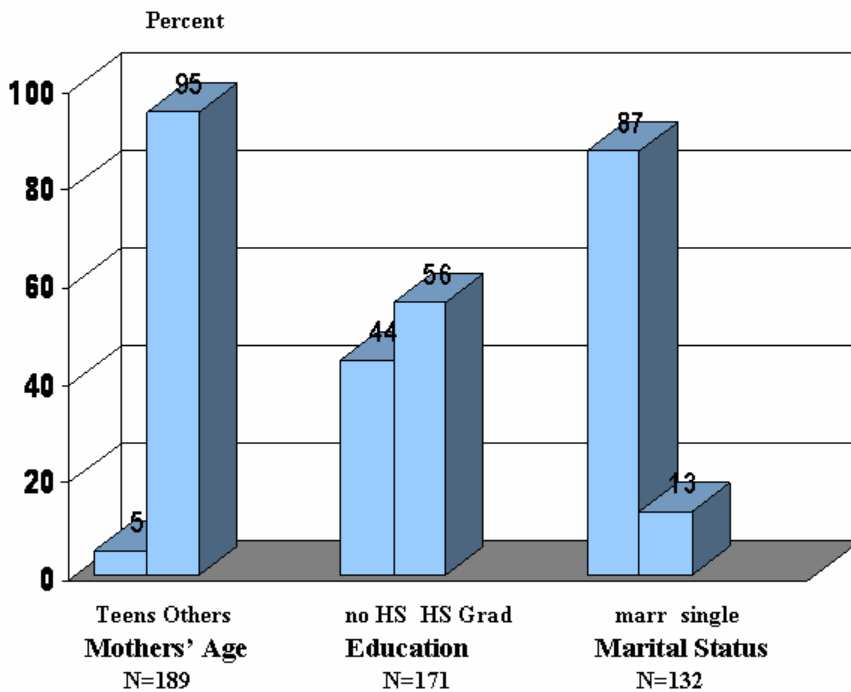


Figure 1 summarizes the data for mothers' age, education and marital status among the children in the School Link study. As seen in the figure, among children attending school readiness programs in the two collaborating districts, five percent of mothers were 19 years old or younger when their children were born, and just under half of them (44%) did not graduate from high school. The majority (87%) reported they were married or living with a partner.

Figure 2 provides information about the family's annual income and the child's health insurance coverage. The school readiness programs, as was anticipated, serve low-income children with 81 percent of families represented earning less than \$30,000 annually. The school readiness programs also have a sizable segment (15%) of their students without health insurance, in spite of the fact that these data represent the most recent interview information about insurance.

Figure 2. CDOM Data for Income and Health Coverage

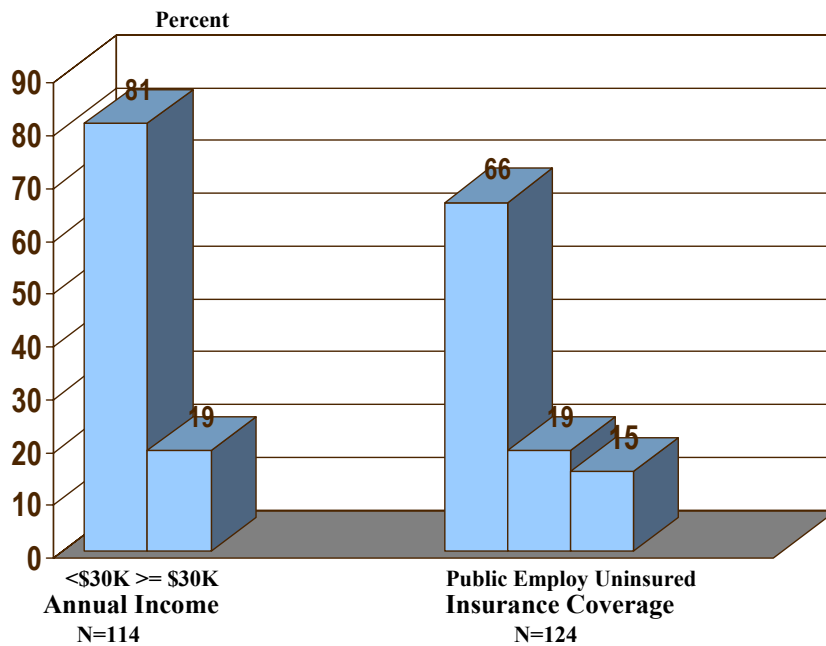
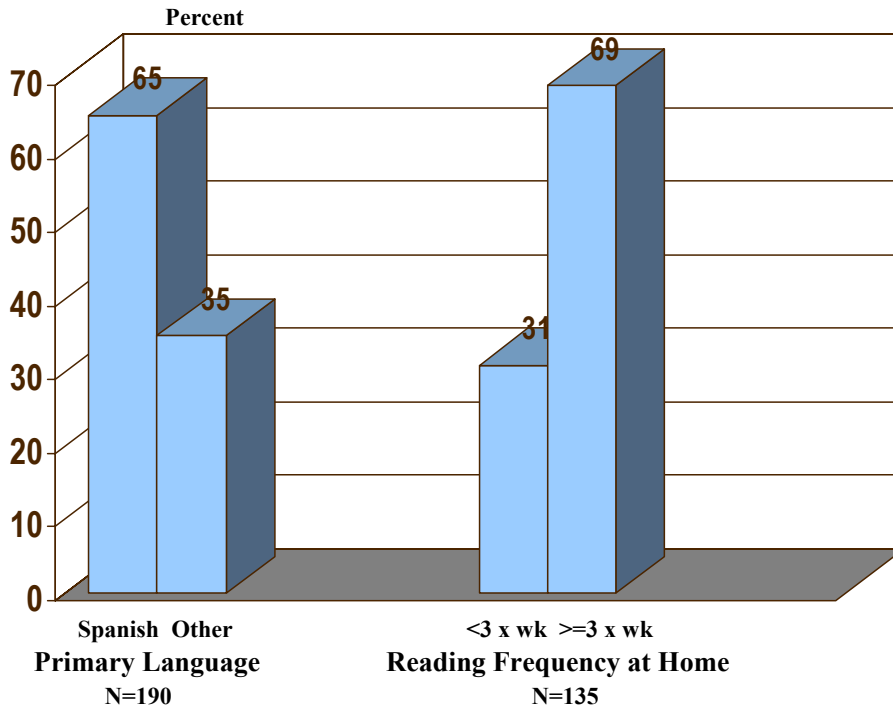


Figure 3 focuses on the primary language used in the home and how often parents report they are reading to their children every week. As seen in the figure, nearly two thirds (65%) of school readiness students speak Spanish in their homes. At the same time, over two thirds of parents (69%) report that they are reading to their children three times a week or more.

Figure 3. CDOM Data for Primary Language and Reading Frequency to Child in the Home



DRDP Data. The Desired Results Developmental Profile is a teacher-completed observational rating scale on which the performance of students is rated on 55 distinct measures. Example measures would include such concepts as self-awareness (knows name and gender) or interactions with adults (knows when to ask for adult help). Each item receives a rating on a four-point rating scale as follows:

- 1 = Not yet observed
- 2 = Emerging
- 3 = Almost mastered
- 4 = Fully mastered.

The 55 items can be grouped into four subscales and a total score. The total score represents the student's average performance across all 55 items, while each subscale score captures average performance in a specialty area. The four specialty areas are:

- Personal and Social
- Effective Learner
- Physical and Motor
- Health and Safety.

Children’s progress is gauged in this study by a comparison of their fall and spring scores on the DRDP overall as well as in the four specialty areas. Before examining those statistics, however, a brief remark is in order regarding the reliability of the DRDP and its special subscales. The internal consistency (reliability) of a scale is a gauge of how well the particular items on a scale cluster together to capture the construct they are said to measure. The statistic, Cronbach’s alpha coefficient, is used to measure the internal consistency of a scale and is believed to be acceptable for research when the coefficient reaches .7 or greater. The reliability of the DRDP total and subscales all met or exceeded this standard as seen in Table 1.

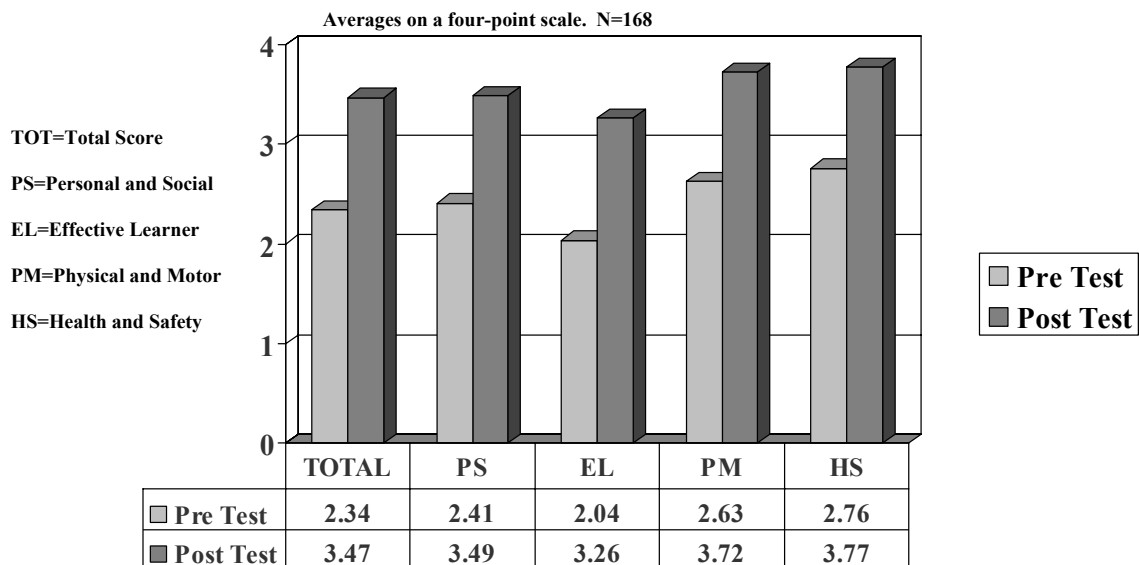
Reliability¹ of DRDP Total and Subscales	
<i>Subscale</i>	<i>Reliability Coefficient</i>
Total (all 55 items)	.958
Personal and Social	.931
Effective Learner	.939
Physical and Motor	.720
Health and Safety	.667

Figure 4 shows the comparison of fall (pre) and spring (post) DRDP teacher ratings for the 168 students who were rated both times. As the figure suggests, the students made statistically significant gains in each of the areas over the course of the school year. By and large, group averages were all below the level of almost mastered (a score of three) at the beginning of the school year, and approached the fully mastered level (a score of four) by the end of the school year. Without a comparison group it is unclear how much of this growth can be attributed to the program and how much must be credited to the maturation of the children. However, their teachers argue that these scores represent rapid growth and high achievement that is a result of the program’s ability to *promote* maturation to its full potential.

The correlational analysis of DRDP scores and CDOM fields. The eight fields from CDOM that were merged with the students’ DRDP scores were used in a simple set of group comparisons to learn whether background variables from CDOM were associated with or continued to be associated with the children’s growth. Mothers’ young age at the birth of their children, lack of formal education, and other variables, are known from the literature to be associated with lower school performance. Ideally, school readiness programs and the greater growth they are assumed to foster would tend to nullify the strong associations between a mother’s background and her child’s school performance. However, it should be strongly stated from the outset that those questions cannot be addressed by this study. **These results must be viewed as extremely preliminary and not yet worthy of interpretation.**

¹ Any value meeting or exceeding .7 is acceptable

Figure 4. Pre/Post Comparisons* on Four Desired Results and Total



*All differences are statistically significant at or beyond .001. Bonferroni corrected p=.01.

The analysis of DRDP scores and CDOM variables focused on two of the available outcome measures: the children’s end-of-year or post-test total score and the *change* in score averages from fall to spring. Children’s scores on both these outcomes were broken down into two groups for each CDOM variable. For example, for the mother’s age, the scores of children whose mothers were 19 years old or less when the student was born were compared to students whose mothers were older than 19. Similarly, the scores of students whose mothers had not completed high school were compared with those whose mothers did complete, and so on. Three groups were compared for health insurance coverage. Both the scores for the DRDP total for the post-test done in spring and the differences from fall to spring (Change Scores) were used in this analysis. The results are reported in Table 2.

Both the small sizes of the samples and the “lopsidedness” of the group sizes make these statistics unreliable. Be that as it may, it can be seen in the table that significant differences in post test scores were observed for the effect of income on scores and insurance coverage on scores. Children residing in families earning less than \$30,000 annually had significantly lower average scores at the end of the school year than children from families earning more. Similarly, children with publicly-funded insurance had significantly lower scores than either uninsured children or children whose coverage was paid for by an employer or the family itself.

A similar analysis was conducted to assess the amount of change exhibited by the various groupings. Interestingly, children who needed the most growth improved the most when the change scores are examined. Uninsured children, on average, grew more than insured children (1.32 points of growth versus 1.15 points or 1.04 points); the children of teen mothers showed somewhat greater growth than their counterparts with more mature mothers. Children of single

mothers showed somewhat greater gains than children in more traditional family arrangements. While these data remain unreliable at this writing, serving as they did only to test the feasibility of merging CDOM with district data, this will be an interesting trend to investigate in future evaluation samples of a larger size.

Summary and Lessons Learned

This first pilot of the School Link project demonstrated that it is possible to merge CDOM data with school district data and analyze the relationships between family characteristics in the former with academic performance in the latter. Although the sample size was too small to do anything more than demonstrate the feasibility of the project, there were a number of lessons learned.

- No two school districts are alike, so flexibility and perseverance are helpful to determine the requirements of individual districts and the processes needed to overcome them
- An MOU is essential; plenty of time should be allowed for school board review if that is required by the district
- Some districts will require active consent of participating families for this specific project and when this is the case, it is best to seek this at or near the beginning of the school year
- The data from the districts needs to be labeled identically
- Use of the statewide student identification number should reduce concerns about confidentiality

The preliminary results, although not statistically reliable, are tantalizing enough to cause the School Link participants to endeavor to expand the project to three more school districts and merge data of up to 800 children. This effort is currently underway.

Acknowledgements

The authors would like to thank the following individuals for their good humor, patience, and diligence in making this project a success:

Newport Mesa Unified School District:	Lorie Hoggard Jan Marquardt
Anaheim City Elementary School District:	Elaine Coggins Lynda Durand
Corporation for Standards and Outcomes:	Traci Smith
Commission’s State School Readiness Coordinator:	Cinda Muckenthaler

<i>CDOM Variable</i>	<i>Groups Compared</i>	<i>Post Test Total Group Average (n)</i>	<i>p-value</i>	<i>Change Score Group Average (n)</i>	<i>p-value</i>
Mothers' Age	19 or less Over 19	3.44 (10) 3.47 (157)	n.s.	1.21 (10) 1.13 (157)	n.s.
Mothers' Education	No High School High School Grad	3.46 (68) 3.51 (81)	n.s.	1.17 (68) 1.11 (81)	n.s.
Mothers' Marital Status	Married ² Single	3.49 (104) 3.57 (14)	n.s.	1.11 (104) 1.21 (15)	n.s.
Primary Language	Spanish Other	3.47 (109) 3.46 (59)	n.s.	1.17 (109) 1.06 (59)	n.s.
Prenatal Care	First trimester Later or none	3.51 (89) 3.51 (22)	n.s.	1.17 (89) 1.05 (22)	n.s.
Annual Income	Less than \$30k \$30k or more	3.46 (83) 3.69 (21)	.007 ³	1.16 (83) 1.11 (21)	n.s.
Reading Frequency in the Home each week	Less than 1-2 times 3 times or more	3.51 (37) 3.49 (84)	n.s.	1.13 (37) 1.15 (84)	n.s.
Insurance Coverage	Public Employer/Self Uninsured	3.45 (74) 3.68 (22) 3.62 (16)	.010	1.15 (74) 1.04 (22) 1.32 (16)	n.s.

² The 'married' category includes mothers who are cohabiting; the 'single' category includes mothers who are single, never married, divorced and separated.

³ Results for both Annual Income and Insurance Coverage remained statistically significant, or nearly so, when the DRDP pre-test score was statistically controlled. However, confident interpretation of the results should await additional data.

Attachment 1

Memorandum of Understanding between the Children and Families Commission of Orange County and the **Fill in the Blank** School District

Purpose:

The purpose of this MOU is for the Children and Families Commission of Orange County (CFCOC) and **Fill in the Blank** School District (**XXXSD**) to participate in a pilot project to merge data from each organization's data system into a single data repository to improve the evaluation of and program planning for school readiness programs.

Term:

This MOU will be effective on January 1, 2006, and remain continuously in effect until December 31, 2006, unless terminated by either party as described below.

Responsibilities of the Children and Families Commission of Orange County:

1. Contract with an independent evaluator (Evaluator) to develop the merged data repository and prepare reports on the project. Reports will be of aggregate data only, no children or families will be identified in reports prepared as a result of this project.
2. Make Outcomes Collection, Evaluation, and Reporting Service (OCERS) data available to the independent evaluator.
3. Meet with School District staff on a regular basis to manage the project.
4. Work with School District staff to assure that children's rights to privacy are protected and confidentiality of the data is maintained and ensure that Evaluator signs a confidentiality agreement with the School District if required.
5. Work with School District staff to overcome technological challenges as they arise.
6. Provide final project report to the School District

Responsibilities of the **Fill in the Blank Unified School District:**

1. Obtain **active** parental consent to share School District data including but not limited to the Desired Results Developmental Profile (DRDP), preschool attendance, and child identifying information – e.g., name, date of birth, and any other data needed to match the child to records in the Commission's database with the Evaluator for the purpose of the evaluation.
2. Make School District data, including but not limited to the DRDP, preschool attendance, and child identifying information – e.g., name, date of birth, and any other data needed to match the child to records in the Commission's database. available to the independent evaluator in electronic format.
3. Meet with Commission staff on a regular basis to manage the project.
4. Work with Commission staff and consultant to overcome technological challenges as they arise.
5. Work with Commission staff to assure that children's rights to privacy are protected and confidentiality of the data is maintained. School District may request that Evaluator sign a confidentiality agreement.

No funds will be exchanged between the Commission and the School District to carry out this project. Reports resulting from data analysis linking School District data to data collected for the Commission's Outcomes Collection, Evaluation, and Reporting Service (OCERS) will not be

Attachment 1

shared publicly (e.g., with the Commission, School Board, or other groups) without consent of the School District.

Correspondence:

Correspondence concerning this MOU should be sent to:

CFCOC

Evaluation Manager
17320 Redhill Avenue, Suite 200
Irvine, CA 92614
Email address

Fill in the Blank School District
Name of School Readiness Coordinator
Title
Address
Address
Email address

Confidentiality:

Each participant in this project agrees to maintain the confidentiality of all records and information about persons pursuant to all federal and/or state laws or regulations.

Conflict Resolution:

For resolution of conflicts between CFCOC and XXXSD regarding the contents of this Memorandum, the following steps will be taken:

- Step 1: Conference between the CFCOC Evaluation Manager and title of district person (probably the school readiness coordinator)
- Step 2: Conference between the CFCOC Director of Programs and Evaluation and the Assistant Superintendent, Elementary Education – or similar position
- Step 3: Conference between the CFCOC Executive Director and the Fill in the Blank School District Superintendent

Termination:

It is mutually understood that either party to this agreement may terminate this Memorandum of Understanding immediately upon written notice (email and fax are acceptable) to the other party.

By: _____
Executive Director
Children and Families Commission of OC

Dated: _____

By: _____
Superintendent
Fill in the Blank School District

Dated: _____

Attachment 2

School District Name

Program Name

Authorization for Release of Student Information

As the parent or legal guardian of _____
Child's Name (First) (Middle) (Last)

I agree to allow the *XXXXXXXXXXXX* School District to provide information about my child to the Children and Families Commission of Orange County and *insert name*, its independent evaluator. The information will include my child's name, birth date, results of school assessments, and number of school days attended.

The information will be used to learn how well school district and Commission services have helped prepare children for school. I understand that the school and the Commission may look at my child's achievements for several years in order to learn about the benefit of the school readiness program.

I understand that my child will not be identified in any reports prepared from this information.

I also understand that my child may attend preschool and participate in other services whether or not I sign this authorization.

I may revoke this authorization at any time by notifying _____
in writing

Parent/Guardian Signature

Parent/Guardian Name printed

Relationship to Child

Date

Child's Birthdate: