Preliminary Evaluation of Pre-Kindergarten Education Programs to Promote Optimum Outcomes for Children and to Collect Data that Will Inform Future Decisions

Response to 16 VSA Sec 829(e)(10)

[Amended 2015 Act 11 Sec 13. Restart 5-yr clock at 2015]

REPORT

April 2017

Report to the General Assembly

Submitted by:

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AGENCY OF HUMAN SERVICES

Executive Summary

Act 166 (Universal PreK) was enacted on May 10, 2014. Universal PreK is jointly administered by the Agency of Education (AOE) and the Agency of Human Services, Department for Children and Families Child Development Division (AHS/DCF/CDD). In 2015-16, approximately one-third of school systems implemented the program with two-thirds waiting until 2016-17. We caution the legislature and reading public against drawing conclusions about the need or efficacy of Act 166 based on one year of implementation in only one-third of the school system. Initial implementation reveals the following findings:

Enrollment Findings:
1. **Table 1:** PreK enrollment increased by 1,045 students with the partial implementation of Act 166 in 2015-16.
2. **Table 2:** In the first year of partial implementation of Act 166, 44% of newly enrolled students enrolled in Supervisory Unions/Districts in the Champlain Valley area.
3. **Table 3:** During the first year of partial implementation, the vast majority of prequalified programs fully met the quality ratings (90%), with only 10% requiring a plan to participate.
4. **Table 4:** The 2015-16 data suggest that Supervisory Districts were more likely to take advantage of early adoption than Supervisory Unions.
5. **Table 5:** In 2015-16, Early Adoption in PreK enrollment through Act 166 is skewed towards Champlain Valley Supervisory Unions/Districts.
6. **Graphic 1:** Private and public programs participating in Act 166 are found throughout the state but are more concentrated in the Champlain Valley area**.**
7. **Table 6:** The distribution of students enrolling in PreK in terms of students' eligibility for Free and Reduced Lunch (FRL), special education (IEP), and in terms of race/ethnicity has not changed in the first year of Act 166 partial implementation, 2015-16.

Financial Findings:
8. **Table 6:** The vast majority of funds for PreK are expended on special and general education direct instruction services (71%) and student support services (12%). In addition, school systems are spending, on average $ 7,457 per student, which is nearly equivalent to $7,900 earned per student (Vermont's average funding allocation for each PreK enrollment).
9. **Table 7:** Per student expenditures for direct instruction vary across regions from a low of $4,959 in Champlain Valley to a high of $6,501. Differences between direct instruction spending and tuition vouchers is largely due to expenditures on special education services provided by the SU/SD.

Educational Findings and Child Outcomes:
10. **Table 10:** Overall more PreK students in the sample group met preschool expectations for literacy skills than for math skills. Gaps in achievement of expectations were evident for several student groups.

a. 83% of PreK students in the sample group either met or exceeded expected Literacy Achievement Levels in the spring Teaching Strategies Gold (TS-Gold) assessment.
b. 68% of PreK students in the sample group either met or exceeded expected Math Achievement Levels in the spring TS-Gold assessment.
c. TS-Gold achievements vary by free and reduced lunch eligibility, special education status and racial/ethnic background such that achievement gaps appear evident in the publicly funded PreK population.

11. **Table 11:** The Agencies are concerned about the small number of programs in the sample, and the potential effect this might have on any relationship observed between Vermont's **Step Ahead Recognition System (**STARS) ratings and outcomes in the sample. The Agencies are cautious about drawing conclusions based on this data at this time. Overall, results of this preliminary analysis do not conform to the assumption that programs with more STARS will have students with higher performance on the TS-Gold assessment. Full implementation, coupled with improved data administration, management, and quality will help provide conditions where more in-depth analyses can be performed in future.

Recommendations:
1. **Additional technical assistance re: data collection:** The capacity to evaluate impacts of Act 166 in this report is limited by partial implementation in the 2015-16 school year and by inconsistencies in data reporting by PreK programs. 2016-17 will yield a more accurate picture as a year of full implementation unfolds. The AOE and AHS will provide guidance and technical assistance for private providers and school systems to refine data collection processes and systems to generate more consistent, reliable and accurate data.
2. **Additional technical assistance re: TS-Gold administration:** Child progress as measured by TS-Gold is influenced by the reliability of classroom teachers in conducting regular observations and accurately reporting student skill and proficiency. The AOE will provide training and technical assistance related to the administration of TS-Gold.
3. **Continued collaboration between the AOE and AHS on data collection:** It is critical for accountability and evaluation of Act 166 that school systems and private providers collect and report timely and consistent data. Through a new joint monitoring process, the AOE and the AHS will ensure that all participants comply with data collection protocols.
4. **Identify potential obstacles for children living in poverty to enroll in PreK:** Rate of participation in publicly funded PreK by students eligible for free and reduced lunch (FRL), eligible for preschool special education, and in minority populations has not increased or decreased in the first year of partial implementation of Act 166. In subsequent years, state and local partners should pay particular attention to outreach to children in populations who can most benefit from high quality early learning experiences in order to increase their participation in publicly funded PreK. On average, children who live in poverty represent a smaller proportion of PK enrollment relative to their proportion of K-13 enrollment in the same districts.

Report Organization

1. Legislation Summary- A description of Act 166 and background information related to Act 166
2. Evaluation Methods- A description of the strategies employed in evaluating the current data.
3. Section 1: A description of the Pre-K student enrollment to give a broad overview of the current demographic characteristics in this grade and where PreK programs are operating across the state.
4. Section 2: A description of the financial expenditures made in PreK at the district level. (Note: these analyses do not include state level transaction costs.)
5. **Section 3:** The third section provides the analysis that is descriptive only of which students in which programs do not meet, meet, and exceed expectations on TS-Gold assessment.
6. **Section 4:** Specific recommendations for improving the capacity to evaluate the impact of universal PreK.

Legislation Summary

[Act 166 of 2014](). *An act relating to providing access to publicly funded PreK education.*

Introduction:

Act 166 requires the establishment of a system by which the AOE and the AHS/CDD shall jointly monitor and evaluate publicly funded Pre-K education programs to promote optimal outcomes for children and to collect data that will inform future decisions. The Agencies are required to report annually to the General Assembly in January. At a minimum, a system shall monitor and evaluate:

(A) programmatic details, including the number of children served, the number of private and public programs operated, and the public financial investment made to ensure access to quality PreK education;

(B) the quality of public and private PreK education programs and efforts to ensure continuous quality improvements through mentoring, training, technical assistance, and otherwise; and

(C) the outcomes for children, including school readiness and proficiency in numeracy and literacy.

Act 166 (Universal PreK) of 2014 has an effective date for universal PreK enrollments of July 1, 2015. The law was enacted on May 10, 2014. The implementation of the law required the promulgation of administrative rules by the Vermont State Board of Education, and the timeline for adoption of the rules extended through September 2015. On November 25, 2014 an AOE/AHS memo was issued allowing school districts to choose to implement Act 166 as of July 1, 2015 or to wait one (1) year with full implementation July 1, 2016. Just under a third of school districts moved forward with implementing Universal PreK in the 2015-16 school year. School systems that fully implemented Act 166 in 2015-16 were called "early adopters."

Given that we are less than halfway through this first full year of implementation, this second report to the legislature will continue to outline the planned methodology and data requirements for the analysis that the AOE plans to use to evaluate the quality and impact of PreK programs across the state. At this time, much has been learned about the strengths and limitations of the existing data sets. We have identified specific steps to improve quality of collection and data quality, particularly from private providers from whom we have not previously collected data.

Act 166 Basics:
1. Beginning in Fall 2016, all School Districts are mandated to *offer* PreK. However, *enrollment* and *participation* is a family choice.
2. All Vermont children who are three, four, or five years of age by the date established by the district of residence for Kindergarten eligibility, and who are not yet enrolled in Kindergarten, are eligible for this funding.
3. PreK is defined as at least 10 program hours per week, 35 weeks per year (during the school year).

Publicly-funded PreK services can be provided by prequalified public or private programs (homes and centers).

Criteria for Prequalified PreK Programs:
Act 166 (Universal PreK) legislation and Rules require that a public school or private Pre-K education program shall be considered prequalified only if it meets all of the following criteria:
1. The public or private program receives and maintains at least one of the following quality program recognition standards:
    a. National accreditation through the National Association for the Education of Young Children (NAEYC);
    b. A minimum of four stars in Vermont's Step Ahead Recognition System STARS program, with at least two points in each of the five arenas:
        i. Regulatory History
        ii. Staff Qualifications
        iii. Families and Communities
        iv. Program Practices
        v. Administration;
    c. Three stars in Vermont STARS if the program has a plan approved by the DCF Commissioner and the Secretary of Education to achieve four or more stars within two years, including at least two points in each of the five arenas.
2. The public or private program is currently licensed or registered, as applicable, by the DCF, and is in good regulatory standing;
3. The public or private program's curricula are aligned with the Vermont Early Learning Standards (VELS);
4. PreK students will have access to qualified, licensed teachers with an endorsement in either early childhood education or early childhood special education:
    a. Public prequalified programs must offer a licensed teacher in each classroom for

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10 hours of direct service to children each week.

b. Private prequalified programs that are center-based must have at least one educator on site at the center when students are present for the 10 hours of service.

c. Private prequalified programs that are registered or licensed family childcare home providers must employ licensed teachers in one of the following ways:

   i. The operator holds a valid license in the required endorsement area.

   ii. The operator employs or contracts with the services of a teacher who holds a valid license in the required endorsement area during the hours of PreK education paid for by tuition from district; or

   iii. The program received regular, hands-on active training and supervision from a teacher who holds a valid license in the required endorsement area at least three hours per week, during each of the 35 weeks per year in which PreK education is paid for by tuition from districts; the operator shall maintain appropriate written documentation of the supervision on location.

Evaluation Methods

As described in 2016, the Agency of Education plans to conduct path analysis to determine the effect of PreK on student outcomes. Path analysis is a statistical method that can help estimate whether a particular intervention (e.g. a type of PreK program) has the assumed causal effect on an outcome (e.g. a student's Kindergarten Readiness assessment (R4K!S) outcome or Teaching Strategies Gold (TS-Gold) score).

Essentially, path analysis will help us to know if the Pre- Kindergarten experience is leading to improved readiness for Kindergarten in terms of social-emotional development, mathematics, and literacy skills. Eventually, we aim to be able to see if PreK participation leads to improved performance on third grade state-wide standardized test scores.

Path analysis will also help us evaluate the independent relationship of factors like student demographics, PreK program characteristics (e.g. accreditation and quality ratings), and program location on outcomes of interest. This kind of information will help us target program development and improvement in directions that show the greatest return on our state investment in early care and learning.

Data
The type of data needed to fit this kind of model are stewarded within the AOE and the Bright Futures Information System at the AHS/DCF. In order to effectively evaluate the success of Act 166, the following data collections will be conducted in standardized ways:

1. Basic information regarding program structures- e.g. age spans, public/private, location, quality ratings, etc.
2. Student information including enrollment and exit dates, attendance, standard demographic data, etc.

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3. Student assessment data including
    a. The Teaching Strategies Gold (TS-Gold) assessment which measures the progress of children's knowledge, skills, and behaviors in all of the developmental domains (social/emotional, cognitive, and physical)
    b. The recently validated Ready for Kindergarten Survey (R4K!S), which is completed by kindergarten teachers when students enter kindergarten. This tool measures student readiness in social and emotional development, communication, physical health, cognitive development, knowledge, and approaches to learning. The data collected with this tool are appropriate for monitoring kindergarten readiness of the incoming cohorts over time in order to inform early childhood policies, such as the alignment across PreK and early elementary curricula as well as professional development needs. It provides data about the teachers' assessment of students' skills and knowledge as the students start kindergarten.
4. Financial information detailing the distribution of PreK dollars and the services purchased with those dollars.

Section 1: Demographic Picture of Publically Funded PreK Population 2015-16

The data below come from the Public Student Census and the Child Count (special education) collections. Data for 2016-17 is not yet available due to the need to conduct a second count of students in PreK.

Table 1: Enrollment in Publically Funded PreK from 2014-15 (no Act 166) to 2015-16 (Partial Implementation of Act 166 and Expansion Grant)

School Year	Enrollment
2014-2015 (No Act 166)	6,281
2015-2016 (Partial Implementation of Act 166 and Expansion Grant)	7,326
Change	*+1,045*

Table 2: Enrollment in Publically Funded PreK by Supervisory Union/District Region 2015-16

Regions	Champlain Valley	Northeast	Southeast	Southwest	Winooski Valley	Total
#	3,194	827	1,065	945	1,295	7,326
%	44%	11%	15%	13%	18%	100%

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Table 3: Number and Quality Rating of Prequalified PreK Programs in 2015-16

Quality Levels	NAEYC Accredited or 5 Stars	4 Stars	3 Stars with Improvement Plan
Percent of All Programs	54%	36%	10%
All Programs	186	123	33
Public Program	81	47	12
Private Program	105	76	21

Table 4: Publically Funded PreK Enrollment by Supervisory Union/District and Act 166 Early Adopter Status

Act 166 Status		Supervisory Structure		Total
		Supervisory District	Supervisory Union	
Total	#	1,905	5,421	7,326
	%	26%	74%	
Not an Early Adopter	#	752	3,643	4,395
	%	17%	83%	
Early Adopter	#	1,153	1,778	2,931
	%	39%	61%	

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Graphic 1: Map of Prequalified PreK Private and Public Programs
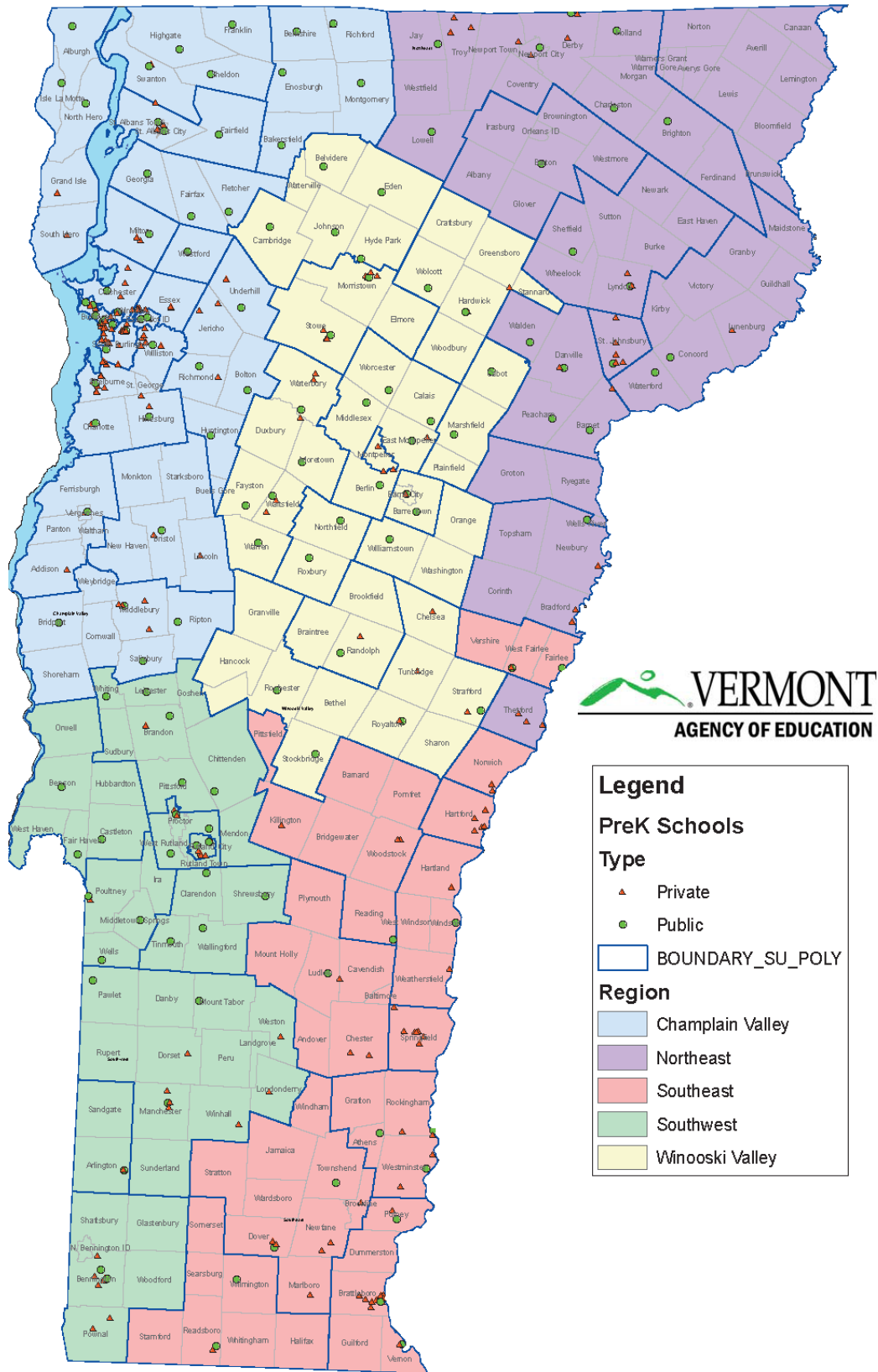
Table 5: PreK Enrollment by Supervisory Union/District Region and Act 166 Early Adoption

Act 166 Status		Region					
		Champlain Valley	Northeast	Southeast	Southwest	Winooski Valley	Total
Not an Early Adopter	#	1,423	551	658	649	1,114	4,395
	%	32%	13%	15%	15%	25%	100%
Early Adopter	#	1,771	276	407	296	181	2,931
	%	60%	9%	14%	10%	6%	100%
Total	#	**3,194**	**827**	**1,065**	**945**	**1,295**	**7,326**
	%	44%	11%	15%	13%	18%	100%

Table 6: Demographic Characteristics of Enrolled Publically Funded PreK Students, 2015-16

School Year		PreK	
		Not Eligible FRL	FRL Eligible
2014-15	#	4,366	1,915
	%	70%	30%
2015-16	#	5,089	2,237
	%	69%	31%
		No IEP	IEP
2014-15	#	5,199	1,082
	%	83%	17%
2015-16	#	6,165	1,161
	%	84%	16%
		Caucasian	Non-Caucasian
2014-15	#	5,756	525
	%	92%	8%
2015-16	#	6,767	559
	%	92%	8%

Section 2: Financial Picture of PreK Expenditures 2015-16

This part of our analysis is based on data collected each year from Business Managers through the Statbook Collection. This collection provides data for annual federal and state required reporting. Details about this collection can be found here: http://education.vermont.gov/calendar/annual-statistical-report.

PreK enrollments are based on the census data collected and reported by Supervisory Unions and Supervisory Districts. This **does not** reflect the location where PreK services are actually received by students. For example, when a tuition payment is made to a prequalified private provider, that is registered as "direct instruction" at the Supervisory Union/District but the private provider likely has administrative and operating costs that are also expended. No data

exists at the AOE regarding how private providers expend the tuition funds.

For this section, it is important to know that the funding allocation to each PreK enrollment is linked to approximately $7,457 per child which includes all special education services. Of this, a portion is spent on direct instruction (71%) including contracts with providers, student support services (12%), instructional support services (3%), administrative costs (6% total) and other costs such as transportation, equipment, and supplies (8%). Direct services to children (instruction, support and instructional support) comprise 86% of all expenditures in PreK. Note that these data do not account for state level transaction costs associated with implementation of Act 166.

Table 7 Statewide expenditures for PreK by category of expenditure from all state and federal funding sources.

	Expenditure	Per Student Cost (7326 Enrollment)	Percent of Total
Total Expenditures	**$54,629,330**	**$7,457**	
Direct instruction	$38,823,021	$5,299	71%
Student support services	$6,802,647	$929	12%
Instructional support services	$1,411,106	$193	3%
School administration	$2,394,916	$327	4%
Central administration and services	$980,168	$134	2%
Other	$4,217,472	$576	8%

Notes:
1. <u>Direct instruction</u> - expenditures for instruction and personnel, such as classroom teachers, paraeducators, etc.
2. <u>Student support services</u> - expenditures for activities to assess and improve the well-being of students and supplement teaching. This includes special education staff, guidance, health, nurses, etc.
3. <u>Instructional support services</u> - expenditures designed to assist instructional staff with content and learning experiences for students. Includes librarians, curriculum coordinators, instruction related technology, etc.
4. <u>School administration</u> - expenditures associated with administering the schools in a district. Includes principals, administrative assistants, department chairs, etc.
5. <u>Central administration and services</u> - expenditures associated with the supervisory union office and functions. Includes superintendents, special education coordinators, business managers, etc.
6. <u>Other</u> - includes transportation, building operation and maintenance, grounds and equipment maintenance, food services, debt, etc.

In looking specifically at direct instruction spending, we note that the current tuition in 2015-16 was set at $3,000, but spending in each region is substantially more than this. This difference in value is attributed to additional special education costs which are provided by school systems above the Act 166 tuition paid to private providers for those students who require those services.

Table 8: PreK Direct Instruction Expenditures and Enrollment by Region, 2015-16

SU Regions	PreK Direct Instruction Expenditures	PreK Enrollment	PreK Direct Instruction Expenditures per Enrollment
Champlain Valley	$15,840,127	3,194	$4,959
Northeast	$5,375,989	827	$6,501
Southeast	$5,799,596	1,065	$5,446
Southwest	$4,744,439	945	$5,021
Winooski Valley	$7,062,869	1,295	$5,454

Section 3: Educational and Child Outcomes

In this section we will discuss the preliminary findings related to the TS-Gold assessment outcomes. These findings represent early efforts to use these administrative data in this way. We learned a considerable amount about this collection as we began to work with its data. We caution readers to refrain from making policy-based decisions on these results as nearly one-half of all data submissions were unusable for analysis.

Measures:

In the 2016, TS-Gold was identified as the measure by which early Literacy and Numeracy would be determined.[1] The Ready for Kindergarten! Survey (R4K!S) was determined as the measure which would indicate students' approaches to learning and social/emotional ability. For students enrolled in PreK in 2015-16, TS-Gold assessment scores are known but they have just finished taking the R4K!S assessment and analysis is not yet complete.

Analysis Sample:

Our analysis sample includes 3,350 students who had full data on the TS-Gold in 2015-16, only 46% of the 7,326 students enrolled in PreK for SY16[2]. Records needed to be excluded if:
1. The student did not have both a fall and spring assessment or the assessments were incomplete
2. The program of attendance recorded in TS-Gold could not be matched to the prequalification list of programs

Program and policy decisions based on these preliminary analyses are not recommended. This first year, partial implementation analysis is a first step toward identifying concrete areas of focus for data collection and quality, data management, and improved analyses going forward.

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[1] Please see Technical Notes for a detailed description of the TSGOLD measure.

[2] Please see Technical Notes for a detailed description of the processes followed in creating the sample.

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Methods & Analysis:

The analysis sample is a representative sample of the overall PreK student enrolled population by: region, FRL status, IEP status, and Caucasian/Non-Caucasian status.[3] These population breakdowns are displayed below in Tables 5-8.

Table 9: Comparison of Publically Funded PreK Enrollment and Analysis Sample by Region, 2015-16

	Analysis Sample	Percent of Analysis Sample	Total PreK Enrollment Group	Percent of Total PreK Enrollment Group
Total	**3350**	**100.0%**	**7326**	**100.0%**
Champlain Valley	1614	48.2%	3194	43.6%
Northeast	440	13.1%	827	11.3%
Southeast	407	12.1%	1065	14.5%
Southwest	293	8.7%	945	12.9%
Winooski Valley	596	17.8%	1295	17.7%

Table 10: Comparison of Total Publically Funded PreK Enrollment by and Analysis Sample by Student Characteristics, 2015-16

	Analysis Sample	**Percent of Analysis Sample**	**Overall PreK Enrollment Group**	**Percent of Overall PreK Enrollment Group**
Total	**3350**	**100.0%**	**7326**	**100.0%**
Not FRL Eligible	2382	71.1%	5089	69.5%
FRL Eligible	968	28.9%	2237	30.5%
Not IEP	2992	89.3%	6165	84.2%
IEP	358	10.7%	1161	15.8%
Caucasian	3063	91.4%	6767	92.4%
Non Caucasian	287	8.6%	559	7.6%

While we attempted additional analyses with the available sample, we were unable to produce a reliable model for use in assessing the impact of Act 166[4].

The following data charts can help us see *what* is happening at "face value" during the year of enrollment. What follows cannot tell us *why* it may be happening or *how* it is related to

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[3] Chi squared analyses showed no statistically significant difference in proportion of the PreK enrolled population and the Preliminary Analysis Group sample.

[4] Please see Technical Notes for a discussion of the attempted analyses.

enrollment in PreK. Also, this kind of analysis will not answer the question "Does a relationship exist between high-quality PreK instruction and improved student performance on the TS-Gold assessment?" This means it will have limited utility for informing the Legislature regarding the return on investment of PreK education dollars. It will, however, provide a look at the preliminary analysis group and their results in a descriptive way.

Table 12: Literacy and Math performance on TS-Gold in Spring 2015

TITLE	Level	Literacy #	Literacy %	Math #	Math %
All Students	**Analysis Sample**	**3,350**		**3,350**	
	Not Meeting Expectations	572	17.0%	1,092	33.0%
	Meets Expectations	2,244	67.0%	1,835	55.0%
	Exceeds Expectations	534	16.0%	4,23	13.0%
Not FRL Eligible	**Analysis Sample**	**2,382**		**2,382**	
Not FRL Eligible	Not Meeting Expectations	360	15.1%	728	30.6%
	Meets Expectations	1,580	66.3%	1,307	54.9%
	Exceeds Expectations	442	18.6%	347	14.6%
Total FRL Eligible	**Analysis Sample**	**968**		**968**	
FRL Eligible	Not Meeting Expectations	212	21.9%	364	37.6%
	Meets Expectations	664	68.6%	528	54.6%
	Exceeds Expectations	92	9.5%	76	7.9%
Not IEP Eligible	**Analysis Sample**	**2,992**		**2,992**	
Not Eligible for IEP	Not Meeting Expectations	418	14.0%	884	29.5%
	Meets Expectations	2,058	68.8%	1,696	56.7%
	Exceeds Expectations	516	17.2%	412	13.8%
IEP Eligible Students	**Analysis Sample**	**358**		**358**	
IEP eligible	Not Meeting Expectations	154	43.0%	208	58.1%
	Meets Expectations	186	51.9%	139	38.8%
	Exceeds Expectations	18	5.0%	***	***
Caucasian Students	**Analysis Sample**	**3,063**		**3,063**	
Caucasian Students	Not Meeting Expectations	515	16.8	973	31.8%
	Meets Expectations	2,045	66.8%	1,695	55.3%
	Exceeds Expectations	503	16.4%	395	12.9%
Non-Caucasian Students	**Analysis Sample**	**287**		**287**	
Non Caucasian Students	Not Meeting Expectations	57	19.9%	119	41.5%
	Meets Expectations	199	69.3%	140	48.8%
	Exceeds Expectations	31	10.8%	28	9.8%

Table 13: Literacy and Math performance by BFIS STARS Rating

TITLE	Performance Level	Literacy #	Literacy %	Math #	Math %
3 STAR Programs with Improvement Plans	**Analysis Sample 3 Stars**	**268**		**268**	
	Not Meeting Expectations	22	8.2%	60	22.4%
	Meets Expectations	150	56.0%	139	51.9%
	Exceeds Expectations	96	35.8%	69	25.7%
4 STAR Programs	**Analysis Sample 4 Stars**	**865**		**865**	
	Not Meeting Expectations	133	15.4%	262	30.3%
	Meets Expectations	580	62.4%	479	55.4%
	Exceeds Expectations	152	17.6%	124	14.3%
5 STAR Programs	**Analysis Sample 5 Stars**	**2,217**		**2,217**	
	Not Meeting Expectations	417	18.8%	770	34.7%
	Meets Expectations	1,514	68.3%	1,217	54.9%
	Exceeds Expectations	286	12.9%	230	10.4%

Section 4: Strategies to Improve Quality and Reliability of Data and Reporting

Early work with these administrative data sets has informed our approach to this work: shaping the AOE's strategic plans to deploy resources to support universal PreK implementation across the state, and to address identified data infrastructure needs. The following are early lessons learned, and measures the AOE and AHS are taking to address the needs we have identified:

- While missing data is always a challenge in conducting work of this kind, the finding that not all student data was being submitted as required reinforced the AOE's decision to provide additional training for the field in working with TS-Gold as statewide public PreK is implemented. For the 2015-16 school year, the AOE planned and delivered eleven TS-Gold introductory trainings as well as nine advanced trainings throughout the state. These face-to-face trainings were provided to school district personnel, childcare staff, and administrators. Introductory as well as advanced trainings were conducted in a small group setting (no more than 20 participants) with a certified TS-Gold instructor. Participants received notification of opportunity for TS-Gold training through the AOE's listservs, weekly field memo, and calendar of events. For the 2016-17 school year, opportunities for professional development training on TS-Gold will continue to be planned and conducted statewide. TS-Gold trainers will offer technical assistance to programs to support TS-Gold implementation.

  In addition, the monitoring process for maintenance of prequalification status will be implemented next year. The monitoring process includes the AOE and CDD verifying that prequalified programs submit all data as required or risk losing their prequalification status.

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- Over the last six months, the AOE has worked to refine data collection mechanisms in TS-Gold to improve data quality. For example, where previously the provider typed in the name of their program as text, the new collection has a drop-down menu of provider names drawn from the BFIS data system. This small change should greatly increase the match. Another example is that two weeks prior to the close of the data collection, the AOE will provide each provider with a roster of the names of students for whom assessments have been recorded. This should help educators to provide data for all students.

- We have also begun a process to link the CDD BFIS database and the AOE TS-Gold database. This will ensure alignment of STARS ratings with program profiles, and will include the creation and administration of a unique PreK program ID similar to the PSID/PAID/ISID system that AOE already employs for schools in the K-12 context.

- The current resources allocated to the AOE and the AHS are insufficient to address any and all impacts of PreK, for that reason we have proposed a modest evaluation that will leave some questions unanswered.

- We also note that when ambitious and complicated legislation is passed, the time needed for implementation must sufficiently allow for adequate planning including the development of systems for rule-making, monitoring and evaluation prior to that initiative's effective start date. Act 166 demonstrates that our speed to implement, if only on a voluntary basis in the first year, lacked the monitoring necessary to ensure that the data collected could be useful for policy determinations.

Technical Notes

Sample Technical Notes

When we tried to perform the two-step matching process to compile the analysis data set from data housed at AOE (student-level data) and at CDD (program-level data), we experienced considerable data loss. When we began to try to perform this matching process, we learned that some students reported in the Public School Census did not have corresponding records in the TS-Gold collection. Additionally, we learned that not every student record reported in the Public School Census that could be matched to a TS-Gold record, would have complete TS-Gold outcome data for both the fall and spring checkpoints. Because our planned methodology relied on being able to examine changes in achievement scores from fall to spring checkpoints for each student, records with incomplete data had to be dropped from this preliminary analysis. Only students with a full complement of domain scores from both fall and spring checkpoints have been used in the parts of this analysis that required outcome scores.

Additionally, when we tried to perform the second step of the planned matching process to connect the student-level data to the program-level data from the BFIS, the TS-Gold program name being a text field in this system presented a challenge. A text field is a data field where users can type in information and in our case, this was the name of the program students were reported to be attending. This condition of the data caused considerable inconsistency in naming conventions, which resulted in our inability to match records perfectly or even within a reasonable assumption in many cases.

For example, "Made-Up-PreSchool LLC" from the BFIS STARS system might be called "Made-Up-PreK Center" in the TS-Gold system. These two records might also each have a different town listed as their location in each of the BFIS STARS system and the TS-Gold system and these two towns might be directly next to one another. Sometimes such discrepancies could be reconciled, other times they could not. We proceeded to match records to within a reasonable level of certainty across these two sets and those which could not be matched with relative certainty were dropped from this preliminary analysis.

This lack of alignment between the collections is likely an artifact of different people engaging in different administrative data collections for different reasons and not standardizing naming conventions across both cases as such data normalization has not been needed or performed, to our knowledge, until now. For example, TS-Gold assessment administration is being used by classroom providers for assessing students while an administrative person might be engaging with the BFIS STARS ratings system for administrative or monitoring purposes. The AOE Data Analysis & Reporting Team has documented areas where attention and consistency with respect to data management, alignment, and data quality are needed, and plans to address these needs are being formulated with CDD and the administrators of the BFIS system. This effort has been a very important data discovery process and has provided concrete areas for targeting improvement efforts going forward.
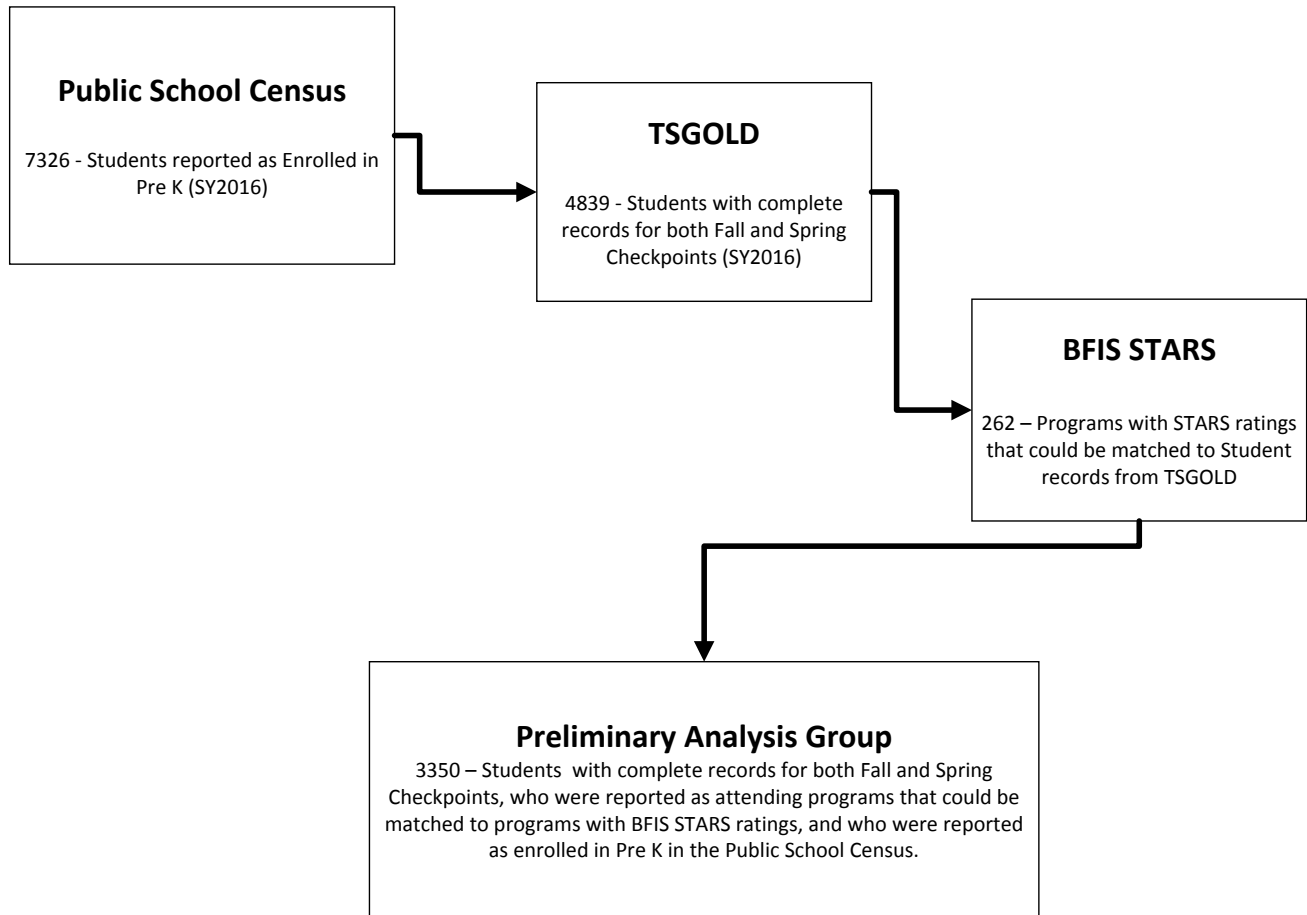
There were a total of 691 program level records identified in the TS-Gold extract we worked

with. We were able to match 262 PreK Program records from TS-Gold with a reasonable level of certainty to records with STARS ratings in the BFIS extract we worked with.

Ultimately, through this two-step matching process, of the 7,326 students reported in the Public Student Census as enrolled in PreK in SY2016, 3,350 had complete records for both fall and spring TS-Gold checkpoint data and were attending programs that could be matched to BFIS STARS ratings. This means 46% of the SY2016 PreK population reported in the Public School Census could be used in this preliminary analysis.

See Graphic 2 below for a visual diagram of how the preliminary analysis group was derived from the data available in these disparate administrative collections.

Graphic 2: Derivation of Preliminary Analysis Group Sample

Public School Census

7326 - Students reported as Enrolled in Pre K (SY2016)

TSGOLD

4839 - Students with complete records for both Fall and Spring Checkpoints (SY2016)

BFIS STARS

262 – Programs with STARS ratings that could be matched to Student records from TSGOLD

Preliminary Analysis Group
3350 – Students with complete records for both Fall and Spring Checkpoints, who were reported as attending programs that could be matched to programs with BFIS STARS ratings, and who were reported as enrolled in Pre K in the Public School Census.

Model Description

With these student-level data, one of the first steps we took was to try to create a two-level, nested model in order to begin examining the possible interactions between variables present in PreK programs and students' TS-Gold performance, while controlling for the factors students bring with them (e.g. FRL status, IEP status, etc.). This kind of analysis was a good method for us to try because

it recognizes the hierarchical structure of students attending PreK programs (e.g. individual students with unique characteristics nested in different programs).

To begin this work, we structured this analysis to encompass some gross measures of program conditions (STARS rating and Region) and student-level measures (FRL, IEP, Caucasian/Non Caucasian status, TS-Gold fall and spring checkpoint outcomes) which were included in the larger, planned path analysis model.

In this first year of partial implementation, a severe challenge of analysis is that we simply did not have enough students in each subgroup of interest in our sample to draw meaningful conclusions. While the student-level demographic data were representative of the overall PreK enrolled population, when we tried to examine the interaction between program-level factors and student-level factors, we quickly found that the preliminary model we tried to build was extremely constrained by the available data in the preliminary analysis sample. What this means, is that within each group we were interested in exploring (e.g. FRL eligible/Not eligible by Region, etc.), there were not enough student data available in each group of interest to yield a sufficient sample size to produce a reliable model.

This is due to how the sizes of sub-groups in the preliminary analysis group (e.g. IEP students or FRL eligible students), when examined by region, became so small in some cases that trying to compare them with their larger neighbors would have been statistically misleading because the smaller cell sizes would be overvalued against the larger cell sizes. If we had compared the very unequal cell sizes we found, we would have violated the statistical assumption underlying the mathematics we were using to test our hypotheses, namely homogeneity of variance. The homogeneity of variance assumption needs to hold when conducting work like this because if it doesn't, you don't have a valid comparison. The homogeneity of variance assumption tells us that you should not compare groups with dissimilar distributions in the target variables you are trying to model. If you do, you are comparing apples to something that may not even be fruit. Essentially, you can't tell if you are making an appropriate comparison or not.

So, because of this shortcoming in the dataset, we did not feel confident that this sub-set of early data were robust enough to use with view to broad program evaluation as we did not want to bring inconclusive results to discussions that may impact policy statewide. Given that we were not confident that our preliminary modeling work was suitable for program evaluation, we fell back on providing descriptive demographic and outcome data in the remainder of the analysis presented here.

TS-Gold

TS-Gold is a teacher administered assessment in literacy and mathematics. For reference, examples of expected behaviors in Literacy the TS-Gold assessment are demonstrating phonological awareness, demonstrating knowledge of the alphabet, demonstrating knowledge of print and its uses, comprehending and responding to books and other texts, and demonstrating emergent writing skills. Expected behaviors in Math in the TS-Gold assessment include using number concepts and operations, exploring and describing spatial relationships and shapes, comparing and measuring, demonstrating knowledge of patterns.

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