

COMPONENT 1: DATA ANALYSIS

1.A. A description of how the State identified and analyzed key data, including data from SPP/APR indicators, 618 data collections, and other data as applicable to determine the SIMR and the root causes contributing to low performance.

In fall, 2013 we started by looking at the Maine State Data Display OSEP provided in its determination package. This report compares Maine to the nation across a number of different areas. We also gathered data from previous Annual Performance Reports and other sources, including the Maine Data Warehouse (see Appendix A, Label 1, page 1). Broad-based analyses were developed in four areas of greatest concern: proficiency rates, graduation rates, educational environment, and disability identification rates. We presented the data at our first SSIP Stakeholders Group meeting in November, 2013 (See Section 1.F).

The Stakeholder Group, facilitated by the Northeast Regional Resource Center (NERRC) and including representatives of the Office of Special Services, broke into 4 teams. Each team reviewed one of the 4 areas of interest based on broad data analysis of each area (see Appendix A, Label 2, page 3). These data were disaggregated by a variety of factors including disability category, socioeconomic status, and region of the state; more detail on the disaggregation of the data is provided in Section 1B. The teams considered a number of questions, primarily 1) does there appear to be a strong need to focus on the issue, and 2) what are the potential benefits for choosing this issue as the area of focus? Then, after the teams reported their findings to the larger group, the areas were rated across a number of dimensions, including the State's capacity to address the issue and the resources that could be leveraged.

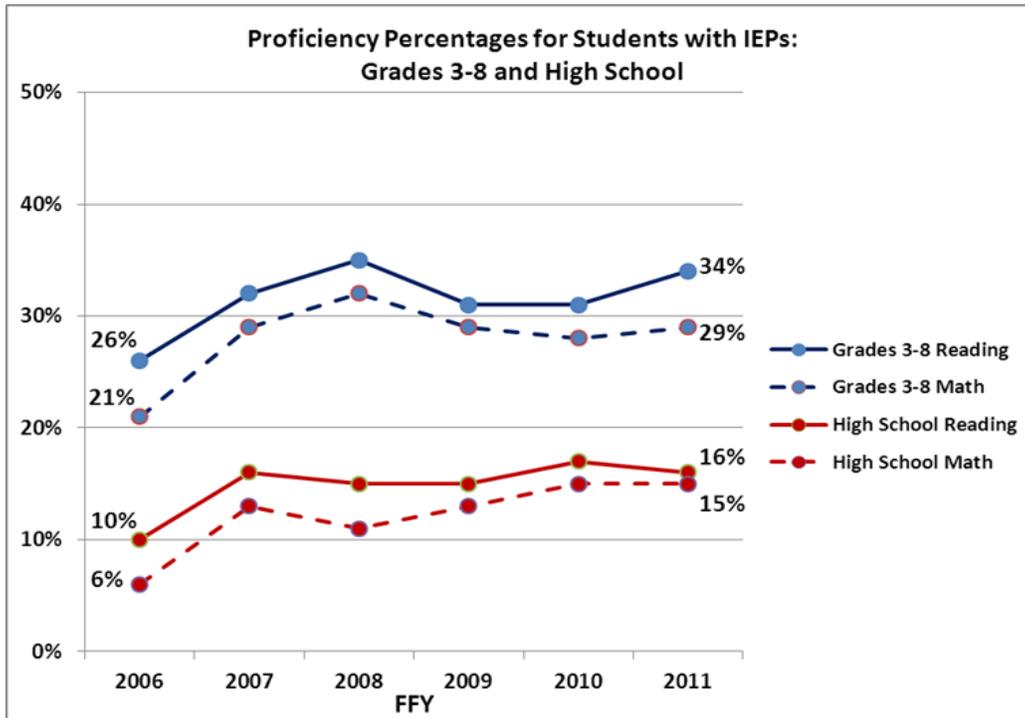
Strengths and concerns were identified by this workgroup. Although stakeholders were concerned about state level capacity to provide necessary technical assistance to move the proficiency needle, strengths were identified in current general education initiatives that provide both a potential roadmap and expertise that could be leveraged for development of effective improvement strategies and a successful plan. Based on the discussions and data presented, the group identified proficiency as the broad area of focus for the SSIP. In-depth data analysis and discussions on infrastructure lead to a decision to focus on proficiency in math.

The SSIP and outcomes of the SSIP stakeholders meeting were shared with the State Advisory Panel, charged with oversight of Part B activities in Maine. This group was asked to identify a member to serve as a liaison to, and member of, an expanded SSIP stakeholders group that would continue to be involved in the development of the SSIP.

The decision to focus on proficiency was shared with leaders of Maine DOE initiatives including the School Improvement Team and the Standards and Instructional Support Team to engage collaboration and gather information to inform this selection. In particular, information was sought regarding existing activities that may align with improving proficiency outcomes in students with disabilities, and identification of roadblocks teams currently experiences. These team members also participated in subsequent SSIP stakeholder meetings.

1.B. A description of how the data were disaggregated by multiple variables such as LEA, region, race/ethnicity, disability category, and placement, etc.

We began our in-depth investigation of proficiency for students with disabilities by looking at proficiency on all statewide assessments for all students with IEPs in Maine from 2006 through 2011. When discussing local education agencies, Maine DOE and this SSIP refer to school districts as school administrative units (SAUs).



The 2011-12 school-year was the most current year of data at the time of this work. Since then, proficiency rates for students with disabilities for 2012-13 became available, with the following results:

Grades 3-8 Reading: 32.6%

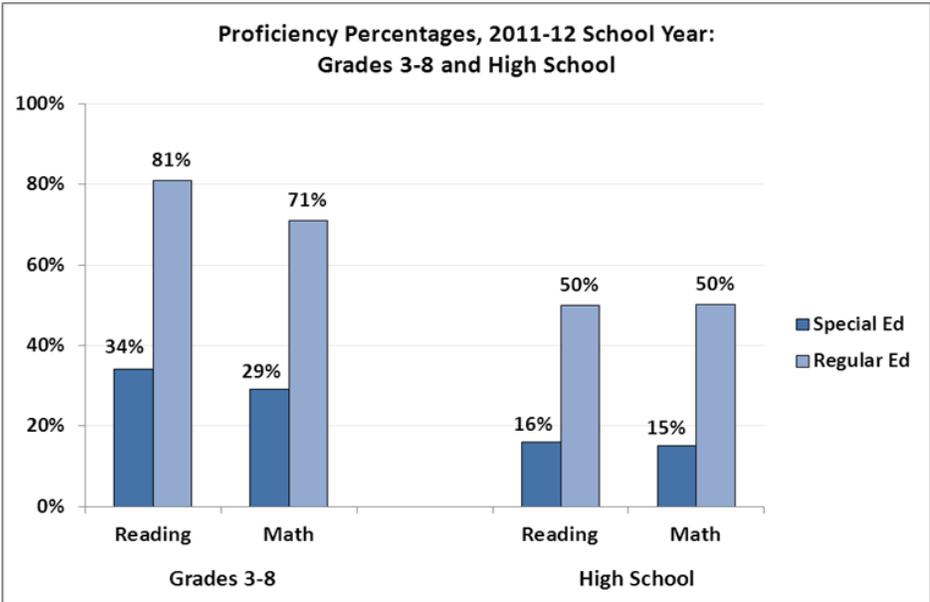
Grades 3-8 Math: 27.53%

High School Reading: 13.8%

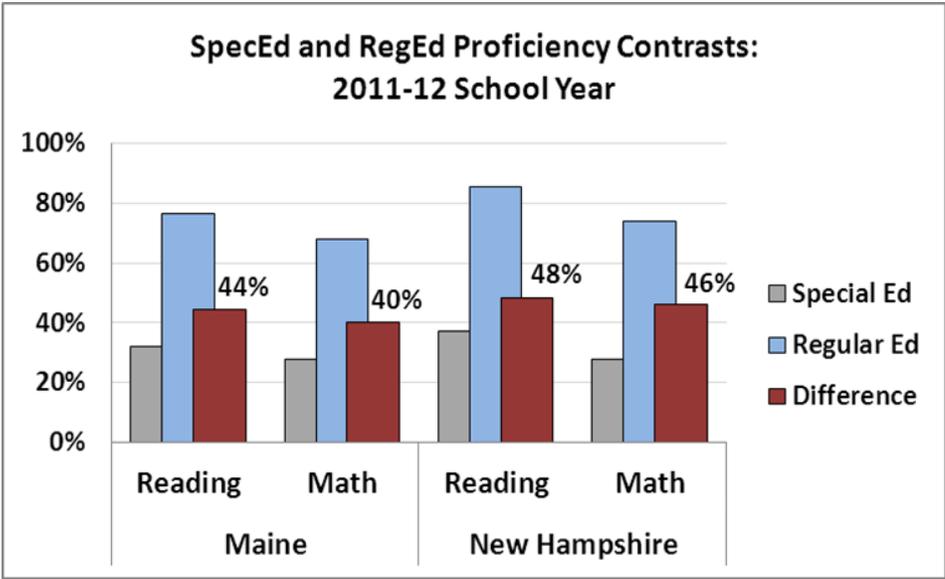
High School Math: 13.71%

The data included in the chart above demonstrates an overall increase in proficiency during the span from 2006-2011. Proficiency in students with disabilities dropped in 2012-13 in both reading math, and overall is far from the State Performance Plan targets (between 66% and 78% for 2012-13). These percentages are derived by pooling counts across SAUs; they are not averages. In addition, math proficiency has been consistently lower than reading proficiency for grades 3-8 and high school, and the percentage of high school students who are proficient in both math and reading has been consistently low overall.

We compared proficiency rates for students in general education and special education in Maine.

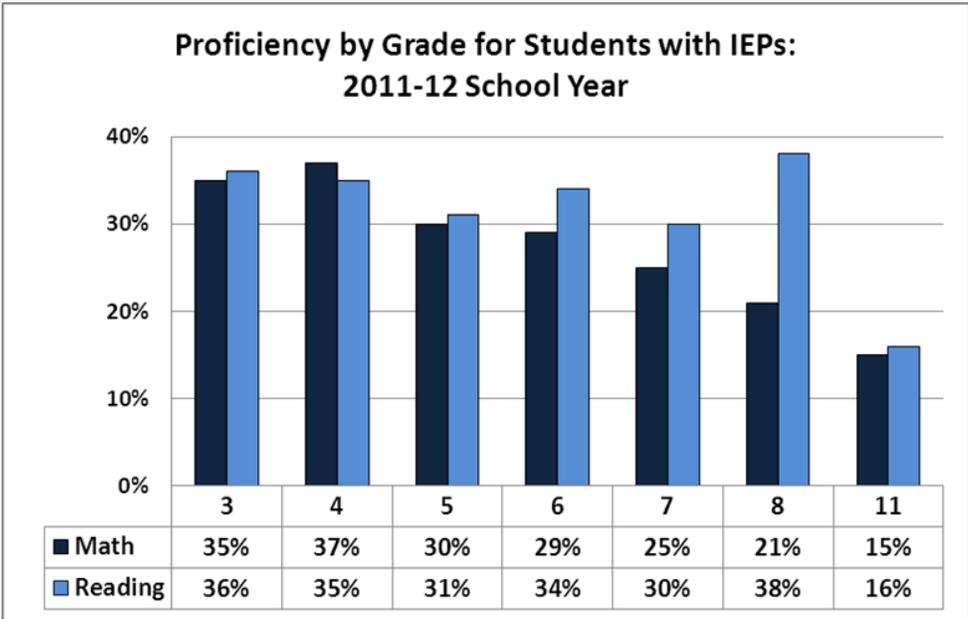


There was a large difference in these rates. To put these differences into context, and because New Hampshire also uses the NECAP, we compared Maine and New Hampshire.



The differences between proficiency rates for general education students and special education students (shown by the red bars) was a bit lower for Maine compared to New Hampshire- 44% and 40% for Maine versus 48% and 46% for New Hampshire. The gray bars demonstrate proficiency rates for special education students. These rates are fairly comparable between the states.

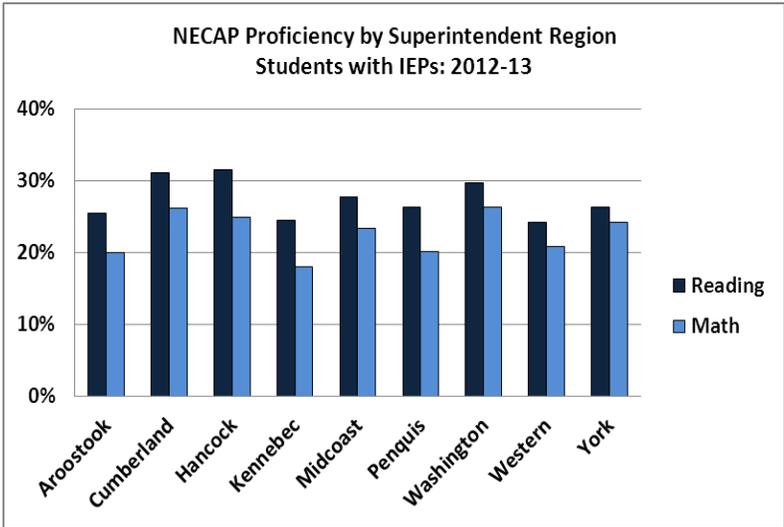
This analysis highlighted for our workgroup and stakeholders that reading proficiency is consistently higher than math for students with disabilities, and that proficiency in 3-8th grade has been higher than that of the high school students throughout the past six years. Because of these facts we looked deeper at the grade level to see if proficiency for students with disabilities declines with higher grade level even within the 3-8th grade group.



Here proficiency is broken down by grade for both reading and math. We can see a fairly steady decline across the grade span for math, shown in dark blue. As with reading (in light blue) what stands out most is the dramatic proficiency drop between 8th grade and 11th grade. To see if this decline is unique to Maine identical data was analyzed for other NECAP states, where the same steady decline across grades in math for students with disabilities, and the same drop-off in reading between 8th and 11th grade can be seen. While we did not conduct further analysis of other states, we know Maine is not entirely unique in this decline.

We continued to explore the data patterns, now at the individual SAU level, to look at the shape of the proficiency distributions. Analysis of school year 2012-2013 SAU counts and proportions for proficiency for 3rd-8th grade students with disabilities in reading and math indicates poor proficiency rates are a problem for most SAUs. The same is true for high school math and reading.

In order to identify where proficiency for students with disabilities was highest and lowest in the State of Maine, we looked at proficiency by Maine’s nine geographic-based superintendent regions. The percentages are derived by pooling counts across each superintendent region, they are not averages.



	Reading			Math		
	Total Tested	Number Proficient	Percent Proficient	Total Tested	Number Proficient	Percent Proficient
Aroostook	815	207	25.40%	815	163	20.00%
Cumberland	2853	886	31.06%	2853	745	26.11%
Hancock	438	138	31.51%	438	109	24.89%
Kennebec	1989	487	24.48%	1989	359	18.05%
Midcoast	1114	309	27.74%	1114	260	23.34%
Penquis	1764	464	26.30%	1764	356	20.18%
Washington	273	81	29.67%	273	72	26.37%
Western	1969	476	24.17%	1969	410	20.82%
York	2222	586	26.37%	2222	538	24.21%
Overall	13437	3634	27.04%	13437	3012	22.42%

The Western region is lowest for reading proficiency for students with disabilities, followed by the Kennebec and Aroostook regions. The Kennebec region is the lowest for math proficiency, followed by the Aroostook and Penquis regions. Although there are one or two regions that are higher than the others in both subjects, no region is exceptional. It was concluded that poor proficiency for students with disabilities in both subjects is spread relatively evenly across the regions in the State.

The previous information was used to inform SSIP stakeholders in their selection of proficiency as the broad area of focus over graduation rates, educational environment, and disability identification rates. Members shared some initial ideas about possible root causes driving the problem of low proficiency rates and what variables we might be able to leverage to improve outcomes for students with disabilities. One main idea that came out of that discussion was that we could consider whether improving rates of education in the least restrictive environment (LRE) might improve proficiency rates. The data manager explored this possible root cause by looking at previous research and conducting some independent research on LRE rates and other possible variables impacting proficiency. This work began by looking at previous research on correlates of NECAP scores for both general education and special education students, and correlates of educational environment for students with disabilities. Roland (2011) examined twenty variables and compared five statistical methods to identify the variables that correlated with school proficiency rates on the NECAP across four school years (2006-07 through 2009-10) for all public and

charter elementary and middle schools in Rhode Island. The analyses revealed that number of variables correlated with proficiency across all years regardless of the statistical method used. In order of greatest positive association to greatest negative association with proficiency rates, these variables are:

- 1) attendance rate (positive association),
- 2) amount of per-pupil funding (positive association),
- 3) number of students receiving supplemental services, including free-reduced lunch (negative association),
- 4) number of students in the Limited English Program (negative association), and
- 5) mobility rate: $\{(new\ enrollments + exits)/total\ enrollments\}$ (negative association).

Other variables (e.g., number of students receiving Title I services, number of students with an individualized education plan, gender, several race/ethnicity variables) were not significantly predictive of proficiency rates across statistical models/schools years when the five variables above were included in the models. However, school level (elementary vs. middle school) was a significant factor in most statistical models for most years; middle school proficiency rates were lower than elementary school rates- in some statistical models, the school level difference was between 10%-14%, depending on the school year. Additionally, the full time equivalent number of teachers was positively associated with proficiency in all statistical models for all but one school year.

In Roland's study, proficiency rates were based on the performance of all students, but Simpson (2012) examined district level NECAP proficiency rates for students receiving special education. Simpson examined 100 Kentucky schools to assess the relationship between proficiency rate and the amount of time that students with disabilities were educated in the general education classroom. The study revealed that districts with higher percentages of students with disabilities instructed in the general education classroom 80% or more of the day had higher math and reading averages on the NECAP (correlations: math ($r=0.15$), reading ($r=0.14$)). Additionally, districts that had lower percentages of students instructed in the general education classroom less than 40% of the day had higher math and reading averages (correlations: math ($r=-0.16$), reading ($r=-0.16$)).

The results of Simpson's study are consistent with other studies that suggest that the delivery of special education services in the general education classroom is associated with positive academic outcomes for students with disabilities. In an examination of the environment of special education delivery and several academic and behavioral outcomes for students with learning disabilities, Rea, McLaughlin, and Walther-Thomas (2002) compared two groups of 8th-grade students attending school within the same district. One group of students ($n=36$) attended a school that implemented an "inclusive support" model in which special education delivery took place primarily in the general education classroom. In this school, regular education and special education teachers frequently co-taught and took turns presenting content or assisting students who needed individual assistance. The other group of students ($n=22$) attended a school in which special education teachers did not teach in the general education classroom-all special education delivery occurred outside of the regular classroom. Apart from school/special education program differences (inclusive support program vs. pull-out program), the groups did not differ statistically for variables such as age, gender composition, ethnic composition, socioeconomic status, years of special education service, and IQ. However, academic assessments revealed that, on average, students in the inclusive support group earned higher grades in all of the courses assessed; language arts, mathematics, science, and social studies. The inclusive support group performed better than the pull-out group on the language and mathematics subtests of the Iowa Test of Basic Skills. Additionally, behavioral assessments revealed that there were no differences between the groups in the number of disciplinary suspensions, but the attendance rate was significantly higher for the inclusive support group. This finding is notable because attendance rate consistently had the greatest positive association with exam proficiency in Roland's (2011) study of the variables that correlate with performance on the NECAP assessment. Additionally, with regard to behavioral/psychological outcomes, another study (Jones & Hensley, 2012) reported that students with intellectual disabilities who spent more time in the general education classroom reported greater feelings of self-determination and psychological empowerment, and such

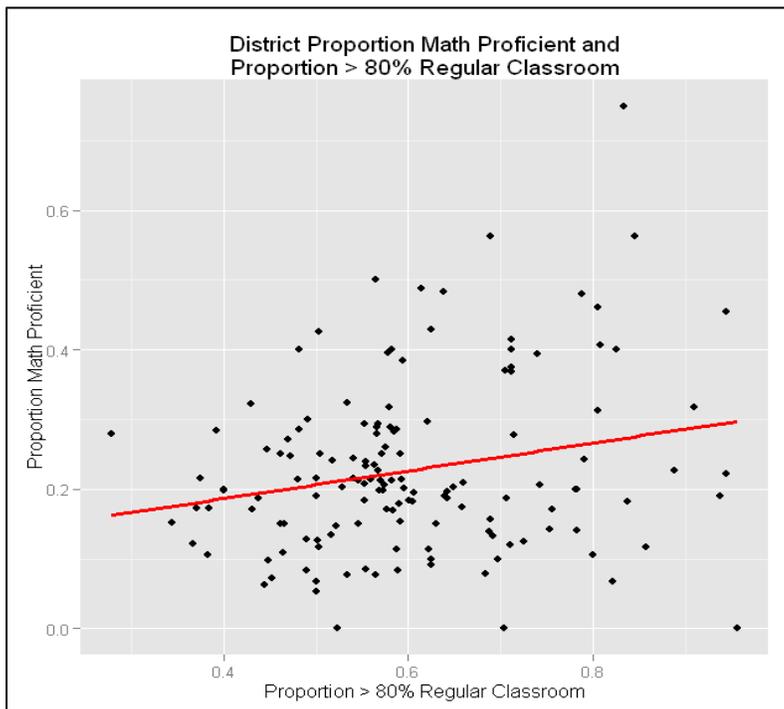
feelings may motivate school attendance.

Results of the studies reviewed above suggest that the following variables might be relevant for understanding Maine's SAU variability in NECAP exam proficiency for students with disabilities:

- 1) attendance rate;
- 2) amount of per-pupil funding;
- 3) number of students receiving supplemental services, including free-reduced lunch;
- 4) number of students in the Limited English Program;
- 5) mobility rate;
- 6) school level (elementary, middle, high school);
- 7) full time equivalent number of teachers; and
- 8) amount of time the student participates in the general education curriculum (Least Restrictive Environment).

This research review was shared with stakeholders at the second SSIP stakeholders meeting in June, 2014. Also shared with stakeholders was the result of regression analysis and additional analyses of 2012-13 school year data. The purpose of creating the regression model was that with many variables playing a role in the prediction of proficiency, we were then able to look at the relationship between proficiency and any one of the predictor variables while holding all other predictor variables constant. This essentially allowed us to look at the effect of one variable while removing the effect of all other variables. This lets us isolate the effect of any variable in which we were interested.

We shared 2012-2013 SAU-level proficiency rates and SAU-level LRE rates to get a sense of whether any kind of relationship might appear when analyzed at the student level.



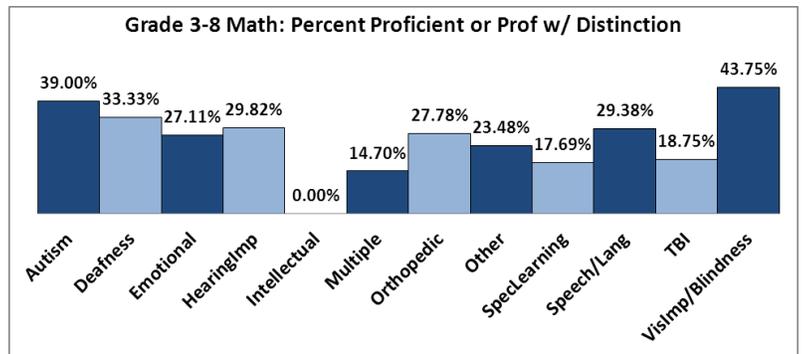
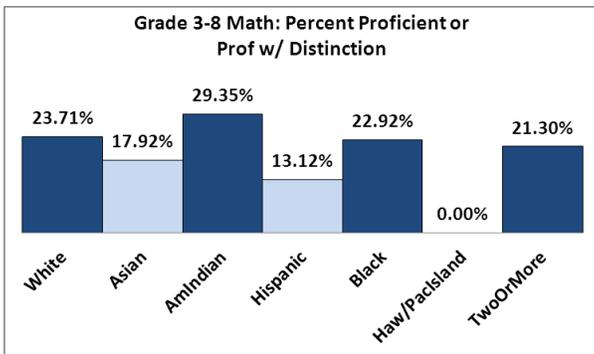
This scatterplot of one of those analyses showing math proficiency for all grade levels has proportions of the students with disabilities in the general education classroom 80% or more listed across the horizontal axis and the proportions of math-proficient students with disabilities on the vertical axis. This plot includes all public SAUs in Maine that have ten or more students who received special education and took the 2012-13 NECAP exam or the Maine High School Assessment (MHSA).

Each black dot represents a SAU. The red “Least Squares” line summarizes the relationship between the variables, and shows a general trend. Generally, across SAUs in Maine, when there are higher proportions of students in the general education classroom 80% or more of the time, the proportion of students with disabilities who are math proficient is also slightly higher. The correlation is 0.22, which is considered a small, but statistically significant correlation ($p < 0.01$).

Important information gets lost when we look at correlations between two variables because no other variables are available to weigh in on the analysis. For instance, maybe there is another, third variable that is correlated with educational environment. Perhaps students in the <40% LRE category are more often economically disadvantaged, or more often have limited English proficiency, or some other factor, and perhaps these are the variables that are responsible for poorer proficiency, rather than educational environment. To account for the effects of many different variables, we created regressions models as Roland did in her research on Rhode Island NECAP proficiency.

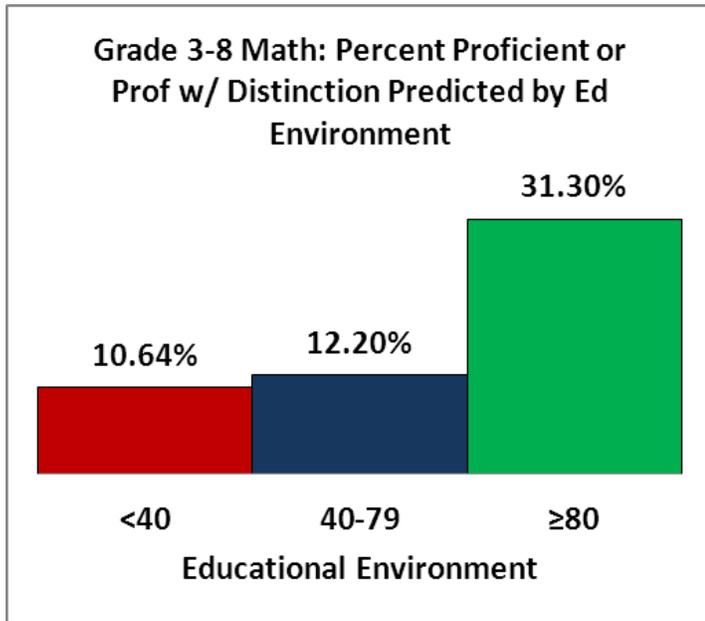
For about 12,000 Maine students with disabilities, we compiled student-level information, including 1) the student’s proficiency level on the NECAP, 2) the student’s educational environment, 3) whether the student participated in the limited English program (LEP), 4) whether the student qualified for free or reduced lunch, and 5) the current grade of the student. SAU-level information that was compiled included 1) the amount of per-pupil funding for special education, 2) the student to teacher ratio for special education, and 3) the overall SAU attendance rate. We used these variables to make predictions about proficiency level to see which ones were related to proficiency and which ones were not.

For math proficiency for students with disabilities in grades 3-8, all of the variables with the exception of SAU-level attendance rate were statistically significant predictors of proficiency. The variables that were most strongly related to proficiency were educational environment, grade level, disability, and being economically disadvantaged. This is consistent with earlier analyses demonstrating proficiency consistently declines across grades 3-8.



The lowest proficiency percentages are found for students with intellectual disability, and the highest rates are found for students with autism and visual impairment.

Using the regression model to isolate the effect of a variable in which we were interested, we demonstrated the modeled relationship between educational environment and 3rd-8th grade math proficiency. Regression has removed the effects of other variables, holding the other variables constant.



Comparing the red bar (<40% category) to the blue bar (40-79% category) shows that the probability that a student will be proficient or proficient with distinction goes up by 1.56%. However, the probability that a student with disabilities will be proficient in math shows an increase of 19% when comparing the 40-79% category to the >80% category. This is evidence for a significant relationship between educational environment and math proficiency for 3rd-8th graders, and it is consistent with previous research. We completed the same analysis for 3rd-8th grade reading, high school math and high school reading with similar results for each. In general, students with disabilities who spend more time in the general education classroom have higher proficiency levels.

There are many variables here that we do not have the power to affect, like the rates of students eligible for free and reduced lunch, representing economic disadvantage. We looked at schools that “defy the odds” with regard to some of these risk factors, thinking we may learn something from SAUs and schools that have high rates of economically disadvantaged students but nevertheless have relatively high proficiency rates. There was such a study commissioned by the Maine DOE that looked at some of the characteristics of what they called “defying-the-odds” schools. Conducted by the University of Maine, this study looked at the variables that correlate with proficiency for all students.

Overall results of the University of Maine study were consistent with those in our own analysis. For example, the University of Maine study found that the most powerful correlates with proficiency in high school were free and reduced lunch rates and the amount of per-pupil spending on instruction. As to the “defying-the-odds” schools, the University of Maine study conducted site visits and interviews at about 50 of the schools that had higher than expected proficiency rates given their rates of free and reduced lunch. Distinguishing characteristics of those schools included 1) high expectations for performance of students and staff; 2) collective expertise in using data for improved learning; 3) contractual time for focused, sustained professional development; 4) efficient use of learning time; 5) collective sense of accountability; 6) focused, collaborative and guiding leadership; and 7) focus on intellectual work as well as academic learning.

All of these data points and stories were presented at the SSIP stakeholders meeting in June, 2014. The members used this data to inform their discussions regarding potential root causes of poor proficiency and possible improvement strategies that may successfully impact proficiency levels for students with disabilities. Stakeholders selected math as an area of focus for the measurable result and identified the following root causes of poor proficiency in math:

- 1) General education teachers may have difficulty knowing how to include and support students with disabilities in their classrooms.

- 2) Special education instructors may demonstrate limitations in their math content knowledge compared to general education teachers who teach math.
- 3) Both general and special education teachers attempt to co-teach without adequate training on the evidence-based models and methods of effective co-teaching.
- 4) Limited differentiated professional development leads to educators not consistently receiving the specific information and training they need to help their students with special needs. For example, special education teachers may not understand the math standards and how to align what they teach to the standards.

In time for our last stakeholders meeting, held September, 2014, NECAP scores for 3rd-8th grade for the 2013-14 school year were available and presented to the stakeholders. Previously regressions models were created to predict the probability of proficiency based on the various predictor variables. In the new analyses, models were created to predict the actual NECAP score (rather than probability of proficiency) based on those same predictor variables. This provided another perspective on the relationship between the predictor variables and proficiency, and helped gather multiple perspectives. Comparing proficiency rates of general education students to rates for students with disabilities, a gap of 13.23 points was seen in math and a gap of 15.12 points was seen in reading. On average, students with disabilities are not proficient in math or reading, and, on average, general education students are proficient (see Appendix A, Label 3, page 32). These scores mirror the gaps in proficiency rates found in the original analysis when looking at the 2011-12 school year.

As for predictors of proficiency, we looked at all of the same variables that we looked at for the 2012-13 school year.

Statistically Significant Reductions From 2013-14 NECAP Averages for Students Receiving Special Ed (Relationships are Bivariate - The Analyses do not Control for Factors Beyond the Two Assessed Variables)				Reading and Math NECAP Scores Across Grades 3-8:			
Variable/Characteristic	Reduction from Special Ed Avg Score		Reading		Math		
	Math	Reading	Grade	Avg Reading Score	Grade	Avg Math Score	
Asian Ethnicity	-----	4.14	3	33.33	3	34.02	
Hispanic Ethnicity	2.34	4.51	4	32.57	4	32.49	
Intellectual Disability	13.27	10.75	5	34.01	5	32.55	
Multiple Disability	4.76	3.37	6	32.94	6	29.75	
Specific Learning Disability	2.32	-----	7	32.1	7	29.87	
Free/Reduced Lunch Eligibility	4.19	4.19	8	32.89	8	29.58	
Limited English Proficiency	4.85	5.39					

These variables were statistically significant predictors of proficiency, listed with the points below average associated with each predictor variable. This data demonstrates the effects for type of disability, economic disadvantage, and limited English proficiency, similar to the previous analyses. Also as in the previous analyses, we found a significant effect of grade with the same patterns: 1) reading scores basically move up and down around a central value; but 2) for math, there is a clearer pattern of decline as students move to higher grades.

1.C. A description of any concerns about the quality of the data and if so, how the State will address these concerns.

Throughout the data analyses, data quality checks were conducted by comparing multiple sources of the same information (e.g., comparing subgroup counts derived from database queries to subgroup counts derived from school-submitted certification forms). No issues affecting the quality of the analyses were detected, and Maine will continue to make data quality a top priority in the SSIP analyses. In addition Maine has had participation of students with disabilities on the statewide

assessments at or above 95% since baseline in 2005. High participation is an indicator of the quality and representativeness of Maine's statewide assessment data.

1.D. A description of how the State considered compliance data and whether those data present potential barriers to improvement.

The State reviewed its compliance data as reported on the State Performance Plan. Potential barriers to improved proficiency in math for students with disabilities include timely completion of initial evaluation for child find (indicator B-11), education in the least restrictive environment (indicator B-5) and proficiency for all students with disabilities on state-wide assessments (indicator B-3C). FFY 2013 APR data for school-aged children (ages 5-20) demonstrated continued growth in timely completion of initial evaluation (88.4% in FFY 2011, 93.16% in FFY 2012, 96.2% in FFY 2013). LRE rates, on the other hand, have remained essentially flat over the last three years. While performance in child find has fallen short of the target, improved performance over the last three years indicates compliance has not had an active negative impact on proficiency for students with disabilities in math. At the same time, flat LRE rates and declining rates in proficiency in math for students with disabilities particularly in the younger grades, suggests that an evidence-based initiative is needed to meet needs that are not currently being addressed.

As part of Maine's SSIP improvement strategies, selected SAUs will conduct self-assessments during which root causes specific to their SAUs will be revealed. Timely completion of initial evaluations or least restrictive educational environments may be identified as possible barriers to improved proficiency for their students with disabilities. The improvement strategies are built to address those challenges in particular SAUs.

1.E. If additional data are needed, a description of the methods and timelines to collect and analyze the additional data.

The State does not expect to collect additional data to inform Phase I of the SSIP.

Maine is making a transition in statewide assessments. In 2014-2015 students in grades 3-8 and in high school are taking for the first time the Maine Education Assessment in Mathematics and English Language Arts/Literacy developed by the Smarter Balanced Assessment Consortium (SBAC) as Maine's annual statewide assessment. This new computer adaptive assessment measures higher-order thinking in Maine's recently updated standards in math and English language arts/literacy. The alternate assessment for students with significant cognitive disabilities is also a computer-adaptive assessment, developed by the National Center and State Collaborative (NCSC). The MEA in Science will continue to be a paper-pencil test similar to the science test administered in the past. The alternate in science for students with significant cognitive disabilities will continue to be the Personalized Alternate Assessment Portfolio.

Baseline data and targets are based on the 2012-2013 administration of the NECAP. In the past the NECAP was administered in October. The SBAC will be administered during a window in March until May. This new data will inform the continued development of the SSIP, including a change in baseline data and target data if necessary.

1.F. A description of stakeholder involvement in the data analysis.

Maine considered the importance of stakeholder involvement in the development of the SSIP from the moment the work began, in September, 2013 (see Appendix A, Label 4, page 33). The process has involved presenting analyses and facilitating stakeholder discussions around the information. The goal for each stakeholder meeting was to work together to produce the intended outcome. In some cases the outcome for the meeting was to brainstorm and look for trends in the experiences of the membership. For others the outcome was to reach consensus on a topic, activity, or course of action. In each case workgroup members presented information and facilitated discussion, and stakeholders made the ultimate decision.

Our first meeting, on November 20, 2013 consisted of the previously organized Data Management Group, an existing group of stakeholders that had met in previous years to address data issues as these impacted programs and outcomes for students with disabilities. For the first SSIP stakeholder meeting this group was re-convened to capitalize on their previous working relationships and data-based activities. This group was tasked with identifying a general area of focus through a process of consensus. They reviewed broad data analysis of four target areas identified by review of the State Data Display FY2012-2013: graduation rates, educational environments, identification rates, and proficiency rates. This group was facilitated by technical assistance providers from the Northeast Regional Resource Center (NERRC). The group arrived at consensus using various discussion and analysis tools. The group selected proficiency as the broad area of focus.

Our second meeting, on June 30, 2014 consisted of additional members representing multiple stakeholder groups in the community, including educators, parents of students with disabilities, and a representative of the State Advisory Panel. At this meeting, facilitated by NERRC, the group was tasked with analyzing in depth data analysis on proficiency for students with disabilities. Through brainstorming activities, members identified possible root causes and potential improvement strategies. Outcomes included identification of root causes as related to the members' field experiences. They examined the idea that improving the rates at which students with disabilities participate in the general education curriculum would improve proficiency rates for these students. The stakeholders described potential improvement strategies and trends were outlined. At this meeting members began a discussion around a possible measureable outcome for students with disabilities.

At our next meeting in July, 2014, applying a process of consensus to the in-depth data analysis, stakeholders identified the measurable result for students with disabilities. At this meeting, stakeholders identified increased proficiency in math for students with disabilities as the measurable result. Stakeholders discussed the advantage of following a cohort of students by focusing on identified schools over a grade span, measuring student performance to demonstrate the effects of the intervention. In addition, stakeholders brainstormed local initiatives that align with the selected measurable result. They used initial information from the broad infrastructure overview to brainstorm which State-level initiatives might offer evidence-based improvement strategies that would support positive outcomes on the measurable result.

In conclusion, research supports, and stakeholders agree, that time students receive special education in the general education environment has a significant impact on students' proficiency. Math is a content area in Maine that shows the greatest need in all grades, particularly the earliest grades where there is a consistent downward trend starting at grade 3. Root causes preventing improved proficiency in math for students with disabilities include limitations to time in the general education environment. Maine's SSIP will address improved outcomes in math proficiency for students with disabilities.