More Efficient Maine Schools Project

A Work in Progress

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INTRODUCTION

Funding for K-12 public education in Maine is facing some difficult times, both in the short term and well into the future. While the state faces unprecedented budget deficits, keen global competition underscores the need for exceptional performance in all Maine K-12 schools. In fact, the moral imperative to provide every Maine child a first rate education is not diminished in tough economic times; rather Maine educators and policy makers must rise to the challenge to do even more with less.

How can more be done with less? One strategy which may prove useful is to help schools adopt "best practices", practices found in more efficient Maine schools. These are schools that are deemed more efficient because they are higher achieving schools, and these are schools obtaining higher returns on spending. Adopting this strategy would entail at least three major steps: (1) identifying the more efficient Maine schools; (2) identifying the practices found in these schools; and (3) disseminating these practices to all Maine schools. This study was designed to complete the first step in this three step process. More specifically, this study developed criteria for identifying more efficient schools and tested these criteria by applying them to Maine schools.

CRITERIA

More efficient schools should be exceptional schools. Not in the sense that only a few may qualify but rather these schools should be considered exceptional because they are performing above the norm, both in terms of student achievement and how they are spending public funds. More specifically, we believe these schools should:

1. out perform all other schools and schools with similar student demographics.
2. be helping all children achieve high academic standards.
3. in the case of high schools, have above average high school graduation rates.
4. be achieving these academic goals through the wise use of their resources.

To test the appropriateness of these benchmarks, the four were converted into technical criteria, and these were applied to an analysis of Maine schools. The technical translation of the benchmarks into criteria resulted in the identification criteria appearing in Figure 1.

Figure 1
Criteria for Identifying More Efficient Maine Schools

For a school to be identified as a More Efficient Maine school, the school must meet two major criteria: It must be a higher achieving school and it must be obtaining a higher return on spending.

Higher Achieving Schools. A school is designated as higher achieving if it meets *the first four* of the following criteria in the evaluated grades, grades 4 or 8, and *all five criteria* for grade 11:

1. The average cumulative scale score on the state exams (MEA or SAT) is at least one-third of a standard deviation higher than state average,
2. The average cumulative scale score on the state exams is higher than would be predicted based on pupil characteristics and student scores in previous grades,[1]
3. The percentage of pupils at or above the *Meets* proficiency level is higher than the state average, and
4. The percentage of pupils at or above the *Partially Meets* proficiency level is higher than the state average.
5. For high schools, the four-year graduation rate is higher than the state average.

Higher Return on Spending Schools. A school is designated as obtaining a higher return on spending if it meets the following two criteria:

6. The school's Proficiency Return on Spending is higher than the state average;[2]
7. The school's Proficiency Return on Spending is higher than would be predicted based on pupil characteristics and student scores in previous grades.

[1] In grade 4, the predicted score is based only on pupil characteristics, not student scores in previous grades.
[2] Proficiency Return on Spending is defined as the percentage of students at or above the Meets Proficiency Level divided by its annual per-pupil expenditure.

In addition, the criteria were translated into those that would be classified as Less Efficient schools and those having mixed results. These criteria appear in Figure 2.

Figure 2
Criteria for Identifying Less Efficient Schools

Lower Achieving Schools. A school is designated as lower achieving if its average cumulative scale score on the state exams (MEA or SAT) is at least one-third of a standard deviation lower than state average and it fails to meet *each* of criteria 2 through 4 in Figure 1, and

Lower Return on Spending Schools. A school is designated as a lower return of spending school if it is designated a lower achieving school and fails in both criteria 6 and 7 in Figure 1.

Mixed Results Schools

Mixed Performance Results Schools. A school is designated as having mixed performance results if it is neither higher achieving nor lower achieving, and

Mixed Efficiency Results Schools. A school is designated as having mixed efficiency results if it is neither more efficient nor less efficient.

The data used in the application of these criteria to Maine schools were as follows:

a. Two years of MEA data (4th and 8th) and two years of SAT (11th) data.
b. Composite scores were created by averaging sub-test scores on the MEA and SAT (reading, writing, mathematics, and science).
c. One year of school level expenditure data submitted by SAUs to the Maine Department of Education.

Note: Currently, additional data is being analyzed. This includes an additional year of data both for academic performance and expenditures.

Application of these technical criteria resulted in the identification of 93 more efficient schools and 112 less efficient schools, out of a total of 532 schools included in the analysis. A breakdown by school level appears in Table 1. It should be noted that not all schools were eligible for review and inclusion in Table 1. Excluded schools included schools without any achievement data (e.g. no 4th grade MEA scores), insufficient data, and/or missing data.

As may be seen from the table, approximately 10% of Maine's public high schools meet the More Efficient criteria, while approximately twice as many high schools

Table 1: More Efficient and Less Efficient Maine Public Schools

School Level	Schools Evaluated	More Efficient	Range in School Size	Less Efficient	Range in School Size
High School (9-12)	109	11 (10.1%)	269 - 1021	20 (18.3%)	88 - 1035
Middle School (6-8)	93	16 (17.2%)	271 – 813	28 (30.1%)	85 – 639
Grade School (K-5)	234	57 (24.4%)	53 – 780	49 (20.9%)	48 – 872
K-8 School	96	9 (9.49%)	85 - 510	15 (15.6%)	61 - 313

are deemed less efficient. Although the percentage of schools is higher in the case of middle schools, the same pattern of more and less efficient schools is apparent. In the case of grade schools, the percentage of more efficient schools was greater thanthe percentage of less efficient schools, and there were approximately twice as many less efficient K-8 schools as there were more efficient schools.

For purposes of further analysis Tables 2-4 present additional profiles for a small number of high schools. The same type of information is available for all the schools in this analysis. In Table 2, two of these high schools (schools A & B) have been classified as More Efficient, six are Mixed Results schools (School C-H), and four are classified as Less Efficient (I-L). To be classified as a More Efficient Schools, all achievement scores (Columns 1-5) must be above 0 with Column 1 being above .33. The scores for return on spending (Columns 6 & 7) must also be above 0. The Mixed Results Schools have a mixture of scores above and below 0, and Less Efficient Schools have scores below 0 for all seven columns.

In addition to this overall profile, achievement performance was also analyzed for economically advantaged and disadvantaged students in the sample of high schools. The results of this analysis appear in Table 3. Positive results are signified by scores above 0.

This analysis is intended to provide schools additional information for examining their schools in more detail. For example, the scores for School B indicate they are helping both economically advantaged, as well as economically disadvantaged achieve the Learning Results. However, in the case of School A, even though overall it is classified as a More Efficient School, it is not being as successful with its economically disadvantaged students. School G presents an even different profile. The data in Table 3 indicates School G is

Table 2
Sample of High School Profiles – Efficiency Scores

		1	2	3	4	5	6	7
Schools	**Efficiency**	**Ave. SS Compared to State**	**Ave. SS Compared to Peers**	**Ave. Percent Meets or Better Compared to State**	**Ave. Percent Partially Meets or Better Compared to State**	**Ave. Graduation Rate Compared to State**	**Proficiency Return Compared to State**	**Proficiency Return Compared to Peers**
School A	More Efficient	1.04	.26	1.06	.67	.99	.90	.13
School B	More Efficient	2.56	.88	2.27	1.87	1.67	2.58	1.00
School C	Mixed Results	1.12	.12	1.07	.75	.89	.67	-.17
School D	Mixed Results	-.35	-1.28	-.19	-.26	-.94	.19	-.21
School E	Mixed Results	-.06	-.55	-.06	.12	-.39	.36	-.07
School F	Mixed Results	.05	.84	.08	.37	.19	-.39	-.21
School G	Mixed Results	.15	-.14	-.08	.36	.96	.15	-.05
School H	Mixed Results	-.93	-.45	-.95	-.87	-1.25	-.45	.19
School I	Less Efficient	-1.34	-.12	-1.47	-.84	-1.48	-1.15	.13
School J	Less Efficient	-1.07	-1.37	-1.10	-.96	-1.27	-1.36	-1.37
School K	Less Efficient	-1.45	-3.59	-1.83	-1.07	.13	-1.81	-2.68
School L	Less Efficient	-1.13	-1.56	-.87	-1.30	.17	-.93	-.17

Table 3
Sample of High School Profiles - Economically Advantaged – Disadvantage Performance

		1	2	3	4	5	6
Schools	**Efficiency**	**ADV Ave. SS Compared to State**	**DA Ave. SS Compared to State**	**ADV Ave. Percent Meets Compared to State**	**DA Ave. Percent Meets Compared to State**	**ADV Ave. Percent Partially Meets Compared to State**	**DA Ave. Percent Partially Meets Compared to State**
School A	More Efficient	1.08	-0.22	1.09	0.18	0.75	-0.77
School B	More Efficient	2.34	1.56	1.99	1.63	1.54	1.05
School C	Mixed Results	1.04	0.67	0.87	1.33	0.50	0.69
School D	Mixed Results	-0.38	-0.20	-0.26	0.16	-0.29	-0.19
School E	Mixed Results	-0.22	-0.32	-0.13	-0.67	-0.05	-0.18
School F	Mixed Results	0.18	0.30	0.34	-0.01	0.41	0.59
School G	Mixed Results	0.45	0.73	0.48	0.02	0.68	0.48
School H	Mixed Results	-0.86	-0.61	-0.81	-0.66	-0.78	-0.44
School I	Less Efficient	-1.34	-0.86	-1.36	-1.08	-0.75	-0.21
School J	Less Efficient	-1.07	-0.69	-1.08	-0.69	-0.89	-0.31
School K	Less Efficient	-1.38	-0.92	-1.86	-1.24	-0.63	-0.49
School L	Less Efficient	-1.16	-0.89	-0.87	-0.60	-1.70	-0.40

being successful will all types of students, but the data in Table 2 reveals that, overall, their performance is not as high as desired.

Table 4 provides additional analytical information. In this case, additional analyses of Return on Spending by three subgroups of expenditures classified as Instruction, Core and System Administration. The definitions of these subgroups are as follows:

Definitions

Instruction – school per pupil expenditures on regular instruction, alternative education, ESL, co-curricula, extra-curricular and summer school

Core – school per pupil expenditure on instruction, guidance, health services, instructional technology, professional development, library services, student assessment, operation and maintenance, school administration, and system administration

System Admin. – school per pupil expenditure on system administration

Total expenditure – school per pupil expenditure on Core, capital enhancement, debt services, and other expenditures excluding transportation, special education, and career and technical education

In this analysis, as in the previous one, positive results are signified by scores above 0. Again, School B is demonstrating good returns on spending in each of the three categories, and both in comparison to the state and peer schools. School A has a similar pattern except that it is falling below the performance of its peer schools in the area of Instruction Return on Spending. And in the case of School F, it has a good return for System Administration, but not so when System Administration is combined with other CORE subcategories.

Table 4

Sample High School Profiles - Efficiency by Subgroups of Expenditures

		1	2	3	4	5	6	7	8
Schools	**Efficiency**	**Proficiency Return Compared to State**	**INSTRUCTION Proficiency Return Compared to State**	**CORE Proficiency Return Compared to State**	**SYSTEM ADM. Proficiency Return compared to State**	**Proficiency Return Compared to Peers**	**INSTRUCTION Proficiency Return Compared to Peers**	**CORE Proficiency Return Compared to Peers**	**SYSTEM ADM. Proficiency Return compared to Peers**
School A	More Efficient	0.90	0.67	0.92	0.97	0.13	-0.14	0.14	0.24
School B	More Efficient	2.58	2.36	2.56	2.17	1.00	0.71	0.94	0.64
School C	Mixed Results	0.67	0.71	0.66	-0.02	-0.17	-0.02	-0.19	-0.82
School D	Mixed Results	0.19	0.56	0.24	0.11	-0.21	0.32	-0.15	-0.23
School E	Mixed Results	0.36	0.39	0.35	0.81	-0.07	0.04	-0.09	0.55
School F	Mixed Results	-0.39	0.46	-0.39	0.53	-0.21	0.91	-0.22	0.92
School G	Mixed Results	0.15	0.94	0.15	-0.31	-0.05	0.96	-0.05	-0.52
School H	Mixed Results	-0.45	-0.66	-0.45	-0.94	0.19	-0.14	0.19	-0.52
School I	Less Efficient	-1.15	-1.21	-1.13	-0.58	0.13	0.05	0.19	0.66
School J	Less Efficient	-1.36	-1.33	-1.34	-1.08	-1.37	-1.21	-1.33	-0.85
School K	Less Efficient	-1.81	-1.95	-1.81	-1.48	-2.68	-2.87	-2.69	-1.85
School L	Less Efficient	-0.93	-0.43	-0.89	-1.42	-0.17	0.54	-0.07	-0.67

NEXT STEPS

Based on the results of these analyses, several next steps are recommended. These are as follows:

1. A second year of financial data be included in the analysis.
2. A plan be developed and implemented for identifying the distinguishing attributes of More Efficient Schools for the different school configurations.
3. A plan be developed and implemented for disseminating information on the distinguishing attributes of More Efficient Schools.

In addition to these steps, possibly consideration should be given to defining More Efficient School Districts. At first blush this may appear to be rather straight forward, but the assumptions one makes may greatly influence the definition. Some options include:

1. Classify a district as More Efficient if all the individual schools within the district are classified as More Efficient.

   Pro: Easy and straight forward.

   Con: Narrow gate to get through, especially for an SAU with many schools.

2. Classify a district as More Efficient only by grade 11 performance with no prior achievement in the model.

   Pro: Easy and straight forward.

   Con: Disregards information about all other schools and other grades within the district; assumes the lag of all prior education, kindergarten up to grade 11 in one outcome.

3. Classify a district as More Efficient on the percentage of schools within the More Efficient and Less Efficient ranges, say 80%. Example, 4 schools out of 5 within a district are in the zone.

   Pro: Easy and somewhat less straight forward. Need to set a range and level.

   Con: Disregards percent of students in different schools within the SAU; and may disregard the level of education taught at the school.

4. Classify a district as More Efficient on the number of schools within the More Efficient and Less Efficient ranges and the percentage of students. Example, 3 schools out of 5 within a district are in the zone and those 3 schools account for 76% of students.

   Pro: Somewhat as straight forward. Need to set a range and level.

   Con: Disregards the level of education taught at the schools.

5. Classify a district as More Efficient by evaluating on district grade level models, 4, 8, and 11.

   Pro: Looks at district level.

   Con: More models. Disregards school classifications. May be difficult to make sense of with school classifications.

6. Classify a district as More Efficient based on some combination of the above options or by some other yet to be developed method.

SUMMARY

In summary, this study was designed to define and test a set of criteria for identifying More Efficient Maine schools. To be classified as More Efficient a school had to meet several student achievement criteria, and return on spending criteria. Application of these criteria resulted in designating 17.5 percent of Maine schools as More Efficient and 21.0 Less Efficient, with the remainder of the school demonstrating mixed results. Additional analyses examine the schools by how well they were helping both economically advantaged and economically disadvantaged achieve high standards, and how different components of school expenditures are contributing to efficiency in student achievement.

Once these analyses are finalized it is recommended that steps be taken to determining the distinguishing attributes found in More Efficient Schools, and that strategies be put in place for sharing this information with other Maine schools. In so doing, schools will learn strategies of how to become more efficient, and strategies to increase access and equity of educational opportunities for <u>all</u> Maine students.