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PUBLIC INSTRUCTION

May 21, 2012

MEMORANDUM

TO: State Board of Education

FROM: Michael P. Flanagan, Chairman

SUBJECT: Presentation on Great Start Readiness Program Evaluation

State funding for public prekindergarten began in Michigan in the fall of 1985 with \$1,000,000 for small pilot programs. Within a decade, the program had grown to serve over 21,000 four-year-old children at risk of school failure. This year, the Great Start Readiness Program has funding of over \$104,000,000 to serve as many as 30,000 children.

In 1994-95, funding for a longitudinal evaluation grant was first included in the state budget. After a competitive process, the HighScope Educational Research Foundation was selected to conduct the evaluation. The evaluation has included several parts and studies, including participation in a multi-state evaluation of state prekindergarten programs. The newest results are the latest findings in the long-standing evaluation of a cohort of 338 children who attended the prekindergarten program in 1995-96. They were matched in the fall of 1996 with a group of 258 demographically similar children who did not attend a classroom preschool program. Reports at kindergarten entry, in the primary grades, at the first administration of the MEAP in 4th grade, and in middle school, have confirmed the initial findings of differences between the program group and the control group. These reports are all available at <http://www.highscope.org/Content.asp?ContentId=225>. The students have now graduated from high school, and HighScope has presented the report on this cohort of students through high school graduation to the Michigan Department of Education.

Attachment A is a summary of the findings of the longitudinal study from 1995-2011. Attachment B is the full report on High School Graduation and Grade Retention.

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Summary of Great Start Readiness Program Evaluation Findings 1995-2011

- Kindergarten teachers consistently rated GSRP graduates as more *advanced in imagination and creativity, demonstrating initiative, retaining learning, completing assignments* and as *having good attendance* (Florian, et al., 1997).
- Second grade teachers rated GSRP graduates higher on being *ready to learn, able to retain learning, maintaining good attendance and having an interest in school* (Xiang & Schweinhart, 2002).
- A *higher percentage of 4th grade GSRP graduates passed the MEAP* compared to non-GSRP students (Xiang & Schweinhart, 2002).
- GSRP boys *took more 7th grade math courses* than non-GSRP boys (Malofeeva et al., 2007).
- GSRP *children of color took more 8th grade math courses* (Malofeeva et al., 2007).
- Significantly *fewer GSRP participants were retained in grade* than non-GSRP students between 2nd and 12th grades (36.5% versus 49.2% in 12th grade) (HighScope, 2011).
- Significantly *fewer GSRP children of color were retained for two or more grades* than their non-GSRP counterparts by the 12th grade (14.3% versus 28.1% in 12th grade) (HighScope, 2011).
- More GSRP students *graduated on time from high school* than non-GSRP participants (58.3% versus 43.0%) (HighScope, 2011).
- More *GSRP children of color graduated on time from high school* than non-GSRP participants (59.7% vs. 36.5%) (HighScope, 2011).

The findings provide evidence of both the short- and long-term impact of GSRP attendance on student outcomes.

*The data used for these analyses were collected from a cohort of 595 children (338 GSRP graduates and 258 non-GSRP graduates) from six districts who were followed from kindergarten through 12th grade.

Michigan Great Start Readiness Program Evaluation 2012: High School Graduation and Grade Retention Findings

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About HighScope Educational Research Foundation

HighScope Educational Research Foundation is an independent, nonprofit organization with headquarters in Ypsilanti, Michigan. Founded in 1970, HighScope's mission is to lift lives through education so everyone can succeed in life and contribute to society. Its vision is widespread participatory education in which students and teachers are partners in shaping the learning experience. To this end, it engages in evaluative research, development of curriculum, training, and assessment materials, and dissemination through educational services and publishing. These activities target teachers and caregivers in early childhood programs. It also disseminates research findings to those who influence children's lives, including teachers, child-caregivers, parents, administrators, policymakers, academics, and researchers. We value your opinions and pay attention to them in our work. If you have any comments or suggestions about this or any other HighScope's research related reports, please contact:

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Abstract

This evaluation of the Great Start Readiness Program finds that 58 percent of GSRP participants, as compared to 43 percent of non-participants of similar background, graduated from high school on time. This difference was greater among students of color – 60 percent versus 37 percent. This difference occurred because 37 percent of GSRP participants as compared to 49 percent of non-participants repeated a grade during their schooling. In particular, 14 percent of GSRP participants of color as compared to 28 percent of non-participants of color repeated two or more grades. In addition, 35 percent of GSRP participants as compared to 28 percent of non-participants were found proficient in math and language arts on the Michigan Merit Examination at grades 11 or 12.

Introduction

This report presents the findings of the evaluation of the Great Start Readiness Program (GSRP) through high school graduation. The GSRP is the state-funded preschool program of the state of Michigan, which began in 1985. This study uses GSRP study data to investigate the relationship between state-funded preschool attendance and short- and long-term child outcomes. Data are analyzed from a sample of preschool attendees and non-attendees that spans their schooling from preschool through high school graduation and beyond.

The work presented here extends the investigation of outcomes for 595 children who were enrolled in GSRP during the 1995-96 school year. These students were tracked through high school using data provided by the Center for Educational Performance and Information (CEPI) within the Office of the State Budget and additional data provided to HighScope by the Michigan Department of Education. This report centers on the findings regarding high school graduation and grade retention.

- The principal research question is whether GSRP participation improves the high school graduation rate, on time and a year later.
- The second research question is how much the GSRP effect on grade retention influences the timing of high school graduation.

This report begins with a review of the findings of evaluations of early childhood education programs. It next looks at the methods and previous findings of this Great Start Readiness Program Evaluation. It then presents the analysis of the high school graduation, the analysis of grade retention, and the analysis of how they relate to each other, and the analysis of Michigan Merit Examination scores. It ends with summary, consideration of the study limitations, and conclusions.

A substantial body of evidence points to the fact that high-quality preschool experiences have an effect on children's short-term and long-term development (Barnett, 2011; Belsky et al., 2007; Gorey, 2001; Henry et al., 2003; Peisner-Feinberg

et al., 2001; Schweinhart, Montie, , Xiang, Barnett, Belfield, & Nores, 2005). Several evaluations have been conducted which have specifically evaluated state-funded preschool programs (Early et al., 2006; Gormley et al., 2005; Henry et al., 2003). Most find at least modest, positive program effects on children's performance, attendance, and reduced rates of grade retention. Much of the work that has examined the effect of state-funded preschool programs has focused on relatively short-term impacts. Evaluations have primarily focused on whether or not preschool graduates are ready for kindergarten or how preschool attendance affects student performance in kindergarten and first grade (Hustedt et al., 2007; Lamy et al., 2005). Few studies have looked beyond the kindergarten and first grade performance of attendees of state-funded preschool programs (Henry et al., 2003; Peisner-Feinberg et al., 2001).

The Great Start Readiness Program (GSRP), formerly the Michigan School Readiness Program (MSRP), is a state-funded preschool initiative which began as a pilot program in 1985. To qualify for the program, a child must be four years of age and have at least two of the following risk factors: low birth weight, developmentally immature, physical and/or sexual abuse and neglect, nutritionally deficient, long-term or chronic illness, diagnosed handicapping condition (mainstreamed), lack of stable support system of residence, destructive or violent temperament, substance abuse or addiction, language deficiency or immaturity, non-English or limited English speaking household, family history of low school achievement or dropout, family history of delinquency, family history of diagnosed family problems, low parent/sibling educational attainment or illiteracy, single parent, unemployed parent/parents, low family income, family density, parental/sibling loss by death or parental loss by divorce, teenage parent, chronically ill parent/sibling (physical, mental or emotional), incarcerated parent, housing in rural or segregated area, and other (can only apply to 10 percent of the enrolled children). (Eligibility criteria for GSRP have since been pared to eight risk factors.)

Since 1995 the HighScope Educational Research Foundation has served as independent evaluator for the GSRP. Evaluators have followed a cohort of program and comparison children who entered kindergarten during the 1996-97 school year at six evaluation sites across the state. This cohort consisted of 338 GSRP children and 257 other children of the same age who did not have a preschool program experience and came from families whose parents' self-reported income was low enough to have qualified them for GSRP.

Evaluation Method

Data were analyzed with Bernoulli hierarchical generalized linear modeling to investigate the differences between GSRP participants and non-participants, controlling for student and school characteristics. We examined how students who attended GSRP compared to students who did not attend GSRP on two primary outcomes of interest, grade retention and high school graduation. These analyses controlled for student-level demographic and socioeconomic variables including

age, gender, ethnicity, special need status in early grades, mother's level of education at school entry, free lunch status and the frequency of school transfers since middle school (6th – 12th grades).

The evaluation of the 1995-1996 GSRP cohort started with 338 children who attended a GSRP program during the 1995-1996 school year in six selected sites across the state of Michigan. It also included an additional 258 children at these sites who did not attend a GSRP program (no GSRP), but were like their counterparts in age and socioeconomic status. The no-GSRP students in this cohort entered kindergarten in 1996, the same year as the GSRP children, but they did not have a preschool program experience. They came from families whose parents' self-reported income was low enough to have qualified them for the GSRP, that is under 200 percent of the federal poverty level – \$30,300 for a 4-person family in 1996 (Assistant Secretary for Planning and Evaluation, 2012). The state's median income at that time was \$51,342 (State median income estimates, FY 1997). The KidsCount Data Center estimates that 45 percent of Michigan's children live below 200 percent of the poverty level (KidsCount Data Center, 2011). Examination of the 25 risk factors indicated that the GSRP group was representative of the GSRP students across the state (Xiang & Schweinhart, 2002).

As shown in Table 1, no significant differences were detected between the GSRP participants and non-participants in age, gender, fathers present at home, persons in the household, mother's highest year of education, or household annual income; the GSRP group fathers had .41 more years of education than the no-GSRP group fathers (Xiang & Schweinhart, 2002).

Table 1
Characteristics of Children and Their Families, by GSRP Status

Characteristic	GSRP (<i>n</i> = 239-336)	No GSRP (<i>n</i> = 183-255)
Average age at kindergarten entry	5.30	5.29
Females	51.4%	51.0%
Fathers present at home	61.5%	60.6%
Average number of persons in the household	4.53	4.69
Average of mother's highest year of education	12.14	11.95
Average of father's highest year of education	12.11*	11.70
Average annual income of households	\$17,882	\$18,022

*:*p*<.05

Previously Reported Findings

Previous reports of the findings of the evaluation of this cohort have appeared through kindergarten (Florian, Schweinhart, & Epstein, 1997), second grade (Xiang, Schweinhart, Hohmann, Smith, & Storer, 2000), fourth grade (Xiang & Schweinhart, 2002), and middle school (Malofeeva, Daniel-Echols, & Xiang, 2007).

In kindergarten, teachers and trained observers rated the development of the GSRP group significantly better than the no-GSRP group (Florian et al., 1997). Teachers rated them significantly better on *initiative, learning retention, completion of assignments, and creativity in using materials*. Trained observers rated them significantly better on *shows initiative, has a good attendance record, interested in school work, gets along with other children, gets along with teachers and other adults, takes responsibility for dealing with own errors or problems, retains learning well, is cooperative, completes assignments, imaginative and creative in using materials, and ready to learn and participate in school*. These findings were later confirmed using additional background information on the children.

In grade 2, teachers ranked the GSRP group significantly higher than the no-GSRP group on the School Readiness Rating Scales (SRRS) of *ready to learn, retaining learning, good attendance, and interest in school work*. In addition, the GSRP group had a significantly lower grade retention rate than the no-GSRP group (8% vs. 15%; Xiang et. al, 2000).

Kindergarten through grade 3 teachers ranked the GSRP group significantly higher than the no-GSRP group on the SRRS scales of *retains learning, ready to learn and participate, shows initiative, good attendance, and shows interest in school work*. Grade 4 teachers rated the GSRP group significantly higher than the no-GSRP group on *literacy skills, thinking skills, and makes good progress to next grade* (Xiang & Schweinhart, 2002).

In grade 4, students who had attended GSRP had a significantly higher percentage of satisfactory scores on the Michigan Educational Assessment Program (MEAP), the state-wide test assessing student academic performance, than students who had not attended GSRP. Larger percentages of the GSRP group demonstrated proficiency on the MEAP in both math (55% vs. 47%) and reading (43% vs. 35%). Again, a smaller percentage of the GSRP group than the no-GSRP group had ever repeated a grade (14% vs. 22%). Parents of GSRP students were significantly more involved in school activities and communication with teachers during the first 3 years of school than comparable parents whose children did not participate. Parent involvement, as in previous years, was positively correlated to children's social relations scores across years, and with their 4th grade academic performance.

To examine whether the positive effects of GSRP were sustained in the middle school years, five outcomes were examined when the 1996-1997 kindergarten cohort were in grades 6-8. The outcomes examined were: Michigan Educational Assessment Program (MEAP) state-wide assessment results in 7th grade; grade retention in grades 6-8; school attendance in grades 6-8; math and science course enrollment in grades 7 and 8; and receipt of Title I and special education services at the end of grades 6-8. While no group differences were found in the MEAP scores, school attendance, or Title I/special education services, and mixed results were found for math and science course enrollment, a significant association persisted for grade retention. GSRP participants were less likely to be retained in grades 6-8. The

effect on grade retention was more complex in grades 7 and 8, when an interaction effect was found between GSRP participation and race. While fewer GSRP participants of color were retained in grade, this effect was not found for white GSRP participants. Similarly, an interaction was found between GSRP participation and gender, and GSRP boys were significantly less likely to be retained than non-GSRP boys. No similar effect was found for girls.

For Title I/special education services, GSRP participants were found to have relatively higher rates of special education services in grades 7 and 8, as one might expect given their larger number of risk factors. However, since information on risk factors for no-GSRP comparison students was not collected at the beginning of the study, the implication of this result remains unclear (Malofeeva et al., 2007).

High School Graduation

Two indicators were used to represent high school graduation: (1) “Graduation on time” with a diploma before or at the end of 13 years of schooling (K-12); and, (2) “Graduation on time or a year later” which included graduation with a diploma by the end of 14 years (the last year data were available for the analysis). For both measures, participants who obtained a GED by the end of 13 or 14 years of schooling were coded as not graduated.

Method

The analysis included 503 GSRP participants out of the original 595. The overall retention rate was 85 percent, with little difference between the GSRP and no-GSRP groups (86% vs. 83%) and little variation across the six study sites (78% - 91%). The data used in the analysis came from the Michigan Student Data System, which tracks Michigan public school students 3 times a year on such measures as their enrollment, grade level, and graduation status. For the 92 participants who were not included in the graduation analysis, 37 had not had any record in the database since the system’s inception. The remaining 55 were not included because of the unavailability of their schooling status, potentially due to a transfer out of the system (e.g., transferring to an out-of-state school, private or home school) or because they disappeared from the system (e.g., no record was found for a school period or following a transfer to another within-state school).

Analysis of the remaining 503 participants did not reveal significant differences between the GSRP and no-GSRP groups in their student-level demographic and socioeconomic variables including age, gender, ethnicity, special need status in early grades, mother’s level of education at school entry, free lunch status and the frequency of school transfers since middle school (6th – 12th grades). The 55 students who were not included in the analysis due to transfer or disappearance from the system were found to be significantly lower in family income at school entry ($p < .05$) and tended to be more likely to be held back in grade ($p = .12$) compared to the 503 participants.

The Bernoulli hierarchical generalized linear model (HGLM) was used to examine whether high school graduation was related to students' GSRP participation, controlling for seven covariates (age, gender, race, special education status in earlier grades, level of mother education at school entry, free lunch status grade 6-12, and frequency of school transfers grade 6-12). The analysis also adjusted for school district differences.

Findings

Table 2 shows that significantly more of the GSRP group than the no-GSRP group **graduated from high school on time** (57% vs. 43%, $p < .01$) – a difference of 14 percentage points. This difference was smaller for white students – only 9 percentage points and not statistically significant (56% vs. 47%). But it was larger and clearly significant for non-white students—22 percentage points. (59% vs. 37%, $p < .01$).

Table 2
High School Graduation on Time, by GSRP Status and Race

	GSRP	No GSRP
All	57.3%**	42.5%
Non-white	58.8%**	36.5%
White	56.3%	46.5%

**: $p < .01$; *: $p < .05$; GSRP percents are adjusted for the effects of 7 covariates.

Table 3 shows that GSRP and no-GSRP groups did not differ significantly in their **high school graduation rates on time or a year later** (64% vs. 60%), nor did GSRP and no-GSRP boys differ in this variable (51% vs. 59%). However, significantly more GSRP than no-GSRP girls graduated on time or a year later (75% vs. 62%, $p < .05$) – a 13.5 percentage-point difference.

Table 3
High School Graduation on Time or a Year Later, by GSRP Status and Gender

Gender	GSRP	No GSRP
All	64.1%	60.3%
Male	50.5%	58.7%
Female	75.3%*	61.8%

*: $p < .05$; GSRP percents are adjusted for the effects of 7 covariates.

The finding of a GSRP effect on high school graduation on time but not on high school graduation a year later points strongly to grade retention as the mediator between GSRP and high school graduation. The correlation between grade retention and on-time high school graduation was $-.731$ (Spearman's ρ , $n = 503$, $p < .001$). Table 4 shows that, combining GSRP participants and non-participants, 80 percent of the non-retained students, but only 6 percent of the retained students, graduated from high school on time. A year later, 3 percent more of the non-retained students and 28 percent more of the retained students graduated, so that 83 percent of the non-retained students and 34 percent of the retained students graduated from high school by then. (The high school graduation rate for students retained two or three years was only 6 percent at that point.) Despite some catching up a year later, grade retention led to almost twice as many high school dropouts as high school graduations.

Table 4
High School Graduation Timing by Grade Retention Status

Grade Retention Status	Graduation on Time ($n = 250$)	Graduation a Year Later ($n = 65$)	Not Graduated Yet ($n = 178$)
Never retained ($n = 297$)	80.1%	2.7%	17.2%
Ever retained ($n = 206$)	5.8%	27.7%	66.5%
Retained 1 year ($n = 126$)	7.5%	41.3%	49.2%
Retained 2 or 3 years ($n = 80$)	0.0%	6.3%	93.8%

The path from GSRP to not repeating a grade to on-time high school graduation is also evident in the amount that grade retention adds to the prediction of on-time high school graduation status by GSRP status and the seven background covariates used in these analyses (age, gender, race, special education by grade 4, mother's education, family income eligibility for the free lunch program, and number of school transfers in grades 6-12), using logistic regression analysis. Its contribution was quite strong ($\beta = -4.09$, $p < .001$). Using the Cox and Snell R^2 , the variance accounted for was .202 without grade retention and .494 with it – an increase of .292.

Grade Retention

Grade retention has been implemented as a strategic intervention in public schools for decades, despite the limited availability of data to support the efficacy of the practice. While its prevalence has fluctuated over time, the last two decades have seen increased numbers of students retained seemingly due to two intricately related trends: (1) increased efforts to end the practice of social promotion (the practice of promoting students with their class whether or not they have obtained the performance goals/skills required for the next grade); and (2) the push for

educational accountability tied to the advent of the No Child Left Behind law in 2001.

Meta-analyses and reviews of retention research have largely concluded that grade retention provides few benefits for students. Jimerson (2001) reviewed 19 studies comparing academic achievement (i.e., reading, math and language) and socio-emotional adjustment between retained and matched comparison students and found negative effects of grade retention across all areas of achievement and socio-emotional adjustment. Jimerson, Anderson and Whipple (2002) reviewed 17 studies which examined using grade retention as a potential predictor of dropping out. They consistently found that despite varying limitations (such as the decade during which the studies were undertaken, location, ethnicities and differing researchers and designs) retention in grade was highly associated with dropping out of high school. In an extensive review of 91 studies published since 1980, Xia and Kirby (2009) found that, in general, grade retention does not appear to benefit students academically and that retained students are at a significant risk for dropping out of school.

Despite the consistent theme regarding the negative impacts of grade retention, the use of retention is still quite commonplace. In 2007 national statistics indicate that approximately 10 percent of all students from kindergarten through 8th grade had been retained at least once with the largest percentage of the retentions having occurred in kindergarten or 1st grade (34%). More males than females (12% vs. 8%), more Blacks than Whites or Hispanics (16% vs. 8% and 10.9%), and in regions of the U.S., more children were retained in grade in the south (13%) than in the northeast (11%), midwest (8%) or west (6%). The percentage of K-8-retained students from poor families (23%) outpaced near-poor (11%) and non-poor (5%). Mothers with the lowest educational attainment had the highest percentage of children retained (20%) (U.S. Department of Education, 2009).

Grade retention is identified as whether or not a student spent another year in a grade of school. It accumulates from kindergarten through the end of high school. For consistency, we use this term for high school students who do not accumulate enough credit hours in a year to move on to the next grade. Once a student was counted as being retained in a grade, he or she was counted as retained through the rest of schooling, regardless of actual grade or whether their record was available in the later years. If no available record indicated any grade retention, a student was defined as not retained each year through the end of high school even for the years with no available records for any reason, such as moving out of state, dropping out of school, transferring to un-graded programs or non-public schools, or simply disappearing from the system.

The rationale for calculating grade retention this way is that it corrected for under-estimation of the grade retention rate based only on students with available records. Preliminary analyses indicated that students whose records were not available were significantly more likely to be held back than students whose records were available

(57% ever retained rate for the 80 students with no available records for the last year of high school compared to 40% for the 478 students with available records, $p < .01$). To use a grade retention rate that did not account for the impact of students without records would have biased the estimate of the magnitude of grade retention especially for the last two years of high school. Despite this correction, underestimation was still possible. But our estimates also included a small amount of overestimation by including a few students who later caught up with their age-mates. Table 4 shows that 7 percent of those retained in grade graduated from high school on time.

An additional indicator for grade retention was generated for those students who were retained for two or more grades. Multiple grade retention began to appear in middle school and grew considerably in high school ($n = 89$, 16% of 558, by 12th grade). While students retained two or more grade levels were obviously a portion of the group of ever retained students, their tendency to end up with even lower educational achievement warranted a separate analysis to determine how GSRP participation affected them.

Once a student was identified as being retained for more than one grade level, the student remained multiply retained through end of high school regardless of the actual grade placement listed or whether the student's record was available in the later years. If no available record indicated any grade retention, a student was defined as not retained each year through end of high school even for the years with no available records for any reason.

Method

The sample for the grade retention analyses included all the 558 participants (318 GSRP students and 240 no-GSRP students) who had at least one year's record available from the Michigan Single Record Student Database since its inception. The database was created when the participants were in 6th grade. The 558 participants accounted for 94 percent of the original sample ($n=595$) for the first GSRP evaluation longitudinal study with little differences between the GSRP and no-GSRP groups (94% vs. 93%), as well as the six original sites where the sample was selected (92% – 96%). Since the attrition was low and the data for the 37 missing students was limited, no comparative analysis was conducted between the missing study participants and included study participants in demographic and socioeconomic background. With available grade level data for the 25 out of the 37 missing students however no difference was found in grade retention by the 4th grade between the missing 25 and the 558 included participants (16% vs. 17%).

The Bernoulli hierarchical generalized linear model (HGLM) was used to examine whether retention status was related to students' participation in the GSRP. To adjust for group differences in child demographic and socioeconomic backgrounds, seven covariates (age, gender, race, special education status in earlier grades, level of mother education at school entry, free lunch status grade 6-12, and school

transfers in grades 6-12) were included at Level 1 of the model while estimating group difference in retention status. To account for the influence of school districts on grade retention policies as well as demographic differences in the populations served, random effects of school districts were estimated at Level 2 of the model so that the effect of school districts could be adjusted for.

A 2-level HGLM was conducted of ever retained in grade for each year from 1st through 12th grade. Because the percentage of multiple retentions (two or more grade levels) in the middle school years was very low (1%-2%) this analysis was conducted for each year from 9th through 12th grade. In addition to the expected transfers from middle schools to high schools, a large percentage of students transferred between schools in middle and high school years (at least once for 39% of the study participants in middle school and for 43% of the study participants in high school), so analyses were conducted by year to provide a rigorous control for school district effects.

Findings

Table 5 shows the effect of GSRP participation on grade retention status by grade 12. Without GSRP participation, 49 percent of this at-risk group repeated at least one grade by grade 12. While this sample of students was selected to be from families of lower income than others, it is nonetheless striking that virtually half of them repeated a grade. Grade retention is clearly a widely prevalent strategy for combating school failure in Michigan. In comparison, only 37 percent of the GSRP participants repeated at least one grade – a reduction of 12 percentage points or about one fourth as many. In the no-GSRP group, almost half as many students repeated two grades as repeated one grade, and almost half as many students repeated three grades as repeated two grades. GSRP participation reduced grade retention in all three categories, particularly those repeating three or more grades.

Table 5
Grade Retention by Grade 12, by GSRP Status

Grade Retention Status	GSRP (<i>n</i> = 318)	No GSRP (<i>n</i> = 240)
Never retained in grade (<i>n</i> = 323)	63.2%**	50.8%
Repeated at least one grade	36.8%	49.2%
Repeated one grade (<i>n</i> = 149)	24.2%	30.0%
Repeated two grades (<i>n</i> = 63)	9.7%	13.3%
Repeated three grades (<i>n</i> = 23)	2.8%	5.8%

**: $p < .01$; GSRP percents are not adjusted for the effects of 7 covariates.

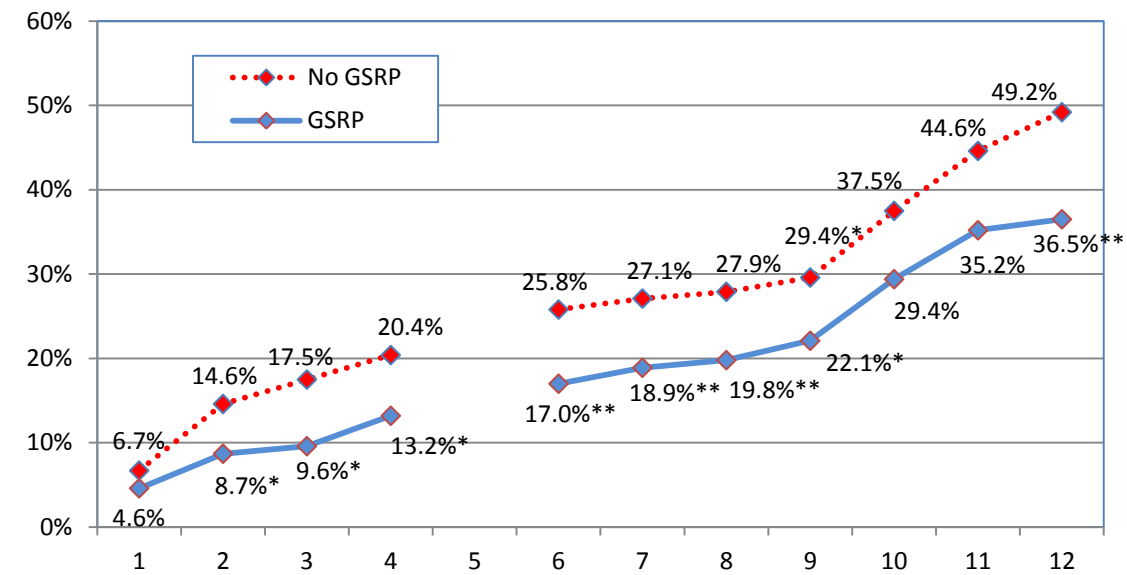
As Table 5 shows, 37 percent of GSRP participants were retained by grade 12, compared to 49 percent of the no-GSRP group, a statistically significant, 12 percentage-point difference. These percentages were virtually unaffected when adjusted for the effects of the seven covariates used in these analyses.

The Michigan School Data System provides a count of Michigan students reported in the same grade for two consecutive school years for every grade from kindergarten through grade 12 from 2003 through 2010. To equate this count to the cumulative grade retention rates reported herein, we subtracted from it an estimate of multiple grade retentions two-thirds as great as that in the study sample (because the state's children are not all disadvantaged). By this method, the cumulative grade retention rate by grade 12 for all the students in the state averaged 35 percent over the years. The no-GSRP group's 49 percent cumulative grade retention rate was 14 percentage points higher, presumably because the no-GSRP group was limited to lower-income children. The GSRP group's 37 percent cumulative grade retention rate was very close to the state's 35 percent rate. In other words, the GSRP experience erased most of the grade retention difference due to the GSRP group's disadvantages.

Michigan public schools spend \$11,987 for every grade a student repeats (Spencer, 2011), while the state spends \$3,400 for a student to participate in the one-school-year GSRP, 28 percent as much. Michigan had 100,000 four-year-olds in 2010 (U.S. Census Bureau, 2012), and 45 percent of them, that is, 45,000, lived below 200 percent of the poverty line (KidsCount Data Center, 2011). Without GSRP, an estimated 22,140 of these children would be retained at some time in their schooling. If GSRP served all eligible children, 16,425 of them would be retained, a reduction of 5,715 students retained in grade. In fact, GSRP has funding to serve 30,668 children in 2011-2012, equivalent to 68 percent of those under 200 percent of poverty, at a cost to the state of \$103,375,000. If GSRP were funded to serve all children under 200 percent of poverty at \$157,500,000, the undiscounted savings from grade retention alone would be \$68,505,705, which would amount to 43.5 percent of the cost of GSRP. This simple calculation does not quantify additional savings from reducing school failure and delayed high school graduation, as well as their lifetime effects on earnings and employment and crime reduction. This return could be increased by better targeting of children and better funding per child leading to higher-quality programming.

As Figure 1 shows, GSRP participants started to be significantly less likely to be held back than the no-GSRP group by grade 2 (9% vs. 15%, $p < .05$). The differences between the two groups remained statistically significant through the 12th grade with GSRP participants being lower by 7-9 percentage points from 3rd through 11th grade, as graphically shown in Figure 1.

Figure 1. Grade Retention, by GSRP Status and Grade



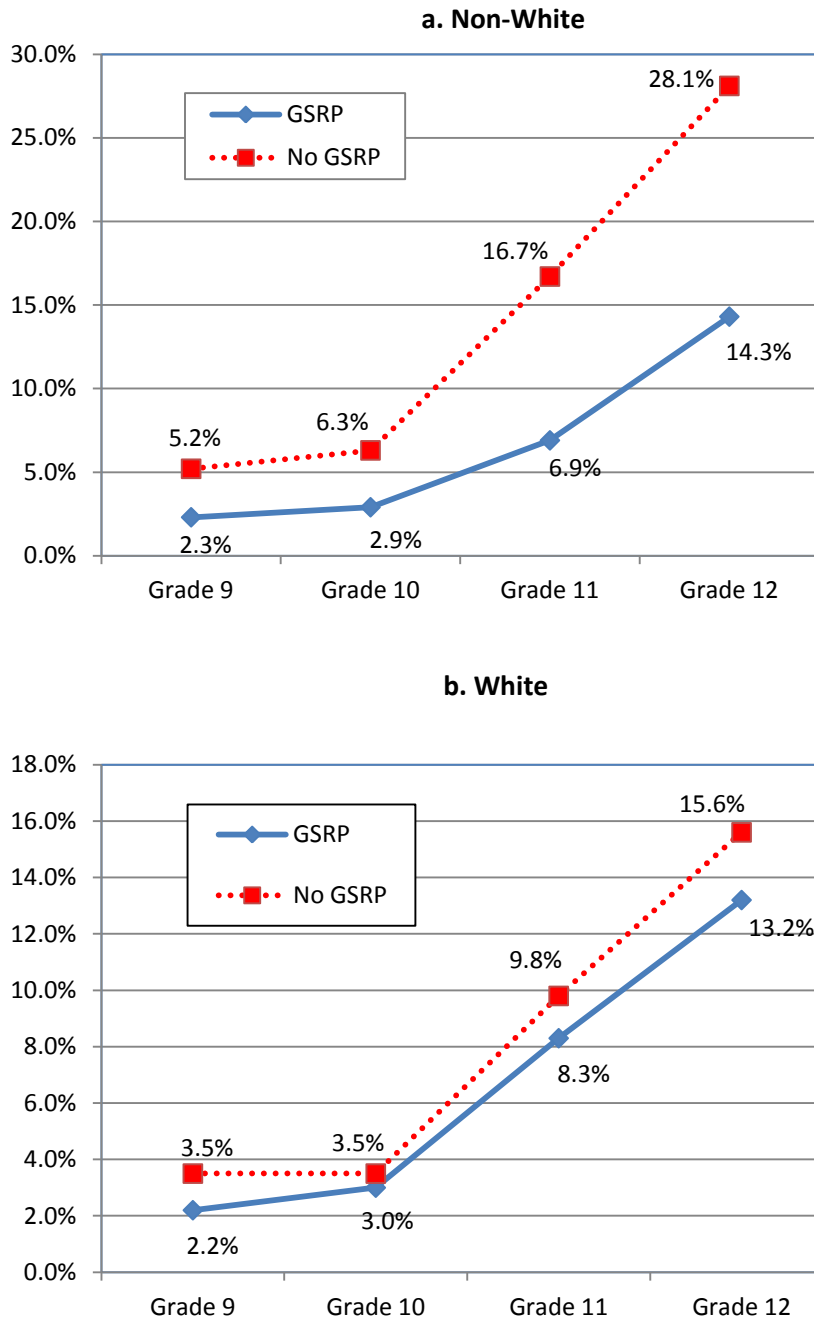
*: $p < .05$; **: $p < .01$

Multiple Grade Retention

The GSRP effects on multiple grade retention by grade 12 differed by race, so Figure 3 presents these effects by race. Only 14 percent of the GSRP participants of color repeated more than one grade, as compared to 28 percent of the non-participants of color. Only 13 percent of the white GSRP participants repeated more than one grade, as compared to 16 percent of the white non-participants. In other words, almost one third of children of color repeated more than one grade, double the rates of GSRP participants of color and white children, whether or not they attended GSRP.

Figure 2 presents the differences in multiple grade retention by high school grade level. Multiple grade retentions rose sharply in grades 11 and 12, doubling or tripling from grade 10 to grade 11 and then almost doubling again from grade 11 to grade 12. The increases are sharp for all four groups, but markedly less for GSRP participants of color than for non-participants of color. So the GSRP effect on the multiple grade retention of children of color becomes most pronounced toward the end of K-12 schooling, as far away from the prekindergarten years as it could be.

Figure 2. Multiple Grade Retention, by Race, GSRP Status, and Grade



Who Repeats a Grade?

The Great Start Readiness Program had effects on children's teacher-rated readiness for school at entry, their grade retention throughout their schooling, and their on-time high school graduation status. Grade retention status is clearly a principal mediator of program effects to the longer term in general and to on-time high school graduation status in particular. That raises the question of what grade retention status means and why it is influenced by GSRP participation.

Table 6 compares the kindergarten teacher ratings of children in this study sample who were retained by grade 4 to those of children in this study sample who were not retained by grade 4. The comparisons favored the non-retained group on all items. Items are listed in the order of the size of the difference between the two groups, so that the first items are the one most strongly associated with grade retention. Grade-level performance or better on literacy and math skills heads the list and is followed by eight items that load on a good student factor that clearly differentiates the groups (Xiang & Schweinhart, 2002). The weakest three items load on a social relationships factor that does not differentiate the groups. We conclude that teachers retain students whom they do not consider good students and do not retain students whom they do consider good students. Teachers' grade retention decisions are decisions about student scholarliness.

Table 6
Kindergarten Teacher Ratings of Children Retained or Not by Grade 4

Characteristic ^a	Not		Difference
	Retained (n = 387)	Retained (n = 71)	
Literacy skills at or above grade level	74.4%	22.4%	52.0%***
Math skills at or above grade level	80.2%	32.8%	47.4%***
<u>Good student factor</u> ^b			***
Retains learning frequently	61.0%	15.7%	45.3%***
Completes assignments frequently	79.5%	39.4%	40.1%***
Shows initiative frequently	54.0%	17.6%	36.4%***
Interest in school work frequently	71.1%	31.4%	39.7%***
Ready to learn and participate frequently	71.0%	35.2%	35.8%***
Imaginative and creative frequently	51.7%	24.6%	27.1%***
Good attendance frequently	79.8%	57.7%	22.1%***
Takes responsibility for own errors frequently	51.9%	31.0%	20.9%***
<u>Social factor</u> ^c			--
Gets along with other children frequently	80.3%	60.6%	19.7%**
Gets along with teachers frequently	89.6%	74.6%	15.0%**
Cooperates frequently	78.8%	67.1%	11.7%*

*.p < .05; ** p < .01; *** p < .001.

^a Percents of children rated to show characteristic frequently rather than sometimes or infrequently.

^b This factor consists of the teacher-rated items that follow it (Xiang & Schweinhart, 2002).

^c This factor consists of the teacher-rated items that follow it (Xiang & Schweinhart, 2002).

Do School Districts Differ in Grade Retention and On-Time Graduation?

Tables 7 and 8 show how GSRP participants and non-participants at the six sites differed in their rates of grade retention and on-time high school graduation. Despite variation among the sites, GSRP participants performed as well as the non-participants at all the sites on both grade retention and high school graduation on time and did better at all but one of them. The GSRP participation effect was strongest for the Detroit and Muskegon public schools, which also had the highest percentages of non-white participants (39% of the study participants in Detroit and 25% in Muskegon). However, Kalamazoo, which had the third largest number of non-white participants (16%), had no GSRP effect on grade retention or on-time high school graduation. This could be simply due to chance variation or perhaps programs in the Kalamazoo Public Schools, such as the Kalamazoo Promise of free college tuition for all students, attenuated the GSRP effect on grade retention.

Table 7
High School Graduation On Time, by GSRP Status by Site

Site	GSRP	No GSRP	Number of Cases
C.O.O.R Intermediate School District	63.2%	41.5%	79
Detroit Public Schools	59.5%	29.8%	89
St. Clair County	56.0%	55.0%	90
Kalamazoo Public Schools	50.0%	50.0%	70
Muskegon Public Schools	53.5%	38.7%	102
Wyoming Public Schools	50.0%	44.8%	73

Table 8
Grade Retention, by GSRP Status by Site

Site	GSRP	No GSRP	Number of Cases
C.O.O.R Intermediate School District	34.9%	39.0%	84
Detroit Public Schools	44.9%	65.4%	101
St. Clair County	29.3%	37.2%	101
Kalamazoo Public Schools	42.0%	42.4%	83
Muskegon Public Schools	44.4%	64.7%	106
Wyoming Public Schools	21.7%	43.2%	83

Michigan Merit Examination Performance

As part of the Michigan Educational Assessment Program, students are supposed to take the Michigan Merit Examination at grades 11 or 12. It consists of examinations in writing, jobs skills, mathematics, science and social studies. Our analysis looked at

students who scored proficient, partially proficient, or not proficient or who did not take the mathematics and English language arts (reading and mathematics) tests. Students who did not take the tests were the least successful in school: of the 137 students who did not take the MME, 10 percent never repeated a grade, 37 percent repeated one grade, and 53 percent repeated two grades. Table 9 shows that significantly larger percentages of the GSRP group than the no-GSRP group took the exams and scored more proficiently on them. This pattern was statistically significant for both tests together and for mathematics, but not for English Language Arts.

These findings may be compared to the statewide public results for the Michigan Merit Examination in spring 2010 by removing those in the study groups who did not take the test and recalculating the percentages at various levels. In mathematics, 50 percent of the state's students scored proficient, as compared to 37 percent of the GSRP group and 34 percent of the no-GSRP group. In reading and mathematics, 55 percent of the state's students scored proficient, as compared to 39 percent of the GSRP group and 40 percent of the no-GSRP group. Both GSRP and no-GSRP groups scored lower than all the state's students who took the test, reflecting their relative disadvantages.

Table 9
Michigan Merit Examination Proficiency at Grades 11/12, by
GSRP Status

	GSRP (<i>n</i> = 289)	No GSRP (<i>n</i> = 214)	Statistically Significant at <i>p</i> <.05? ^a
Proficiency Level			
<u>Mathematics</u>			
Proficient	26.6%	22.0%	Yes
Partially proficient	11.8%	8.9%	
Not proficient	34.3%	34.6%	
Did not take the test	27.3%	34.6%	
<u>English Language Arts</u> (reading and writing)			
Proficient	28.4%	26.2%	
Partially proficient	30.4%	28.5%	
Not proficient	15.2%	10.3%	
Did not take the test	26.0%	35.0%	
<u>Combined</u>			
Proficient on both	20.4%	18.7%	Yes
Partially proficient on both	17.6%	12.1%	
Not proficient on either or both	36.3%	34.6%	
Took neither test	25.6%	34.6%	

^aTested by ordinal regression analysis adjusted for the effects of 7 covariates.

Summary, Limitations, and Conclusions

This evaluation examined how participation in the Great Start Readiness Program was related to performance later in school. This report looked at GSRP effects on high school graduation on time and a year later, grade retention, multiple grade retention, and Michigan Merit Examination proficiency. It identifies the following statistically significant program effects.

- More GSRP participants graduated from high school on time than did non-participants – 57 percent versus 43 percent.
- More GSRP children of color graduated on time from high school than did non-participants – 59 percent versus 37 percent.
- By grade 12, fewer GSRP participants were retained in grade than non-GSRP students – 37 percent compared to 49 percent. The percent of all the state's students ever retained in grade is 35 percent.
- 43.5 percent of the cost of the Great Start Readiness Program was recouped from savings due to the reduction in grade retentions.
- By grade 12, fewer GSRP children of color were retained for two or more grades than their non-GSRP counterparts – 14 percent versus 28 percent.
- At grades 11 or 12, GSRP participants had a higher level of proficiency than non-participants on the Michigan Merit Examination in mathematics (27% vs. 22%) and in math and language arts combined (35% vs. 28%).

These findings come from sites that represent the diverse regions of the state. However, the participating sites volunteered to participate and are not a statistically representative sample of the districts of the state.

Children participating in the study were in the same age cohort, and most of them came from low-income families. But they were selected to participate in the GSRP or not to participate by different procedures. At the time, the GSRP had 25 selection criteria of which a student had to meet two. Most were low-income but not all. But most important is the fact that GSRP group parents enrolled their children in the GSRP while no-GSRP group parents did not, showing that they were likely more motivated regarding the early childhood education of their children.

For more than 12 years, from kindergarten to 12th grade, various aspects of the GSRP program have been evaluated by comparing a group of 1995-1996 GSRP participants to a group of matched no-GSRP group of students. The results of the current study provide strong evidence of a significant relationship between GSRP attendance and participants' lower grade retention rates and high school graduation.

Grade retention is first an indicator of school failure and second an effort to address it. Grade retention reduced the percentage of these students who graduated from high school on time from 81 percent to 7 percent, and it is surprising that these 7 percent of students managed to graduate anyway. Grade retention reduces the

economic efficiency of the school system, adding the cost of a year of school per student for each year of grade retention per student.

The educational debate usually pits grade retention against social promotion, that is, promoting a student who does not meet academic standards anyway, to allow the student to remain with his or her age-mates. But this report suggests another debate that pits grade retention against the Great Start Readiness Program. For both approaches, the cost is for a year of education per student, although the state reimburses less per student for GSRP than it does for other grades. But the relative benefits of the two approaches decisively favor GSRP over grade retention. GSRP prepares children for school success and avoids school failure. Grade retention is a reaction to school failure that further stigmatizes the student and seldom actually remediates this failure. GSRP leads more at-risk children to graduate from high school on time, with their age-mates. Grade retention almost guarantees that the student will not graduate from high school on time alongside age-mates. It is reasonable to assume that students who graduate from high school on time will have better employment and earnings throughout their lifetimes.

The fact that almost half of the comparison students without GSRP repeated one or more grades means that grade retention is thriving in Michigan's educational policy. Unlike GSRP, it does not require legislative recognition, authorization, and appropriation of funding. Were it so, grade retention would surely not be such a widespread policy, since labeling of school failure is its clearest result. The wiser choice for school leaders in Michigan might well be to hold back the money they spend on grade retention and invest it in GSRP instead.

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