

Chapter Eleven

Mid-Michigan Public School Academy

Lansing, Michigan

11.1 Descriptive Summary of School

Mid-Michigan Public School Academy is a charter school established in 1996 to serve grades K-5, with grades 6-8 added in 1997. Mid-Michigan aims to create a school that “achieves quantum gains in students’ academic performance and in the quality of their lives, a school that serves the diverse needs of all students.” Mid-Michigan is on a large, 40-acre, 10-building campus that was formerly the Michigan State School for the Blind. This school runs on a 205-day calendar with a 7-hour day for primary students (Mid-Michigan Public School Academy, 1999).

This is the largest charter school in Michigan. It began in 1996 with 691 students, but expanded to more than 1,000 by 1999 according to the Mid-Michigan Public School Academy School Profile for the 1999/2000 school year. Of 1,016 students, 85 have special education needs. The student body consists of 64 percent African-Americans, 21 percent Caucasians, 9 percent Hispanics, 4 percent Asians, and 2 percent other ethnic groups. The total proportion of minorities in 1995-1996 was different from the Lansing School District, which indicated that nearly 50 percent of the district students are Caucasian (Mid-Michigan Public School Academy, 1999).

The student enrollment for the 1999/2000 school year was significantly greater for students in grades K-4 than for the upper grades. Kindergarten through grade 4 ranged from an enrollment of 139-157 students per grade. For grades 5-8 the number of enrolled students per grade ranged from 58-88. Primary and elementary academies each have three separate “houses”; each house holds 120-150 students. The Junior Academy (grades 6-8) has two houses with approximately 100 students in each house.

By 1999, Mid-Michigan had a hot lunch program for students and was adding a cafeteria. The free or reduced lunch program in 1998/1999 in both the Mid-Michigan Academy and the Lansing School District were nearly equivalent in terms of the proportion of students qualifying (i.e., Mid-Michigan had 50.7 percent of students receiving free lunches; Lansing School District had 53.5 percent of students receiving free lunches).

The teacher/pupil ratio at both Mid-Michigan and Lansing Public Schools were similar with 19.5:1 and 19.7:1 ratios respectively. Mid-Michigan had 51 classroom teachers, 15 specialists (art, music,

physical education, and Spanish), 5 special education teachers, 6 certified tutors, 8 instructional aides, a guidance counselor, and 1 paraprofessional (Mid-Michigan Public School Academy, 1999).

In the evaluation of Michigan Public School Academies conducted by The Evaluation Center (Horn & Miron, 1999), the average salaries for Mid-Michigan teachers during the 1996/1997 school year reflected a difference of almost \$7,000 when compared with the host district. The Mid-Michigan average teacher salary was \$42,073, while the district average teacher salary was \$48,826.

The school received the maximum foundation grant for charter schools in 1997/98 with \$5,962 per pupil, whereas the Lansing School District received \$6,066. Here there is minimal difference. However, in 1996/1997, the per pupil revenues versus per pupil expense at Mid-Michigan showed a significant gap; per pupil expenditures were \$6,156, but total per pupil revenue was \$10,178. For the host district the gap was not as great. Whereas the expenditure per pupil was \$7,692, the actual revenue per pupil was \$8,320.

Tests administered include the Michigan Educational Assessment Program (MEAP) in reading and math for grade 4 in 1997/98 and 1998/99 and grade 7 in 1997/98 and 1998/99; in writing and science for grade 5 in 1997/98 and 1998/99 and for grade 8 in 1997/98 and 1998/99; and the Metropolitan Achievement Tests, 7th Edition (MAT-7) in Spring 1997 for Grades 3-4 and in Spring 1998 for grades 1-8. The 1998/99 annual report included test results for grades 2-8.

11.2 Past Studies and Evaluations and Currently Available Data

In its second annual report on student performance, Edison categorized the gains in this school as “mixed” (a three star rating). The following statements from its second annual report sum up Edison’s findings reported by the company’s central office (Edison, 1999, p. 42):

- “MEAP, the state criterion-referenced test, shows encouraging results in grade four, where the percentage of students scoring satisfactory or better (i.e., “passing”) rose 12 percentiles in reading and 15 percentiles in math. These gains are somewhat difficult to interpret because the state moved the test date in 1997–98 from fall to winter, to give students’ skills more time to develop. The state also provides no demographically similar schools for comparison. The gains at Mid-Michigan did exceed average state gains, and the state is more economically advantaged than the Mid-Michigan student body.”
- “MEAP scores for fifth grade, though not clouded by a change in the test time, are distorted by a change in writing scoring procedures that dropped scores 10 percentiles statewide. Science gains, therefore, stand as a small improvement while writing gains are unclear.”
- “The Junior Academy at Mid-Michigan began in 1997–98, so the MEAP scores merely provide baseline data—indicate a great need for improvement.”

- “The MAT-7 is voluntarily administered by Edison for diagnostic purposes at Mid-Michigan because no other nationally normed test is mandated. Those results are mixed, with two cohorts down somewhat and one cohort up.”

However, in the school’s own annual education report, Mid-Michigan Public School Academy (1999) revealed that too few students were scoring in the proficient category, especially in the area of science, on the MEAP tests. In eighth grade, 0 percent of males and 3 percent of females scored “proficient” on the science portion of the test in 1998-1999; in fifth grade the results were only slightly less alarming with 19 percent of males and 4 percent of females scoring “proficient” in science.

In the area of math for grade 4, 41 percent of males and 25 percent of females were satisfactory. These results along with those in the area of science, show that girls continue to lag behind boys by a significant margin in these two areas.

Fifth and eighth graders participated in a writing portion of the test. The Mid-Michigan fifth-grade results show that 24 percent of males and 33 percent of females were proficient. Seventeen percent of grade 8 males were proficient, while 37 percent of females were proficient.

The reading test scores that Mid-Michigan released show a smaller gap between the scores of boys and girls. The scores are low, indicating that less than half of the students performed proficiently in standard tests; however, 25 percent of fourth grade males and 23 percent of females received a “satisfactory” score.

Other studies have indicated that Mid-Michigan has not been successful in increasing student performance. Two studies conducted by The Evaluation Center (Horn & Miron, 1999, 2000) evaluated Michigan charter schools, including Mid-Michigan. Appendices from both studies include school-level data. Compared with its host district, the school consistently showed smaller gains. This is the largest charter school in Michigan; but as the statewide charter school studies show, the performance of students at this school is among the worst. Central Michigan University (CMU, 1998), which granted the charter for this school and ranks its schools in terms of performance on the MEAP, indicated that Mid-Michigan was among the poorest performing schools it authorized.

11.3 Longitudinal Analysis of Individual Student Data

Edison Schools Inc. provided individual student test results for the Metropolitan Achievement Test (MAT-7). The MAT-7 scores were provided in four separate scales: Grade equivalent scores (GE), standard scores (SS), national percentile rank scores (PR) and normal curve equivalent scores (NCE) for the language, math/problem solving, and reading comprehension subtests. Parallel analyses are reported for each subtest and scale.

Data records included 782 students covering the 1997-1999 academic years, although we were able to trace only 1 cohort of students representing a small portion over the 3 years. In 1997 there were

approximately 105 possible students to follow. By 1998 about 68 percent remained (71/105 pair wise analysis), and by 1999 only about 42 percent of the students remained (longitudinal trend analysis). This represents a 58 percent drop in students over the 3 years in the cohort of students that progressed from grade 3 to grade 5 from the 1997/98 school year to 1998/99 school year. Table 11:1 presents sample size information for each MAT-7 subtest by year and grade level. Also depicted in this table are the sample sizes for the 1-year gain analysis on this and the longitudinal analyses.

Table 11:1 Sample Sizes for Individual Student Data by Grade and Year on the MAT-7

Grade 3									
	1997			1998			1999		
	Language	Math	Reading	Language	Math	Reading	Language	Math	Reading
GE	106	106	106	98	98	98	126	126	126
SS	106	106	106	98	98	98	126	126	126
PR	106	106	106	98	98	98	126	126	126
NCE	106	106	106	97	97	95	126	125	125
Grade 4									
	1997			1998			1999		
	Language	Math	Reading	Language	Math	Reading	Language	Math	Reading
GE	106	106	106	96	96	96	93	93	93
SS	106	106	106	96	96	96	93	93	93
PR	106	106	106	96	96	96	93	93	93
NCE	104	104	106	96	96	96	89	93	91
Grade 5									
	1997			1998			1999		
	Language	Math	Reading	Language	Math	Reading	Language	Math	Reading
GE	85	85	85	96	96	96	106	106	106
SS	85	85	85	96	96	96	106	106	106
PR	85	85	85	96	96	96	106	106	106
NCE	83	83	84	95	95	95	106	105	105

Sample sizes for 1 year gains

Grade 3 to grade 4

	1997/98			1998/99		
	Language	Math	Reading	Language	Math	Reading
GE	71	71	71	49	49	47
SS	71	71	71	49	49	47
PR	71	71	71	49	49	49
NCE	71	71	71	49	49	47

Sample sizes for 1 year gains (Grades 4 to 5)						
	1997/98			1998/99		
	Language	Math	Reading	Language	Math	Reading
GE	75	74	0	62	62	0
SS	75	74	76	62	62	62
PR	75	74	76	62	62	62
NCE	75	74	76	62	62	62

Sample sizes for Longitudinal Analysis

Grades 3 to 4 to 5			
1997/98/99			
	Language	Math	Reading
GE	44	44	44
SS	44	44	44
PR	44	44	44
NCE	44	44	44

Repeated measures ANOVAs were examined for longitudinal trends over a three year period for Mid-Michigan Academy. In all models, the assumption of sphericity was evaluated and, if found to be violated, the Huynh-Feldt adjusted p-values are reported. If the overall linear model was found to be statistically significant, unadjusted (alpha) pair-wise comparisons were examined to identify where a difference in the means might be located.

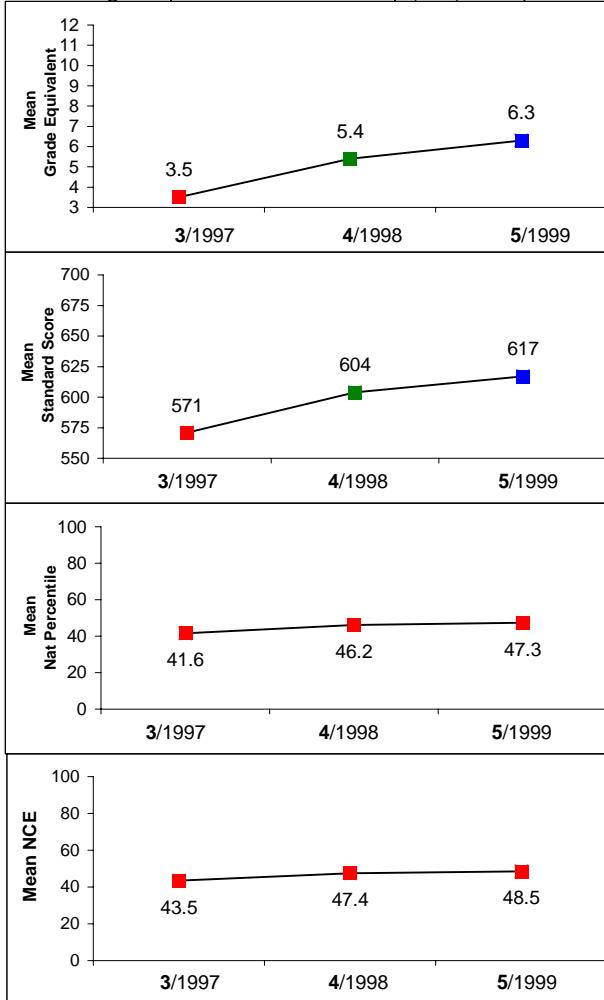
Students are expected to progress at least one grade level per year. Over the two years, the average progress was 2.8 years in language and 2 years in math/problem solving, but only 1.6 years in reading. Similarly, the standard scores of the students in the cohort increased each year in each of the three subjects. These were statistically significant gains relative to the previous year.

Although the grade equivalents and standard scores indicated that the students were progressing each year, the national percentile and the normal curve equivalent allowed us to compare the growth of this cohort of students with the national norms. On the whole, these students made some gains in language, increasing on the average about 5 ½ percentile points, did not make any gains in math/problem solving, and actually lost ground in reading. Specifically, none of these changes reached statistical significance. Thus, there is no real evidence to suggest that these students made any real positive or negative gains relative to the national comparison sample.

Exhibit 11:1 Mid-Michigan Public School Academy (Lansing, Michigan) Results from the Analysis of Individual Student Results on the Metropolitan Achievement Test (MAT-7)

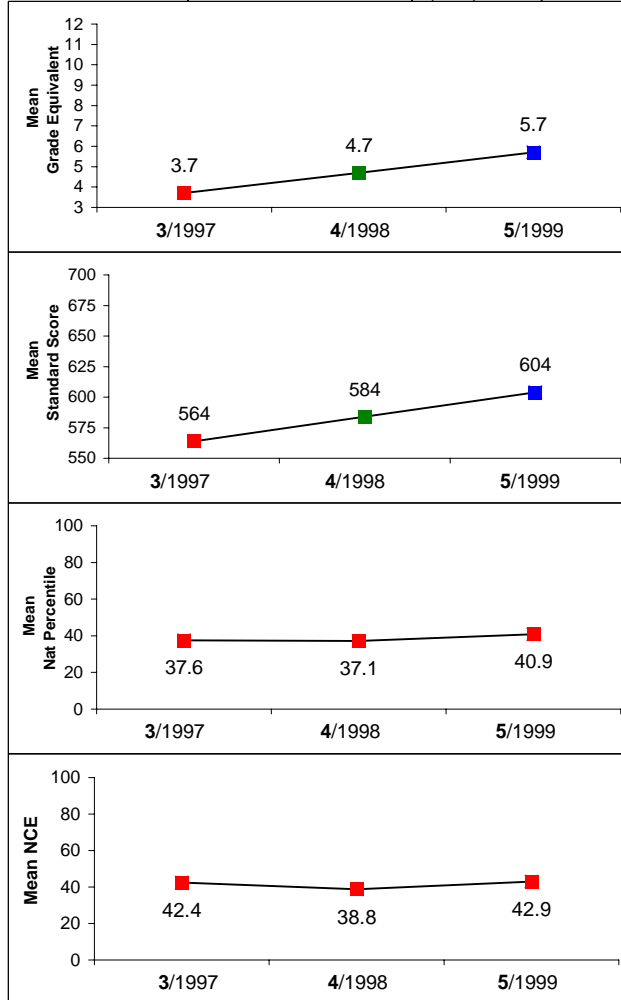
LANGUAGE

n=44	1997	1998	1999	
Grade	3rd	4th	5th	
GE Lang	3.5	5.4	6.3	F(3,86)=34.57, p<.0001
SS Lang	571	604	617	F(3,86)=44.71, p<.0001
NP Lang	41.6	46.2	47.3	F(3,86)=1.67, p=.1995
NCE Lang	43.5	47.4	48.5	F(3,86)=2.12, p=.1365



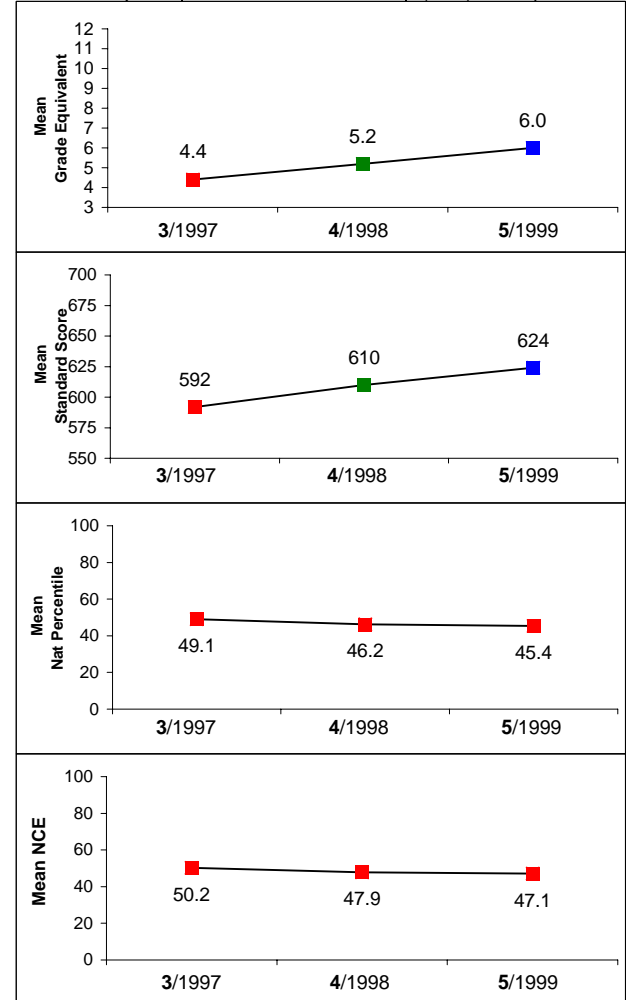
MATH / PROBLEM SOLVING

n=44	1997	1998	1999	
Grade	3rd	4th	5th	
GE Math/Prob	3.7	4.7	5.7	F(2,86)=28.32, p<.0001
SS Math/Prob	564	584	604	F(2,86)=37.85, p<.0001
NP Math/Prob	37.6	37.1	40.9	F(2,86)=0.75, p=.4516
NCE Math/Prob	42.4	38.8	42.9	F(2,86)=1.41, p=.2510



READING COMPREHENSION

n=44	1997	1998	1999	
Grade	3rd	4th	5th	
GE Rcomp	4.4	5.2	6.0	F(2,86)=19.88, p<.0001
SS Rcomp	592	610	624	F(2,86)=23.97, p<.0001
NP Rcomp	49.1	46.2	45.4	F(2,86)=1.02, p=.3653
NC Rcomp	50.2	47.9	47.1	F(2,86)=1.26, p=.2884



A color change represents a statistically significant change in the means. A trend with two color changes represents differences among all three means. A dual colored charting point (red and green) represents a statistically significant difference between one mean but not the other. The reader is encouraged to examine the individual table of means for these cases.

11.4 Chi-Square Analysis of MEAP Data

A chi-square analysis was initiated on data (1997 to 1999) available from the state of Michigan on the outcomes of the Michigan Educational Assessment Program (MEAP), the state-mandated criterion-referenced test. The MEAP is administered in grades 4 (mathematics and reading) and grade 5 (science; writing; and in 1999 social studies was added). In grade 4, mathematics and reading components of the MEAP are scored along an ordinal three category scale: Satisfactory, Moderate, and Low. Similarly, in grade 5 the science component of the MEAP is scored with the same scale, although different labels are used: “Proficient,” “Novice,” and “Not Yet Novice.” The grade 5 MEAP writing component had only two categories of data results: “Proficient” and “Not Yet Novice.” In 1999 the new component of the grade 5 MEAP, social studies, was scored along a four point continuum: Level 1 (highest) to Level 4 (lowest). Additional information on the MEAP is provided in Appendix A. We also secured two years of MEAP data (1998 and 1999) on the grade 7 reading and mathematics components and on the grade 8 writing, science, and social studies (1999) components.

Construction of the comparison groups

We constructed a variety of different comparison groups for our chi-square analyses. Since we were interested in examining the number/proportion of Mid-Michigan PSA students who met state standards (“passing”) or conversely the number/proportion of students who did not meet state standards (“failing”) on the MEAP, we needed to define a suitable comparison group. In the grade 4 and 5 analyses our first comparison was with the Lansing School District in which Mid-Michigan resides. The state performance constituted our second comparison group.

While the state demographics vary from Mid-Michigan Public School Academy and the Lansing Public School District, we believe that comparisons with state averages can yield further information regarding the relative gains of the Edison school. Also, since Edison claims that advances in other district schools is—in part—due to its presence, we used the state as a more distant point of comparison that cannot be easily influenced by the presence of Edison schools.

General procedure

Utilizing published data from the state of Michigan, we made yearly comparisons (consecutive cohorts) at grade 4 and grade 5 from 1997 through 1999 and from 1998 to 1999 in grades 7 and 8 for each subject component of the MEAP test administered at those specific grade levels.

Percentage data (students in each scoring category) were converted to raw frequency data prior to chi-square analysis. To insure independence of the rows in the chi-square tables, the raw frequencies for each scoring category of the MEAP in the district and state comparisons were down-weighted by subtracting the number of students in that category from Mid-Michigan. Thus, the state numbers reflect all students in the state exclusive of those at Mid-Michigan.

It was our intention to construct four chi-square analyses for each subtest nested within year and grade level. Two of these analyses were on uncollapsed data; that is, all scoring levels were represented in the contingency table (e.g., a 2x3) for the district and the state comparisons. Note that the uncollapsed grade 5 and 8 social studies analyses constituted 2x4 contingency tables. Two follow-up analyses were conducted on the data after collapsing the multilevel scoring into a dichotomy (pass, fail), thus producing 2x2 contingency tables. According to the Michigan Department of Education, a score in the “satisfactory” category constitutes “passing” or meeting the state standard for that particular grade and subject. On the other hand, the “moderate” and “low” categories refer to “slightly below the state standard” and “not well prepared,” respectively. Students who had scores in the moderate and low categories did not meet state standards and fell into the “fail” category in our 2x2 chi-square and odds-ratio analyses.

Unfortunately, the data as extracted from the Michigan Department of Education were partially incomplete regarding the three point scoring scale of the MEAP. Specifically in grade 4, we were able to construct the 2x3 and 2x2 tables for the state comparisons but only the 2x2 table for the district comparisons. In grade 5 we could construct 2x3 and 2x2 tables for the science MEAP, but only 2x2 tables for the writing MEAP in both sets of comparisons. For grade 5, we also constructed the 2x4 table for the social studies MEAP test. In grade 7 reading and math, we constructed both 2x3 and 2x2 tables for both comparisons (district and state). In grade 8 we could get the 2x3 and 2x2 tables for science, but only 2x2 for writing tests and the 2x4 table for the social studies test.

Chi-square findings

Results of the chi-square analyses covered the MEAP administration years from 1997 to 1999. Individual contingency tables are presented in Appendix E.

The MEAP reading and math subtests are administered in grade 4. Summary findings from the 22 separate chi-square statistics are presented in Table 11:2. Overall, there were rather substantial and statistically significant differences in the cell proportions in the Mid-Michigan to state comparison in both the 2x3 and 2x2 tables such that there were higher proportions of students in the higher categories in the state in all three years for both reading and mathematics test. Parallel findings were observed when Mid-Michigan was compared against the district on the mathematics test.

There were significantly more students passing the test in the district than at Mid-Michigan.

Table 11:2 Summary of Chi-Square Findings
for Mid-Michigan Academy, Grade 4

	1997	1998	1999
4th Grade Reading			
Mid-Michigan vs. District	NA	sig/sig	sig/sig
Mid-Michigan vs. State	sig/sig	sig/sig	NA/ns
4th Grade Math			
Mid-Michigan vs. District	NA	sig/sig	sig/ns
Mid-Michigan vs. State	sig/sig	sig/sig	sig/sig

Note: Each result cell in the matrix is divided with the results for the 2x4 analysis on the left-hand side and the results for 2x2 analysis on the right-hand side (i.e., 2x4/2x2). Red color indicates a statistically significant difference that favors the comparison group; blue color indicates a significant difference that favors the Edison school. NA means not available.

Chi-square results in the district comparison on the reading subtest are not as consistent. In 1997 (2x2 analysis) there were no differences in the cell proportions for reading, although by 1999, the district was passing a significantly greater number of students than Mid-Michigan.

Table 11:3 summarizes the 26 grade 5 chi-square findings on the MEAP science, writing, and social studies subtests. Overall, there were rather substantial and statistically significant differences in the cell proportions in the Mid-Michigan to state comparison in both the 2x3 and 2x2 tables such that there were higher proportions of students in the higher categories in the state in all three years on all three tests: writing, science, and social studies. Parallel findings were observed when Mid-Michigan was compared against the district on the MEAP science test. Significantly more students passed the test in the district than at Mid-Michigan. More variable findings were observed in the district comparison on the MEAP writing test. Chi-square results revealed that in 1997 (2x2 analysis) there were statistically significant differences in the cell proportions with a higher proportion of students passing at Mid-Michigan relative to the district. However, the proportions equalized in 1998 and moved significantly in the failure direction for Mid-Michigan 1999. In 1999 the social studies test was administered for the first time. Thus, we examined only the 2x4 table since there were published guidelines to indicate passing or failing this test.

Table 11:4 summarizes the grade 7 chi-square findings (20 tables) for 2 years of MEAP (1998 and 1999) reading and math tests. Overall, there were rather substantial and statistically significant differences in the cell proportions in the Mid-Michigan to

Table 11:3 Summary of Chi-Square Findings for Mid-Michigan Academy, Grade 5

	1997	1998	1999
5th Grade Writing			
Mid-Michigan vs. District	NA	sig/sig	sig/sig
Mid-Michigan vs. State	sig/sig	sig/sig	NA/ns
5th Grade Science			
Mid-Michigan vs. District	sig/sig	sig/sig	sig/sig
Mid-Michigan vs. State	sig/sig	sig/sig	sig/sig
5th Grade Social Studies			
Mid-Michigan vs. District			NA/sig
Mid-Michigan vs. State			NA/sig

Note: Each result cell in the matrix is divided with the results for the 2x4 analysis on the left-hand side, and the results for 2x2 analysis on the left-hand side (i.e., 2x4/2x2). Red color indicates a statistically significant difference that favors the comparison group; blue color indicates a significant difference that favors the Edison school.

Table 11:4 Summary of Chi-Square Findings for Mid-Michigan Academy, Grade 7

	1998	1999
7th Grade Reading		
Mid-Michigan vs. District	NA/sig	NA/sig
Mid-Michigan vs. State	sig/sig	sig/sig
7th Grade Math		
Mid-Michigan vs. District	NA/sig	NA/sig
Mid-Michigan vs. State	sig/sig	sig/sig

Note: Each result cell in the matrix is divided with the results for the 2x4 analysis on the left-hand side, and the results for 2x2 analysis on the left-hand side (i.e., 2x4/2x2). Red color indicates a statistically significant difference that favors the comparison group the comparison group; blue color indicates a significant difference that favors the Edison school.

state comparison in both the 2x3 and 2x2 tables such that there were higher proportions of students in the higher categories in the state in both years on both tests. Parallel findings were observed when Mid-Michigan was compared against the district on the MEAP math test where there were significantly more students passing the test in the district than at Mid-Michigan, with an exception in 1998.

Finally, Table 11:5 summarizes the 21 grade 8 chi-square findings on the MEAP science, writing, and social studies subtests. Overall there were rather substantial and statistically significant differences in the cell proportions at Mid-Michigan relative to both the district and the state in both the 2x3 and 2x2 tables such that there were higher proportions of students in the higher categories in the state and district in both years on both the science and writing tests.

Table 11:5 Summary of Chi-Square Findings for Mid-Michigan Academy, Grade 8

	1998	1999
8th Grade Writing		
Mid-Michigan vs. District	NA/sig	NA/sig
Mid-Michigan vs. 8 th Grade	NA/sig	NA/sig
Science		
Mid-Michigan vs. District	sig/sig	sig/sig
Mid-Michigan vs. State	sig/sig	sig/sig
8th Grade Social Science		
Mid-Michigan vs. District		NA/sig
Mid-Michigan vs. State		NA/sig

Note: Each result cell in the matrix is divided with the results for the 2x4 analysis on the left-hand side, and the results for 2x2 analysis on the right-hand side (i.e., 2x4/2x2). Red color indicates a statistically significant difference that favors the comparison group; blue color indicates a significant difference that favors the Edison school.

11.5 Odds Ratio Analysis of the MEAP Data

One of the many possible statistics that can be derived from a 2x2 contingency table is the odds ratio statistic and corresponding 1- α confidence interval. As presented in Section 2.4 of this report, the 2x2 tables analyzed in the previous section can be thought of as representing consecutive class cohorts in a prospective design. From a classical epidemiological perspective, the students in the “Edison” school can be thought of as the “exposed” group—that is, exposed to the “Edison-effect”—and students in the comparison group as the unexposed group. From this perspective each yearly comparison is a “new” cohort; and, measured over a period of years, there are consecutive class cohorts. There is a minimal possibility for cohort contamination if a number of students in one group are not promoted to the next grade level. However, we think this represents a very small number of possible cases and has minimal impact on the validity of these analyses. Section 2.4 details the OR statistic and corresponding 1- α confidence interval. We calculated and charted OR for each of the 2x2 tables constructed from the chi-square analyses presented above. Exhibits 11:2 – 11:54 present these findings.

Exhibit 11:2 Results of the Odds Ratio Analyses, Grade 4 Reading and Math

Mid-Michigan Grade 4 MEAP Reading vs. Lansing

Year	UB	LB	OR
1997	2.221	0.877	1.396
1998	2.289	0.948	1.473
1999	3.680	1.433	2.296

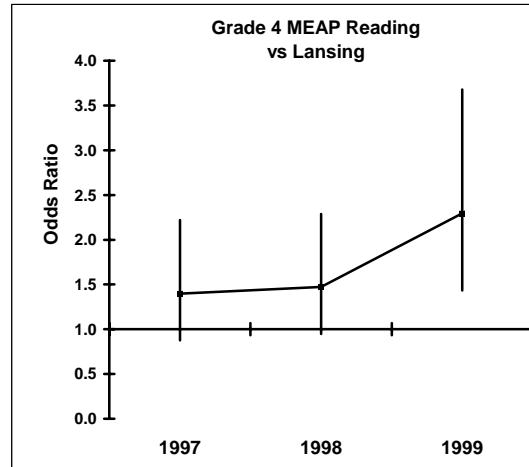
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (2, N=3,845) = 2.564, p = .277

OR = 1.672

LB = 1.284

UB = 2.176



Mid-Michigan Grade 4 MEAP Reading vs. State

Year	UB	LB	OR
1997	4.659	1.978	3.036
1998	3.763	1.647	2.490
1999	7.117	3.037	4.649

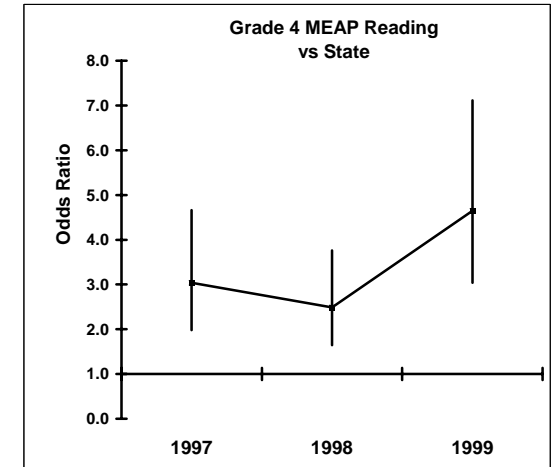
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (2, N=345,616) = 3.854, p = .146

OR = 3.249

LB = 2.549

UB = 4.142



Mid-Michigan Grade 4 MEAP Math vs. Lansing

Year	UB	LB	OR
1997	3.163	1.302	2.029
1998	3.482	1.501	2.286
1999	3.733	1.584	2.432

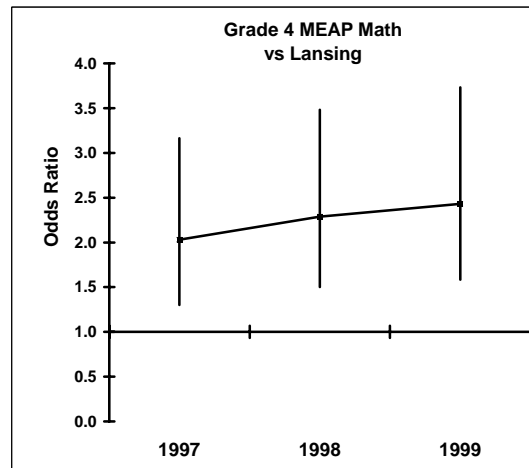
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (2, N=3,856) = 0.327, p = .849

OR = 2.242

LB = 1.748

UB = 2.876



Mid-Michigan Grade 4 MEAP Math vs. State

Year	UB	LB	OR
1997	6.686	3.012	4.488
1998	6.067	2.832	4.145
1999	7.431	3.466	5.047

Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (2, N=346,553) = 0.453, p = .797

OR = 4.553

LB = 3.639

UB = 5.698

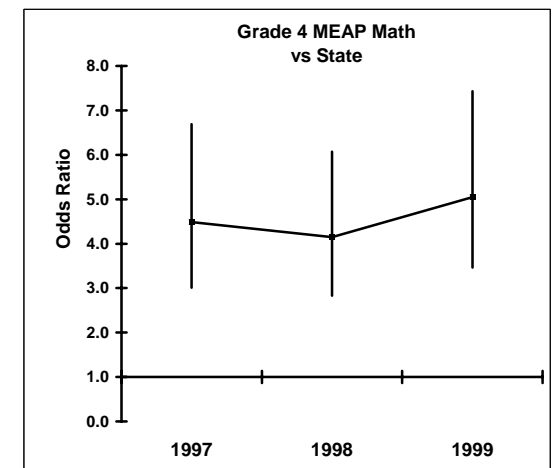


Exhibit 11:3 Results of the Odds Ratio Analyses, Grade 7 Reading and Math

Mid-Michigan Grade 7 MEAP Reading vs. Lansing

Year	UB	LB	OR
1998	1.893	0.727	1.173
1999	4.059	1.382	2.369

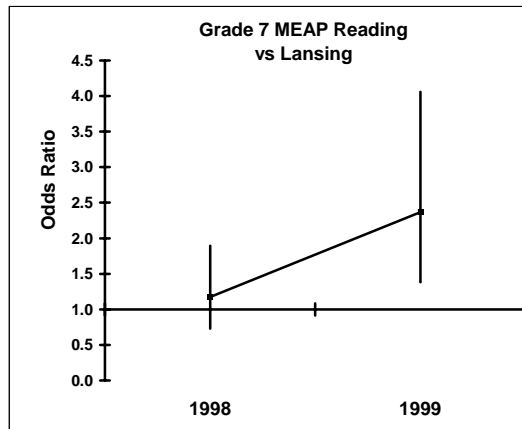
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=2,052) = 3.597, p = .058

OR = 1.622

LB = 1.138

UB = 2.312



Mid-Michigan Grade 7 MEAP Reading vs. State

Year	UB	LB	OR
1998	3.440	1.402	2.197
1999	6.846	2.555	4.183

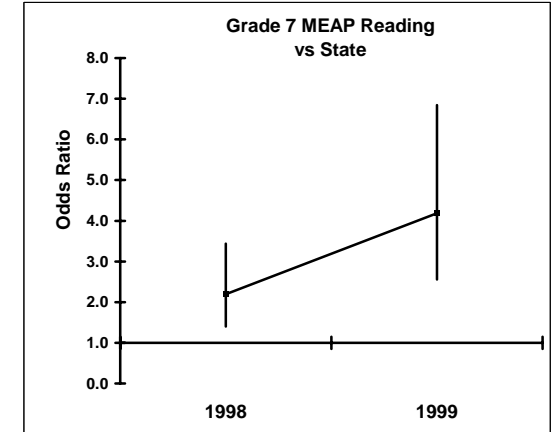
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=230,510) = 3.232, p = .072

OR = 2.941

LB = 2.116

UB = 4.087



Mid-Michigan Grade 7 MEAP Math vs. Lansing

Year	UB	LB	OR
1998	4.674	1.662	2.787
1999	4.028	1.409	2.383

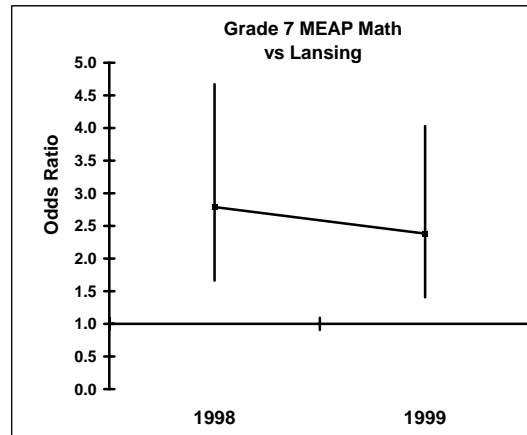
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=2,054) = 0.164, p = .686

OR = 2.579

LB = 1.785

UB = 3.712



Mid-Michigan Grade 7 MEAP Math vs. State

Year	UB	LB	OR
1998	9.245	3.688	5.840
1999	9.933	4.003	6.305

Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=230,578) = 0.042, p = .838

OR = 6.067

LB = 4.392

UB = 8.381

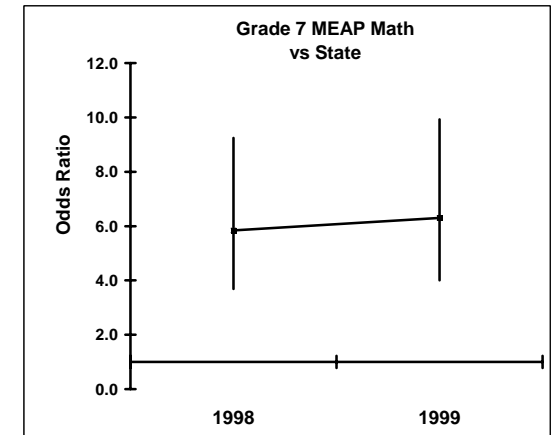
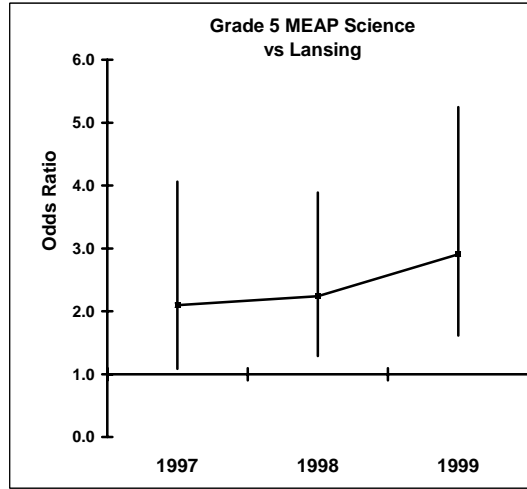


Exhibit 11:4 Results of the Odds Ratio Analyses, Grade 5 Science and Writing

Mid-Michigan Grade 5 MEAP Science vs. Lansing

Year	UB	LB	OR
1997	4.062	1.085	2.099
1998	3.890	1.287	2.238
1999	5.249	1.611	2.908

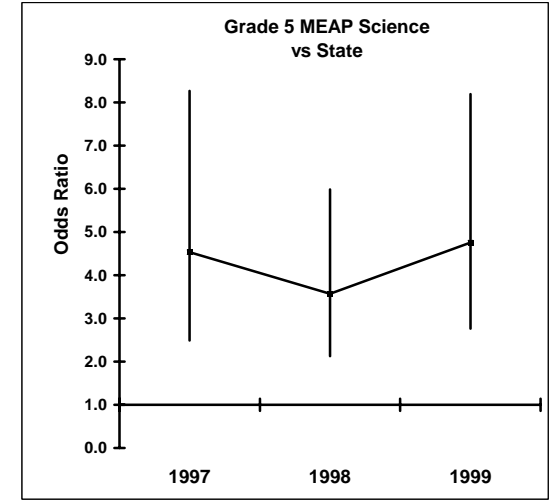
Breslow-Day for Homogeneity of Odd Ratio
 Chi-Sq (2, N=3,651) = 0.587, p = .746
 OR = 2.411
 LB = 1.709
 UB = 3.401



Mid-Michigan Grade 5 MEAP Science vs. State

Year	UB	LB	OR
1997	8.263	2.490	4.536
1998	5.983	2.129	3.569
1999	8.192	2.760	4.755

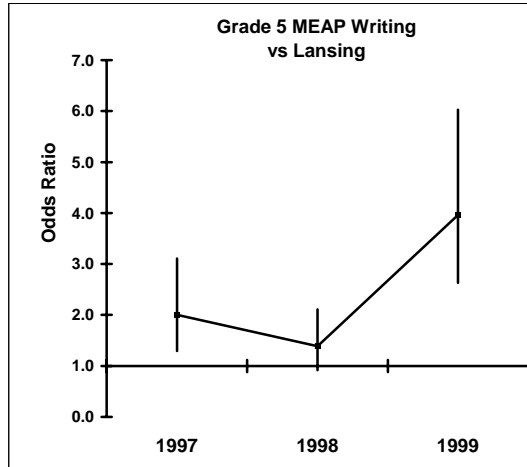
Breslow-Day for Homogeneity of Odd Ratio
 Chi-Sq (2, N=341,233) = 0.554, p = .758
 OR = 4.228
 LB = 3.078
 UB = 5.809



Mid-Michigan Grade 5 MEAP Writing vs. Lansing

Year	UB	LB	OR
1997	3.105	1.291	2.002
1998	2.110	0.914	1.389
1999	6.030	2.629	3.960

Breslow-Day for Homogeneity of Odd Ratio
 Chi-Sq (2, N=3,594) = 11.998, p = .002



Mid-Michigan Grade 5 MEAP Writing vs. State

Year	UB	LB	OR
1997	3.311	1.443	2.186
1998	3.099	1.408	2.089
1999	4.593	2.058	3.074

Breslow-Day for Homogeneity of Odd Ratio
 Chi-Sq (2, N=339,393) = 1.977, p = .372
 OR = 2.436
 LB = 1.930
 UB = 3.076

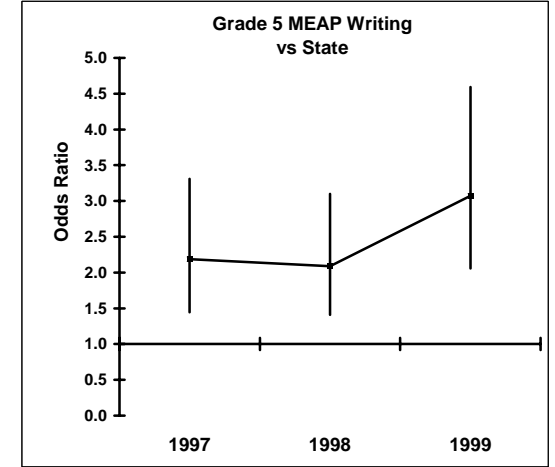


Exhibit 11:5 Results of the Odds Ratio Analyses, Grade 8 Science and Writing

Mid-Michigan Grade 8 MEAP Science vs. Lansing

Year	UB	LB	OR
1998	38.297	1.240	6.891
1999	51.643	2.097	10.407

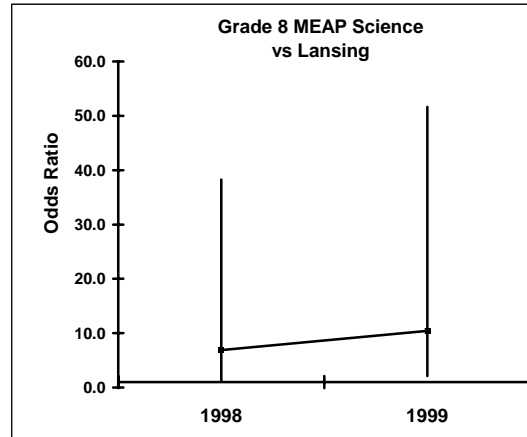
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=2,037) = 0.084, p = .773

OR = 8.606

LB = 2.677

UB = 27.683



Mid-Michigan Grade 8 MEAP Science vs. State

Year	UB	LB	OR
1998	63.399	3.151	14.134
1999	73.911	4.218	17.658

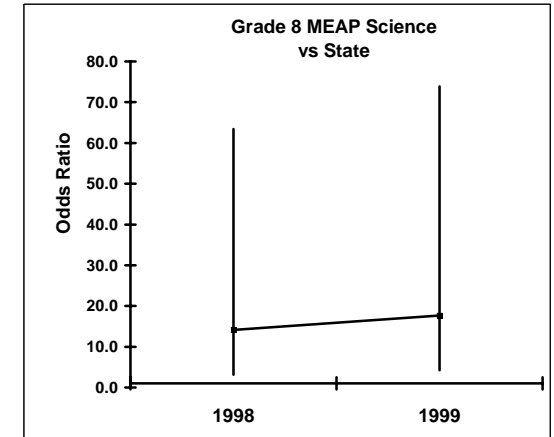
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=224,400) = 0.024, p = .876

OR = 15.885

LB = 5.641

UB = 44.731



Mid-Michigan Grade 8 MEAP Writing vs. Lansing

Year	UB	LB	OR
1998	4.797	1.388	2.581
1999	5.460	2.432	3.644

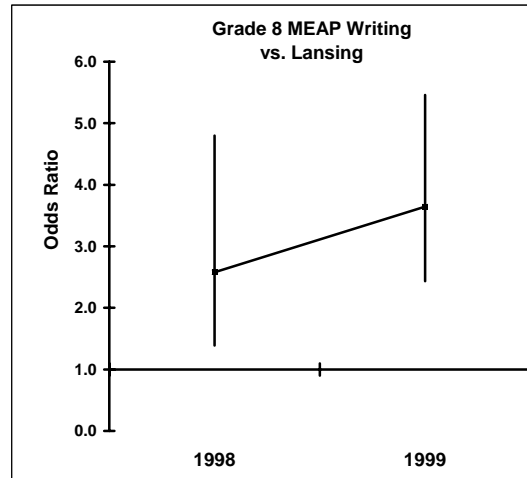
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=1,967) = 1.999, p = .157

OR = 3.644

LB = 2.432

UB = 5.460



Mid-Michigan Grade 8 MEAP Writing vs. State

Year	UB	LB	OR
1998	7.406	2.334	4.158
1999	8.037	2.853	4.788

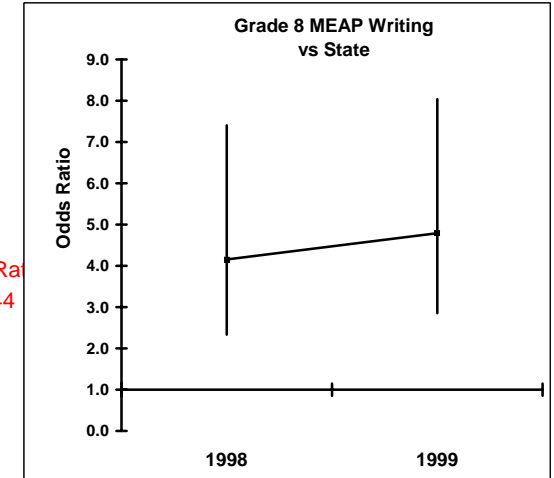
Breslow-Day for Homogeneity of Odd Ratio

Chi-Sq (1, N=221,783) = 0.107, p = .744

OR = 4.509

LB = 3.066

UB = 6.631



Odds ratio findings for grade 4

In grade 4 reading (see Exhibit 11:2), the OR for Mid-Michigan showed relative stability in magnitude against the district, revealing a slight rise in OR in 1999. The Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, indicating there was no real (statistically significant) change in the OR over the three years. The common OR for the three years is 1.672 and the 95 percent CI is from 1.284 to 2.176. Since the CI does not include 1.00, there was a statistically significant increase in odds for a Mid-Michigan student to fail the grade 4 MEAP reading test relative to students in the district. That is, the Mid-Michigan students were about 1.6 times more likely to fail this test relative to students in the district. A similar pattern in OR is observed relative to the state except that the magnitude is larger, indicating that the Mid-Michigan students were even more likely to fail the reading MEAP test relative to the state. The Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, indicating there was no real (statistically significant) change in the OR over the three years. The common OR is 3.249 and the 95 percent CI is from 2.549 to 4.142, indicating that Mid-Michigan students were about 3¼ times more likely to fail this test.

The grade 4 math component of the MEAP presents a similar picture. All the CI around the individual ORs exclude 1.00 and thus are considered statistically significant. Likewise, the Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, indicating there was no real (statistically significant) change in the OR. The common OR relative to the district is 2.242 and the 95 percent CI is from 1.748 to 2.876. For the state comparison the common OR is 4.553 and the 95 percent CI is from 3.639 to 5.698. The Mid-Michigan students were about 2¼ times more likely than district students to fail the math test over the three years and about 4½ times more likely to fail relative to the rest of the state.

Odds ratio findings for grade 5

In grade 5 science (see Exhibits 11:4), the OR for Mid-Michigan showed relative stability in magnitude against the district. The Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, indicating there was no real (statistically significant) change in the OR. The common OR for the three year period is 2.411 and the 95 percent CI is from 1.709 to 3.401. Thus, there was a statistically significant increase in odds for a Mid-Michigan student to fail the Grade 5 MEAP science test relative to students in the district in this three year period. Mid-Michigan students were almost 2.5 times more likely to fail this test relative to students in the district. A similar pattern in OR is observed relative to the state except that the magnitude is larger, indicating that the Mid-Michigan students were even more likely to fail the science MEAP test relative to the state. The Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, indicating there was no real (statistically significant) change in the OR over the three years. The common OR is 4.228 and the 95 percent CI is from 3.078 to 5.809, indicating that Mid-Michigan students were about 4¼ times more likely to fail this test as compared with the students in the state.

The grade 5 writing component of the MEAP presented a slightly different picture. In the district comparison the Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was statistically significant, indicating that the OR needs to be examined each year due to its changing value. As can be seen in Exhibit 11:4, the OR in 1999 took a substantial jump. This rising pattern is also apparent in the state analysis, although it did not reach statistical significance. The Breslow-Day chi-square for testing the hypothesis of homogeneity of OR over the three years was not statistically significant, and the common OR for the three year period was 2.436 and the 95 percent CI was from 1.930 to 3.076.

Odds ratio findings for grade 7

The OR analyses for the grade 7 MEAP were based on only two years of data (see Exhibit 11:3). Nevertheless, students at Mid-Michigan showed an increasing trend in failure relative to the district on the reading test, although the Breslow-Day chi-square for testing the homogeneity of OR was not statistically significant. The common OR for the two year period was 1.622 and the 95 percent CI was from 1.138 to 2.312. Thus, students were about 1½ times more likely to fail the grade 7 MEAP reading test relative to students in the district. The OR pattern relative to the state showed the same pattern but with a larger magnitude. The Breslow-Day chi-square was not statistically significant; thus, the common OR is 2.941 and the 95 percent CI is from 2.116 to 4.087. Thus, the Mid-Michigan students were about 3 times more likely to fail the reading test relative to students in the rest of the state.

The grade 7 math component of the MEAP presents a similar picture. In the district comparison, Mid-Michigan students failed to perform at levels consistent with the district students. The Breslow-Day chi-square was not statistically significant. Thus, the common OR is 2.579 and the 95 percent CI is from 1.785 to 3.712, indicating that the Mid-Michigan students were about 2½ times more likely to fail. Relative to the state the Breslow-Day chi-square was not statistically significant. Thus, the common OR is 6.067 and the 95 percent CI is from 4.392 to 8.381.

Odds ratio findings for grade 8

In grade 8 science (Exhibit 11:5), the OR for Mid-Michigan showed relative stability in magnitude against the district. The Breslow-Day chi-square was not statistically significant. The common OR is 8.606 and the 95 percent CI is from 2.677 to 27.683. Thus, there was a statistically significant increase in odds for a Mid-Michigan student to fail the grade 8 MEAP science test relative to students in the district. A similar pattern in OR was observed relative to the state except that the magnitude is larger, indicating that the Mid-Michigan students were even more likely to fail the science MEAP test relative to the state. The Breslow-Day chi-square was not statistically significant. The common OR is 15.885, and the 95 percent CI is from 5.641 to 44.731.

The grade 8 writing component of the MEAP presented a similar picture. In the district comparison, the Breslow-Day chi-square was not statistically significant. The common OR is 3.644, and the 95 percent CI is from 2.432 to 5.460. Relative to the state, the Breslow-Day chi-square for testing the hypothesis of homogeneity of OR is not statistically significant. The common OR is 4.509 and the

95 percent CI is from 3.066 to 6.63, indicating that the Mid-Michigan students were about 4½ times more likely to fail.

11.6 Overall Performance on the MEAP Assessments

Exhibits 11:6 and 11:7 contain charts that illustrate the relative growth of consecutive groups of grade 4 and grade 7 students in reading at Mid-Michigan PSA in relation to the district and state average performance. Performance levels are similar to the district average, but the district is making gains while the Edison school has a decreasing proportion of students meeting state standards.

Performance in math for grade 4 and 7 students is charted in Exhibits 11:8 and 11:9. As with the reading results at these same grade levels, the performance level is similar to the district but below the state levels. Over time, however, the proportion of district students meeting state standards remained rather constant, while the proportion of Edison students meeting state standards declined sharply at grade 4 and slightly at grade 7.

Exhibits 11:10 and 11:11 contain the results in science for grade 5 and grade 8 students. The Edison data for grade 8 science began in the 1997-98 school year, so we could only make a 2-year comparison for this group. Science results at both grade levels were rather poor, both for the Edison school and for the district. District performance increased at grade 4 over time, while the Edison results declined. At the grade 8 level, the district performance remained stable, while less than 2 percent of the Edison students were meeting state standards in grade 8 science.

Writing results for grade 5 and grade 8 students are presented in Exhibits 11:12 and 11:13. The Edison school performed very poorly, both in terms of absolute passing rates and in terms of change over time, which has been negative. Exhibit 11:14 illustrates the performance levels on the relatively new state social studies test. We included the first year of data for this test. Because this was a new test, students across the state performed very poorly. In the years to come, schools will be adjusting their curricula to the state standards, and we can expect passing levels to increase. Much of the growth in the next few years will depend on how quickly schools can modify their curricula so that students are better prepared for this test.

In Exhibits 11:6 to 11:14, we used colors to denote the proportion of students meeting state standards. For some of the MEAP tests, several performance levels can be distinguished, but only one or two of them are considered at or above state standards. The blue components of the bar charts indicate the proportion of students meeting or exceeding state standards, while the yellow parts of bar charts indicate the proportion of students not meeting state standards. The blue and yellow demarcation indicates the proportions used when we conducted the odds ratio. The results from the odds ratio analysis are presented in the previous section.

Exhibit 11:6 Grade 4 Reading , MEAP Results for Mid-Michigan, District, and State

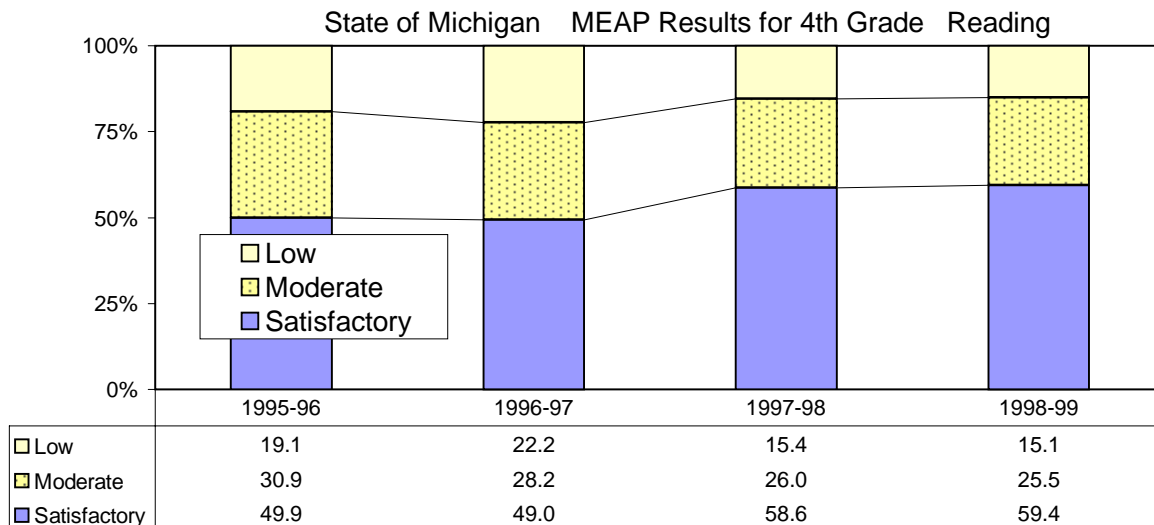
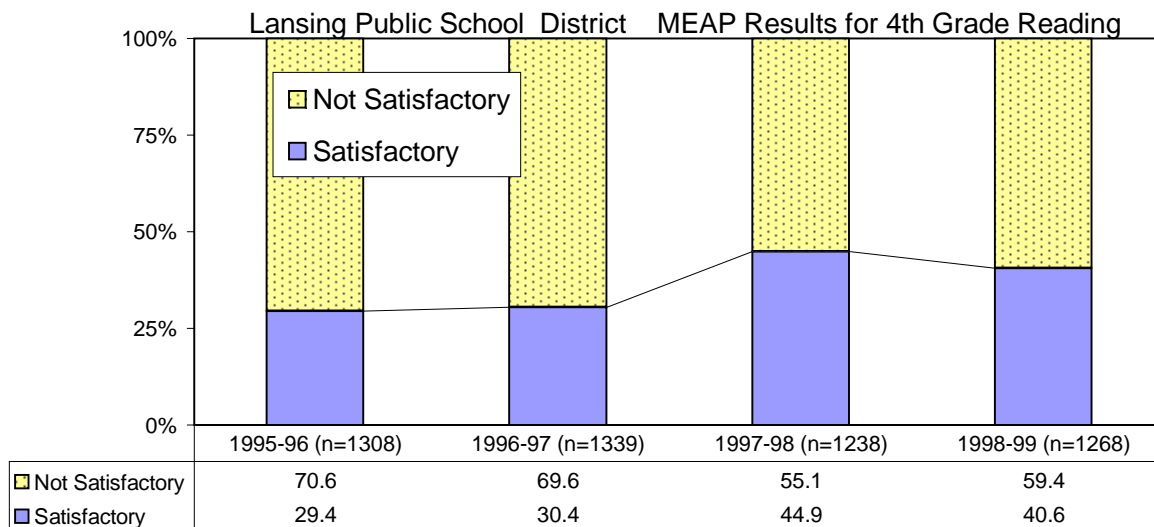
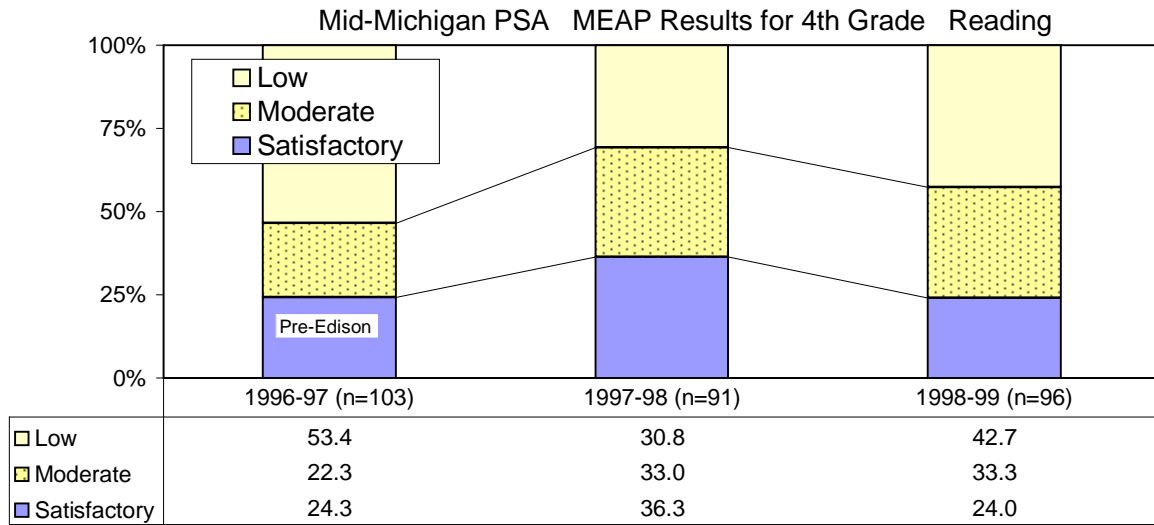


Exhibit 11:7 Grade 7 Reading, MEAP Results for Mid-Michigan, District, and State

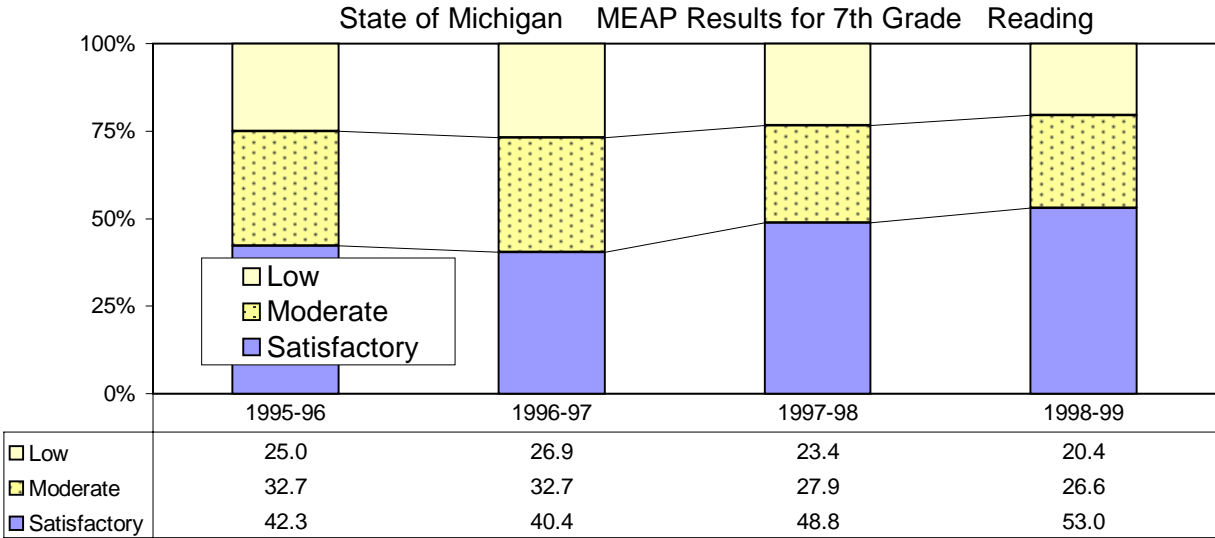
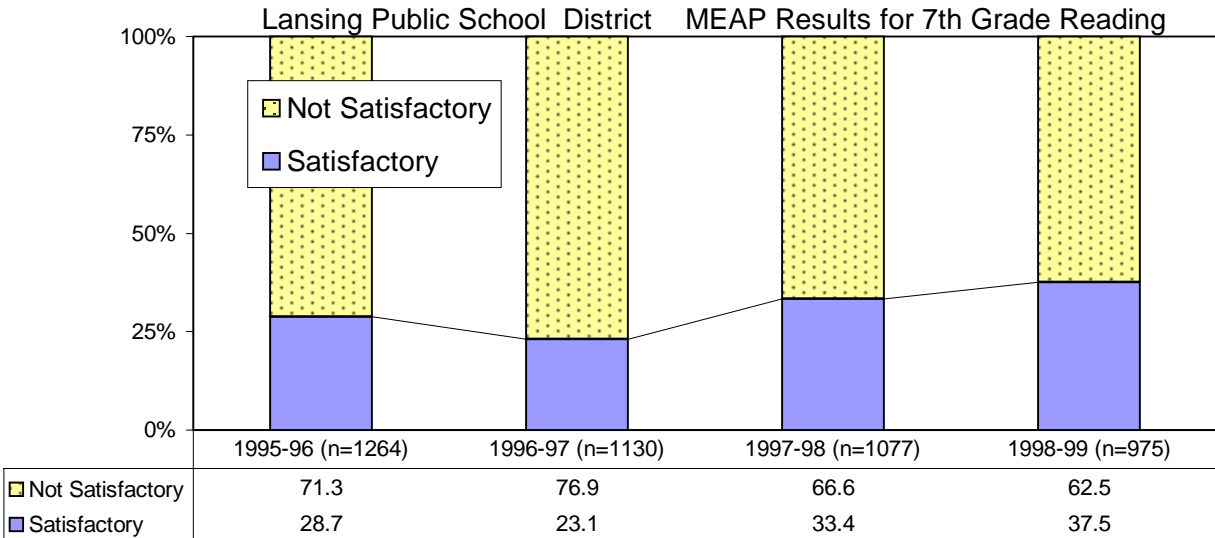
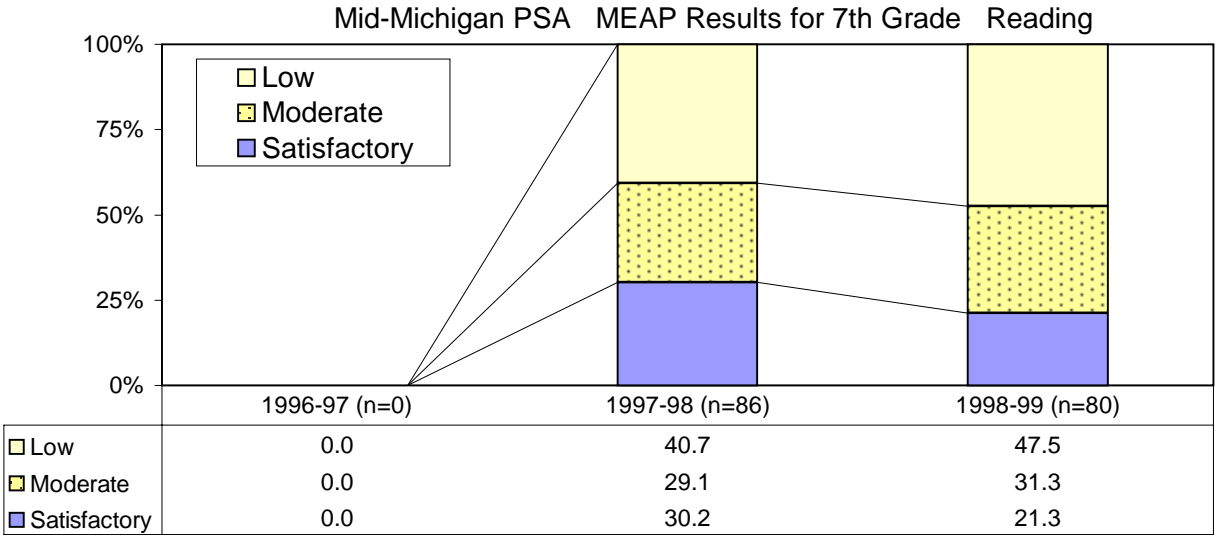


Exhibit 11:8 Grade 4 Math, MEAP Results for Mid-Michigan, District, and State

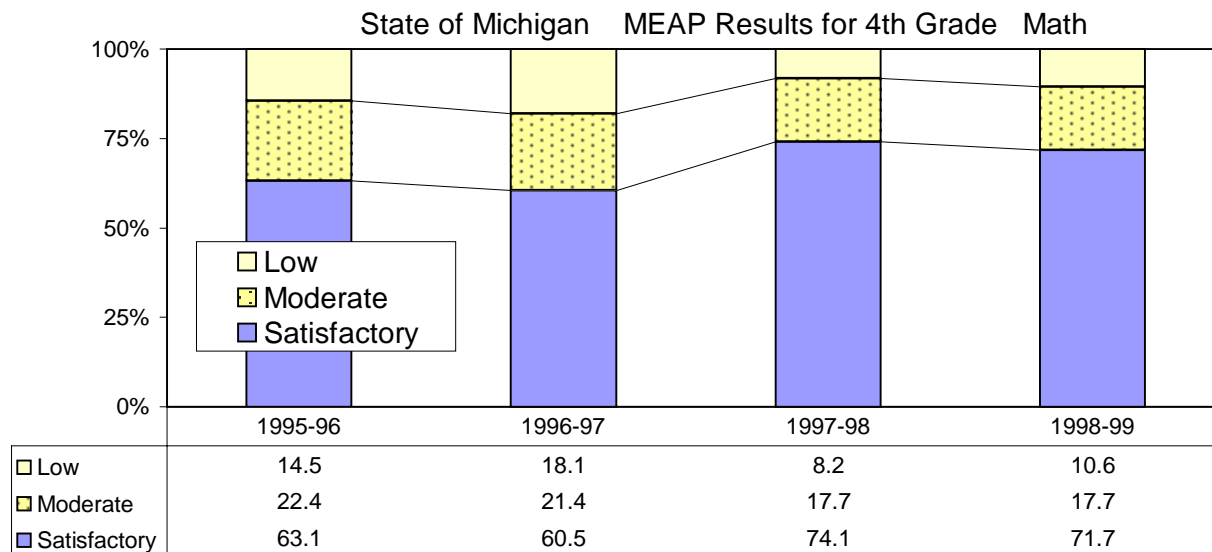
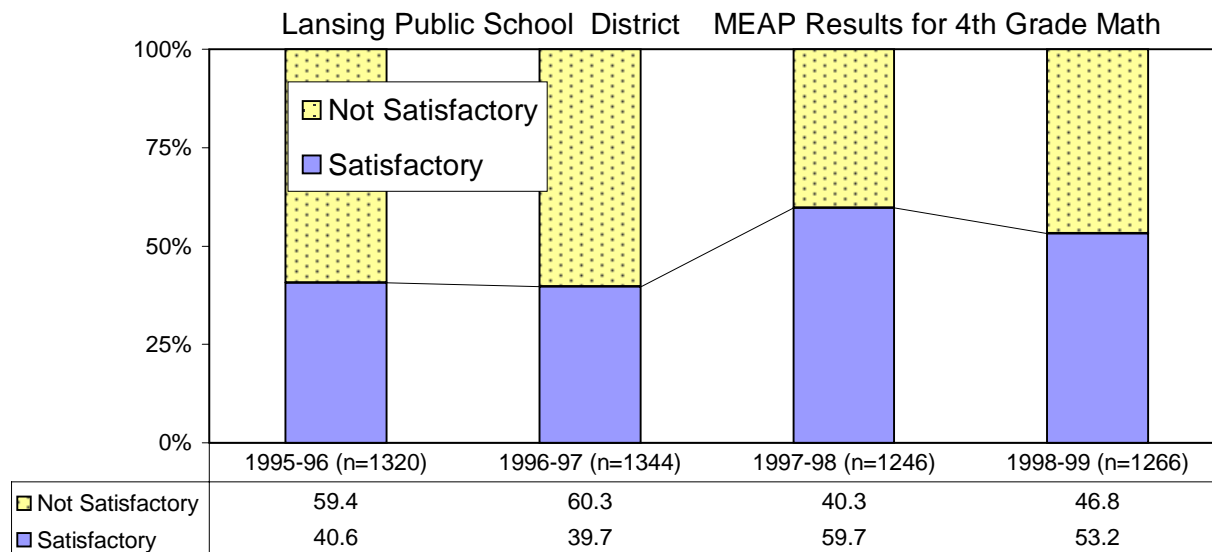
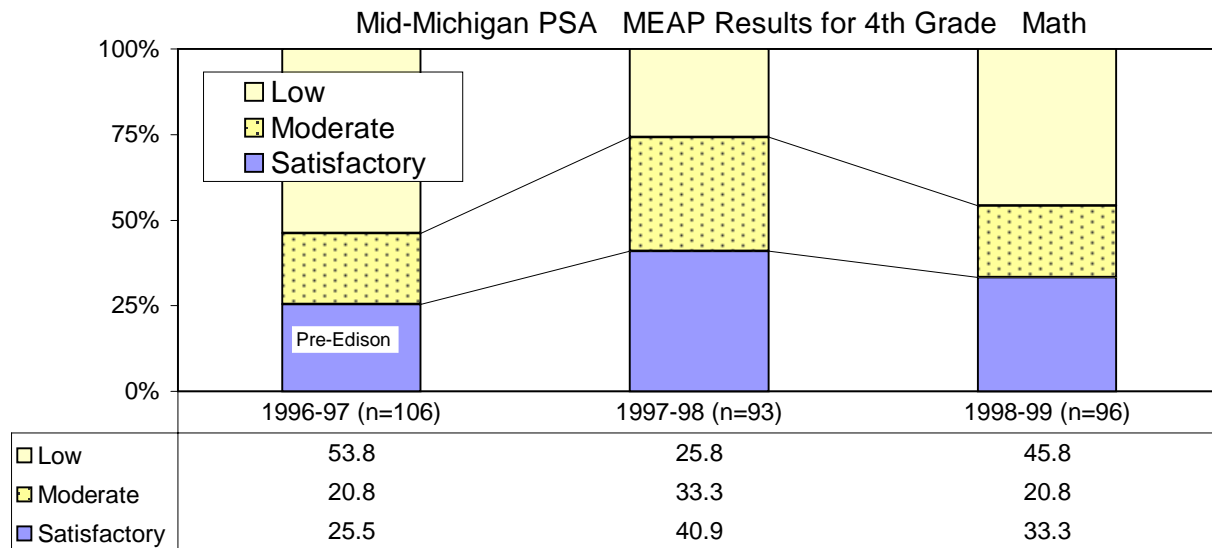


Exhibit 11:9 Grade 7 Math, MEAP Results for Mid-Michigan, District, and State

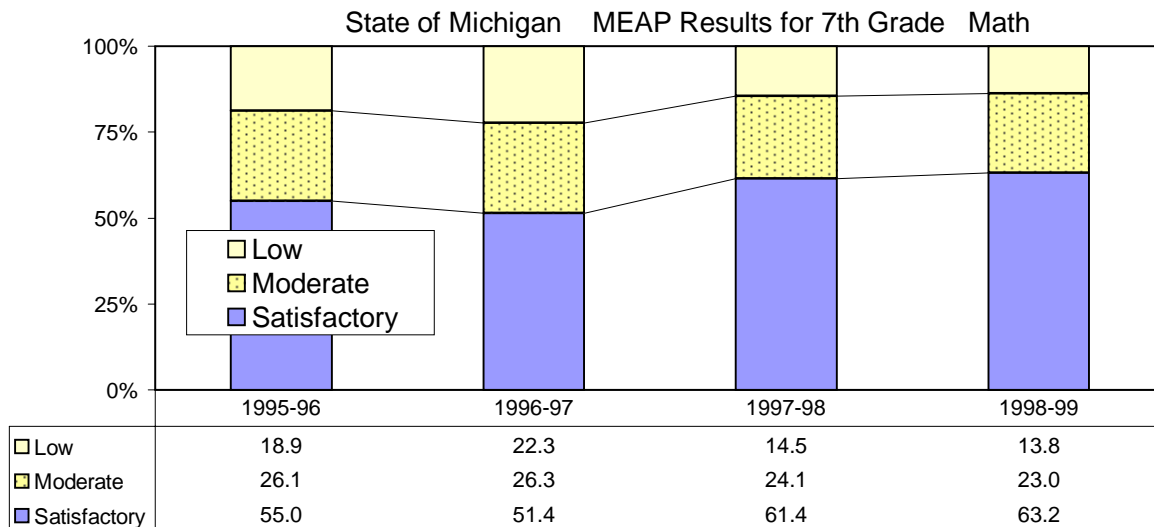
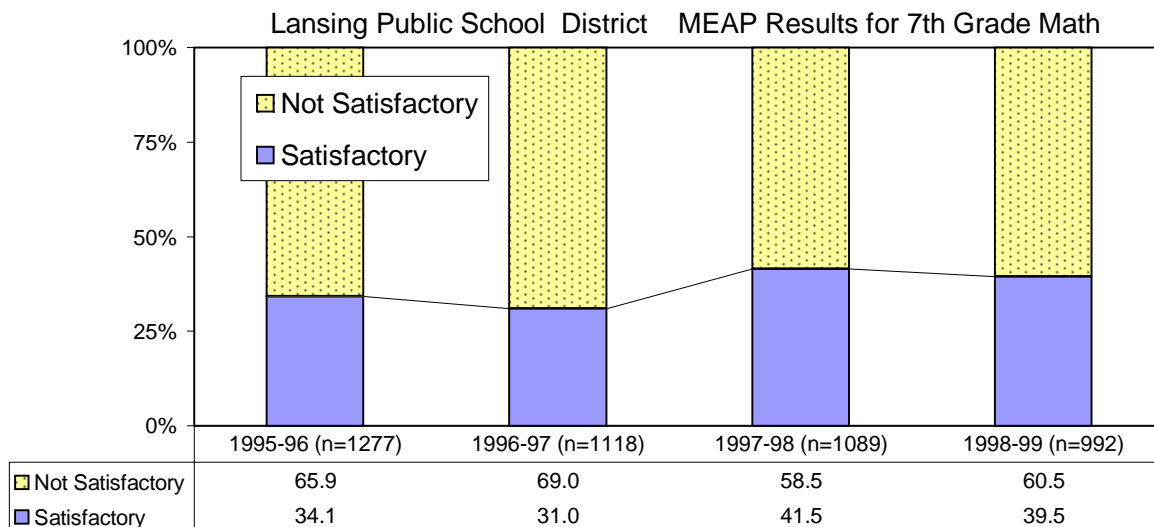
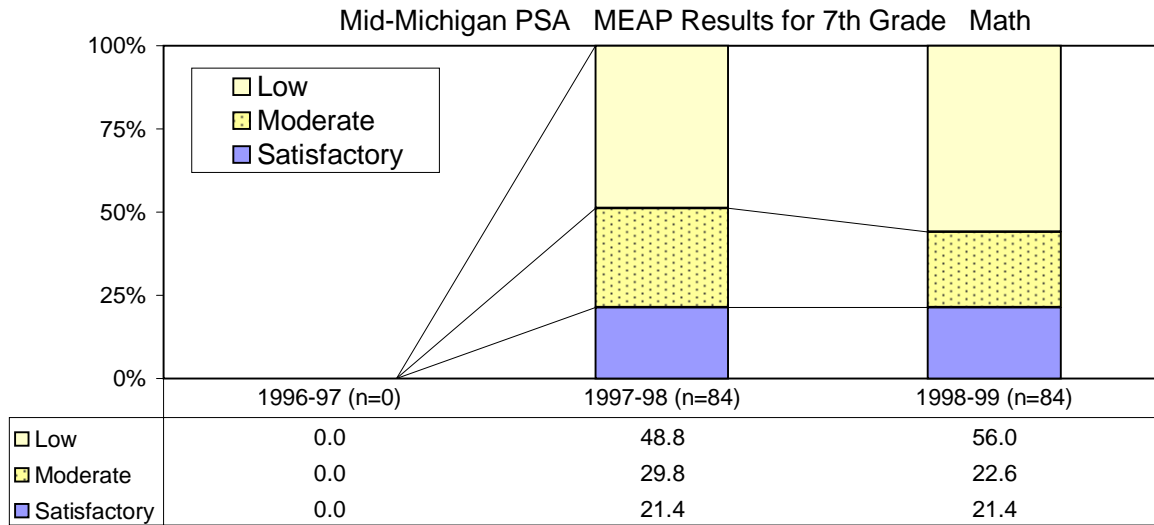


Exhibit 11:10 Grade 5 Science, MEAP Results for Mid-Michigan, District, and State

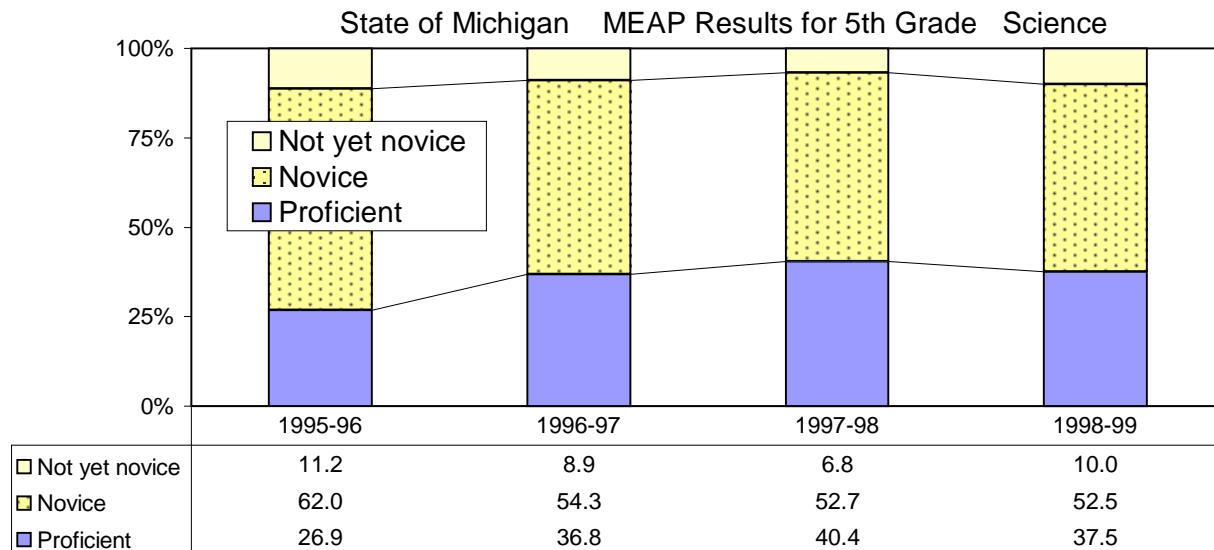
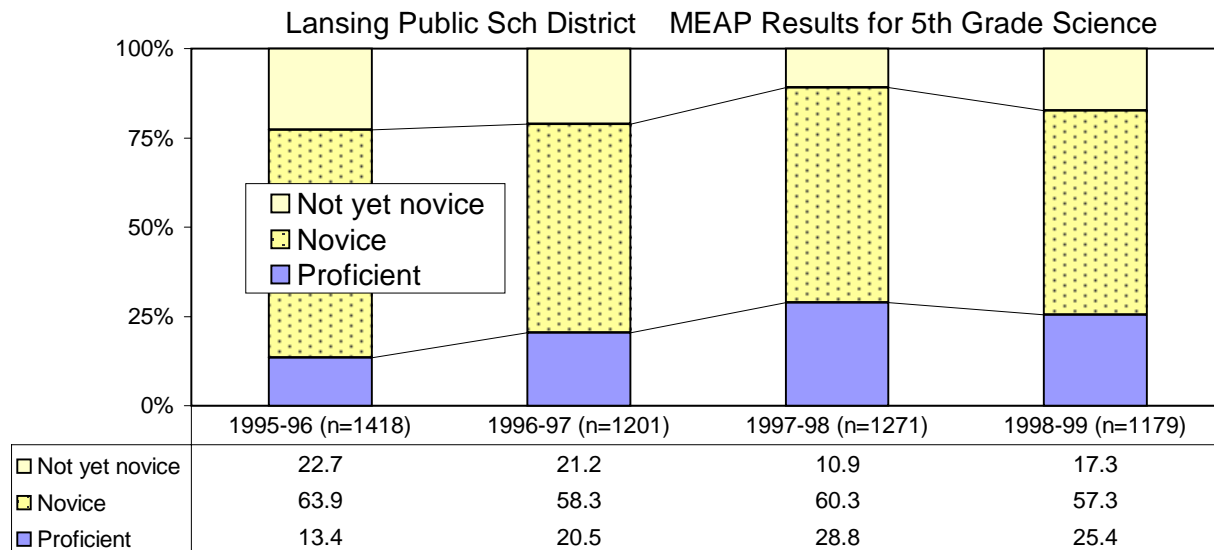
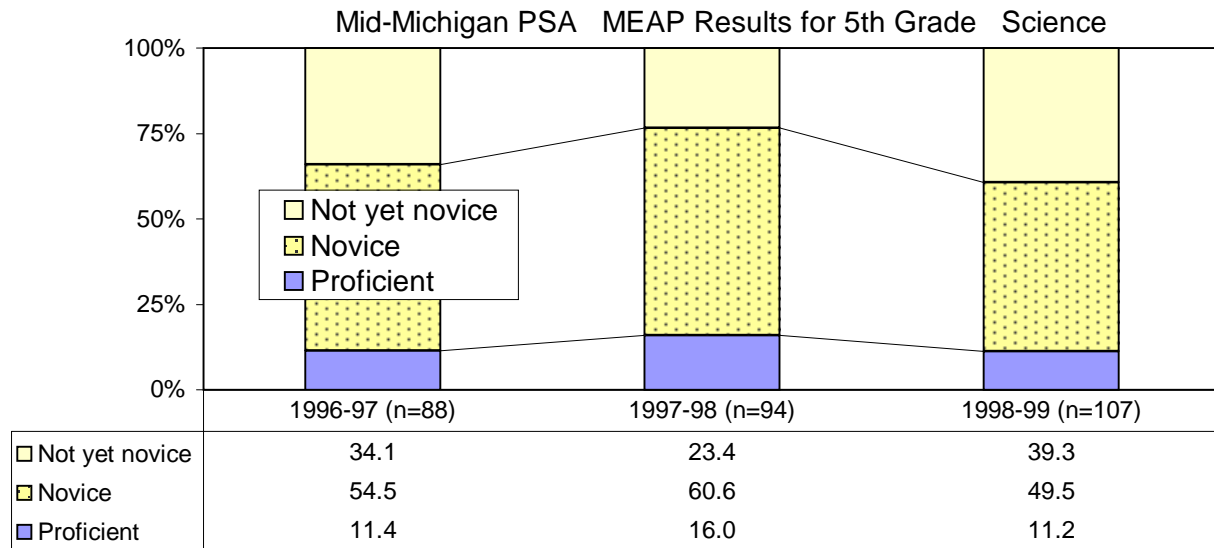


Exhibit 11:11 Grade 8 Science, MEAP Results for Mid-Michigan, District, and State

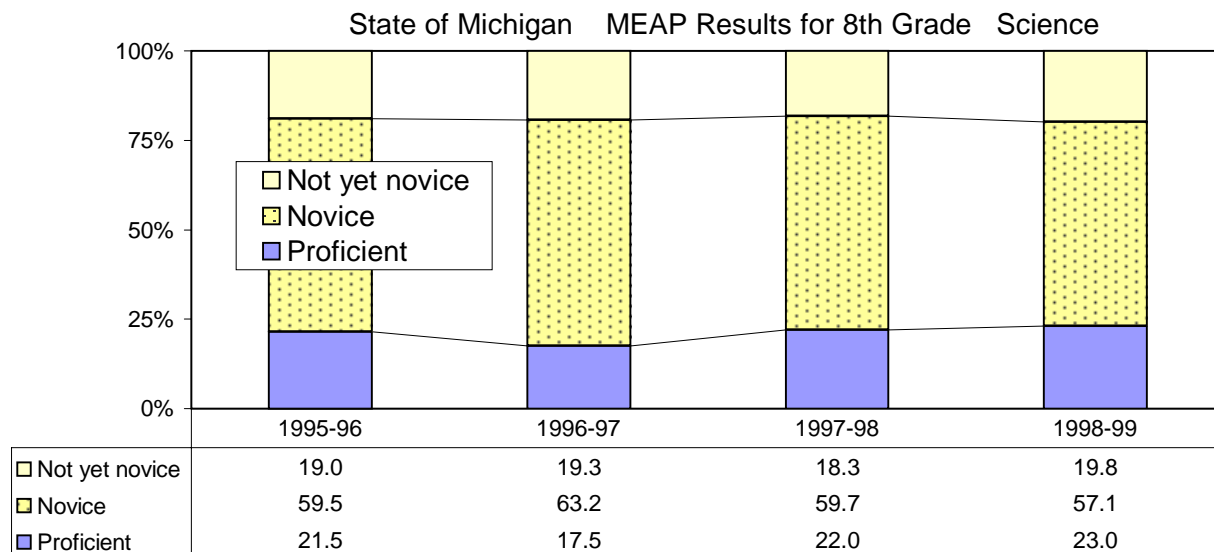
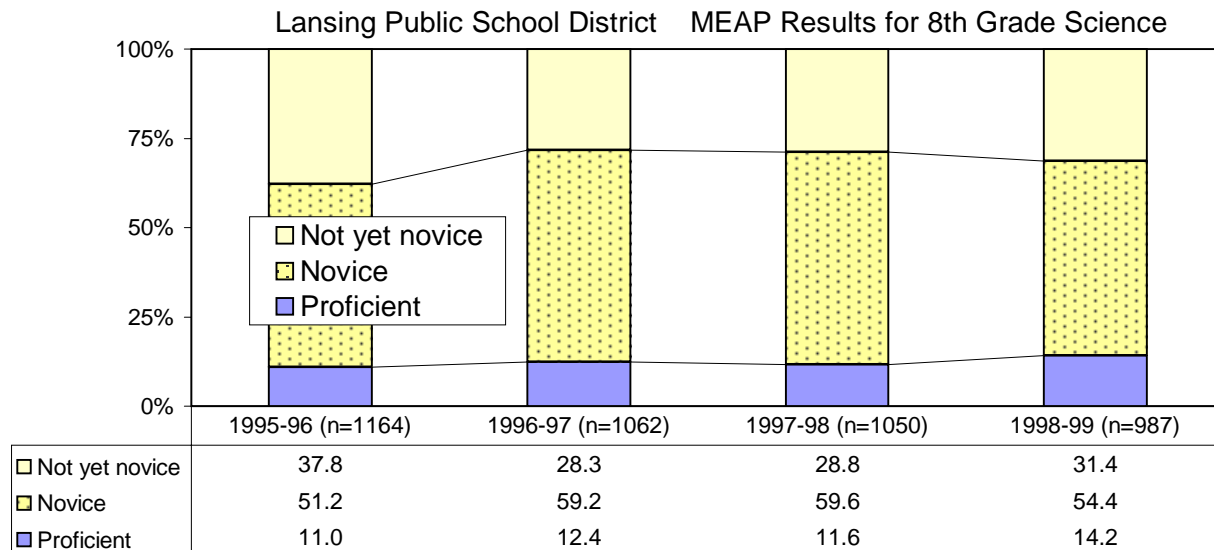
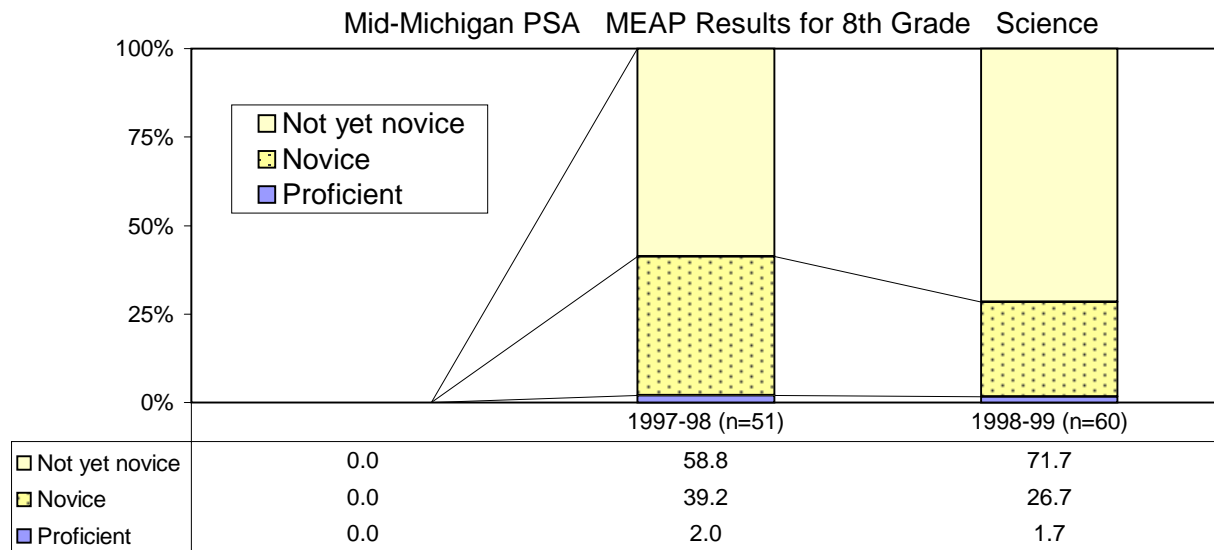


Exhibit 11:12 Grade 5 Writing, MEAP Results for Mid-Michigan, District, and State

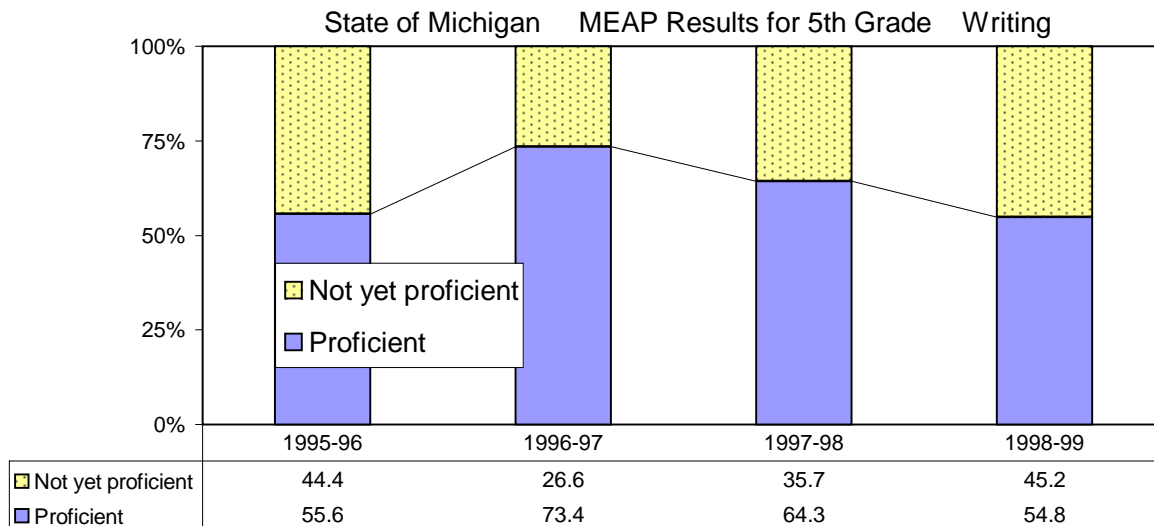
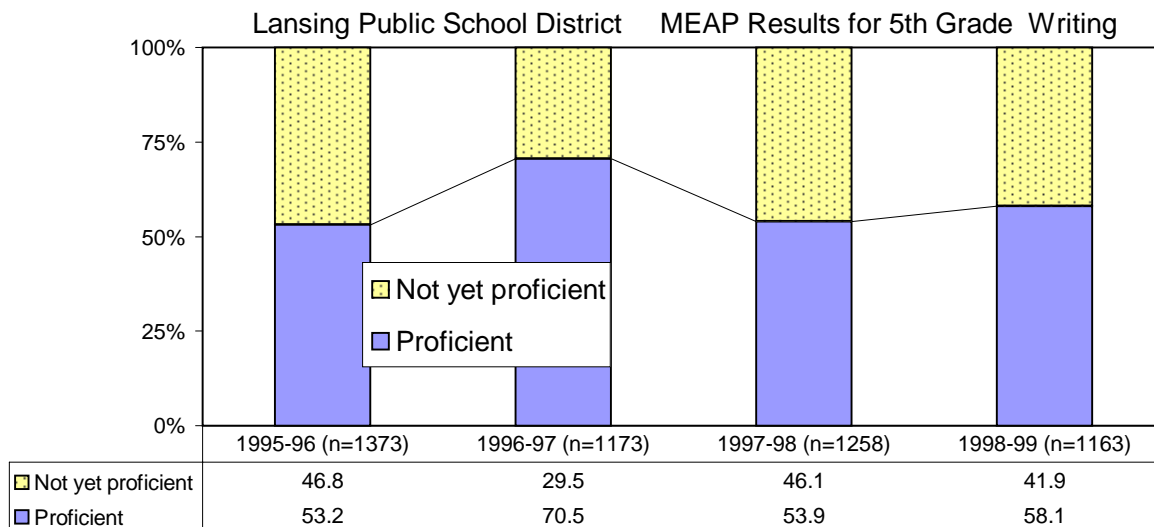
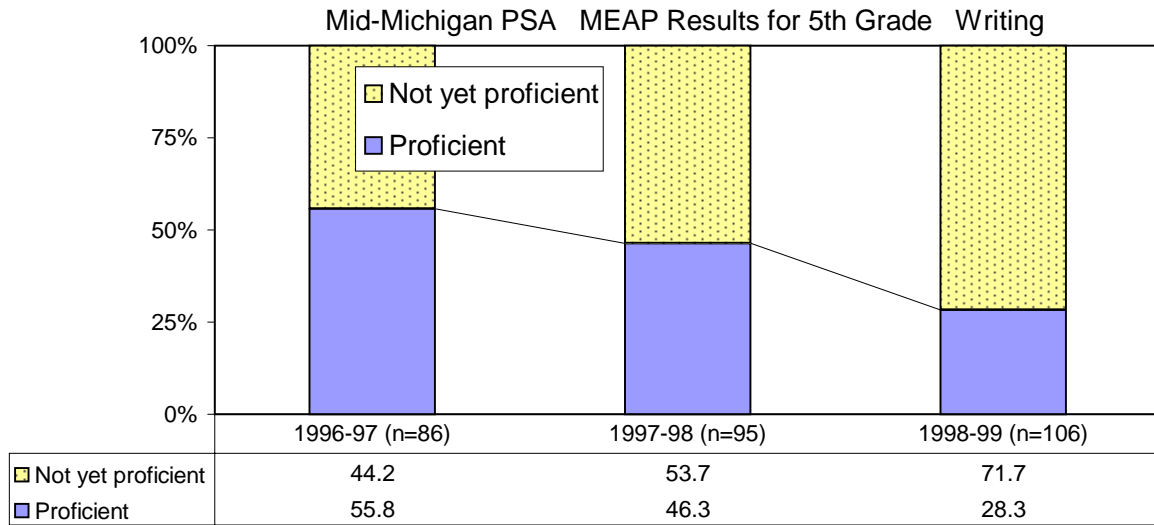


Exhibit 11:13 Grade 8 Writing, MEAP Results for Mid-Michigan, District, and State

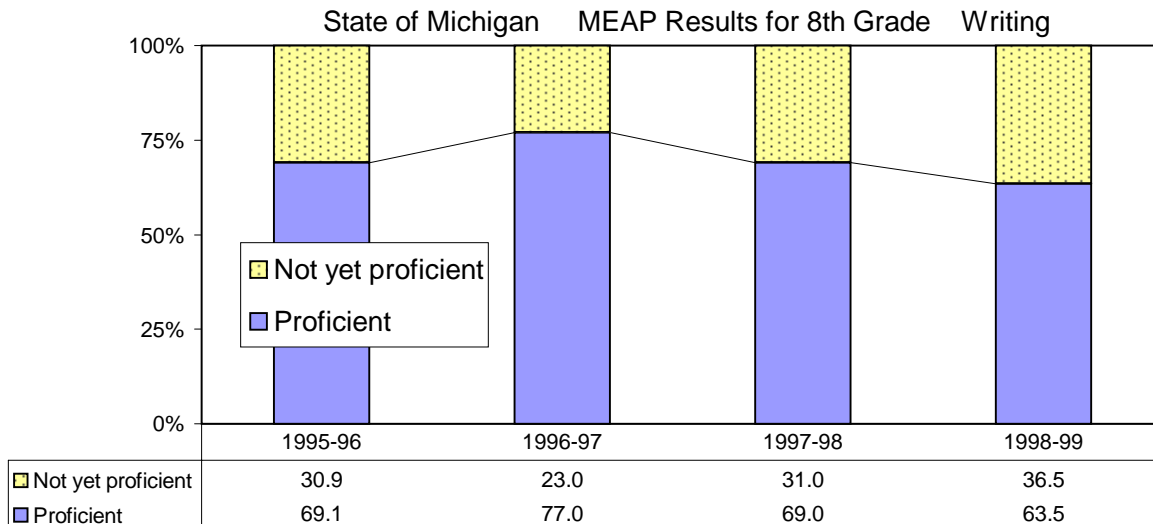
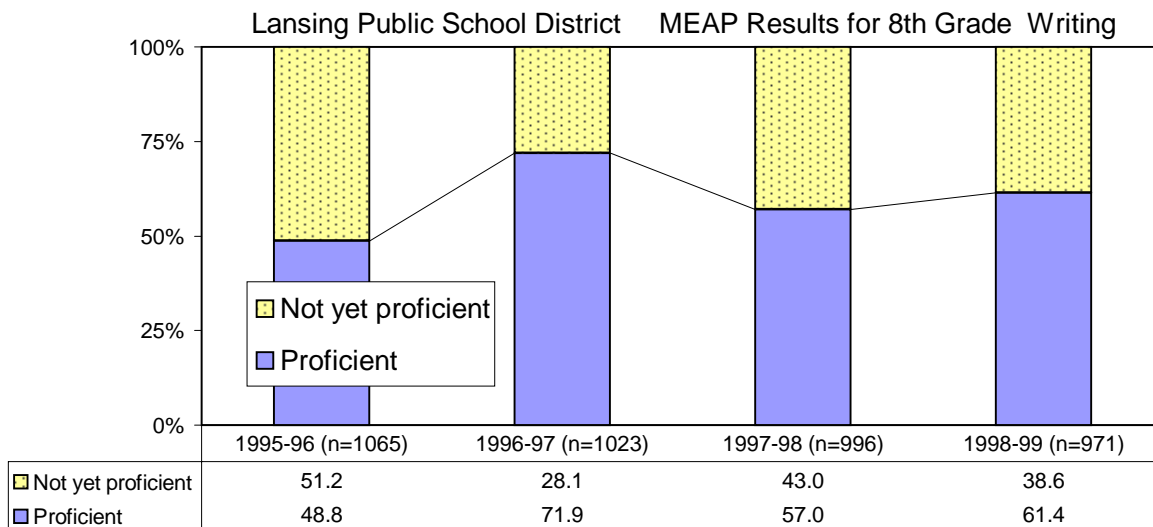
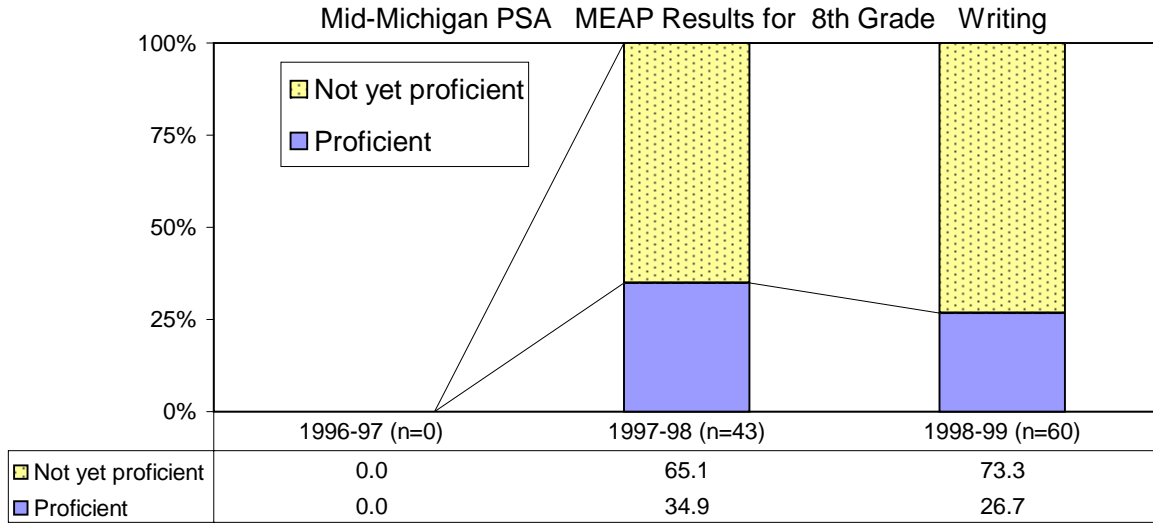
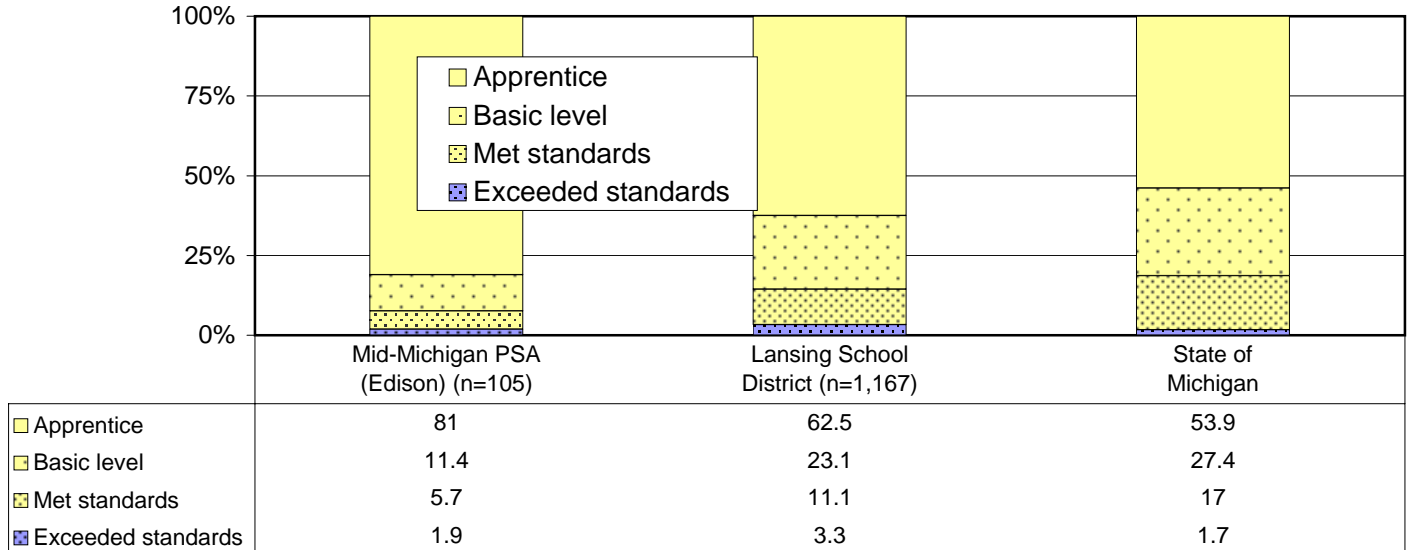
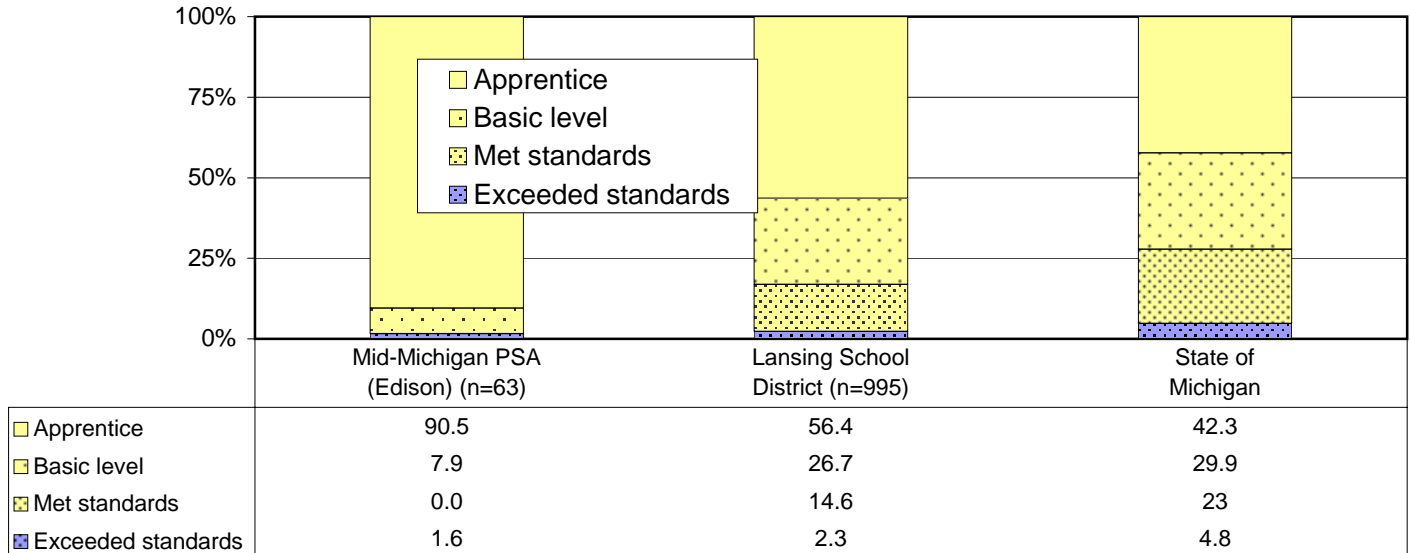


Exhibit 11:14 Grades 5 and 8 Social Studies: MEAP Results for Mid-Michigan, District, and State

MEAP Results for 5th Grade Social Studies 1998-1999



MEAP Results for 8th Grade Social Studies 1998-1999



11.7 Summary

Norm-referenced test findings

While Edison maintains that the gains in this school are “strongly positive,” based on our analysis this is a school that at best matches the student progress in other schools. In its second annual report Edison claimed that students were making great gains, which were measured by the Metropolitan Achievement Test. Our analysis of MAT-7 data do not corroborate this conclusion (Table 11:6). Our longitudinal analysis between 1997 and 1999 revealed that the Edison students went down slightly in most trends according to the national norm. In one subject, the decrease on the normal curve equivalent was significant over a two year period.

A summary score of -1 indicates a result that is unfavorable towards the sample school, a score of 0 indicates a neutral finding, and a score of 1 indicates a favorable result according to the criteria specified in Section 2.5. The effect size (ES) is the omega squared (ω^2) for a one way repeated measures ANOVA (Kepple, 1991).

Table 11:6 Summary of Results on Norm-Referenced Student Achievement Tests

Cohort A 3,4,5 grade (1997-99)	Standard Score		GE			NPR			NCE			Trend
	p-value	ES	p-value	Δ	ES	p-value	Δ	ES	p-value	Δ	ES	
Language	<.0001	.398	<.0001	2.8	.337	.1195	5.7	.010	.1365	5.0 (0)	.017	mixed (0)
Problem Solving(Math)	<.0001	.358	<.0001	2.0	.293	.4516	3.3	-.004	.2510	0.5 (0)	.006	mixed (0)
Reading Comprehension	<.0001	.258	<.0001	1.6	.222	.3653	-3.7	0.0	.2884	-3.1 (0)	.004	mixed (0)

Criterion-referenced test findings

Decisions regarding the OR were based on whether or not the $(1-\alpha)$ C.I. included 1.0. If the $(1-\alpha)$ C.I. fell completely below 1.0, this was interpreted as a protective odds ratio (1), thus favoring the Edison school. If the $(1-\alpha)$ C.I. included 1.0 (0) this was interpreted as an equal odds situation. If the $(1-\alpha)$ C.I. fell completely above 1.0 (-1), this was interpreted as an increase in odds for failing the state CRT relative to the comparison sample.

If the Breslow-Day statistic (B-D) is nonsignificant, one overall OR and $(1-\alpha)$ C.I. can be used to represent the odds for failing the CRT relative to the comparison group. Thus, there are no trends reported for each specific year in the tables, only a rating in the B-D column. If the B-D statistic is found to be statistically significant, then an overall common OR cannot be meaningfully interpreted; that is, there is a statistically significant change in the OR over years and thus yearly ORs are necessary. Thus, our summary ratings appear for each year of data and not in the B-D column (Table 11:7).

Table 11:7 Summary of Criterion-Referenced Test Results for Mid-Michigan

Mid-Michigan vs. District	1997	1998	1999	B-D	Trend
Grade 4 Reading				-1	negative (-1)
Grade 4 Math				-1	negative (-1)
Grade 5 Science				-1	negative (-1)
Grade 5 Writing	-1	0	-1		negative (-1)
Grade 7 Reading	no data			-1	negative (-1)
Grade 7 Math	no data			-1	negative (-1)
Grade 8 Science	no data			-1	negative (-1)
Grade 8 Writing	no data			-1	negative (-1)

Note: All state comparisons were negative.

Combined ratings

Given the total ratings for the trends that are highlighted in Table 11:8, we rate this school as Strongly Negative with a mean rating of -0.73. Our assessment of this school is similar to the assessment made by the school itself in its 1999 annual report (Mid-Michigan PSA, 1999). Edison’s central office, however, reported a different picture. In its 1999 annual report, Edison rated this school as Mixed. In its 2000 annual report, it rated the 1999-2000 school year as Positive and the achievement gains since opening as Mixed.

Table 11:8 Combined Overall Trends for Mid-Michigan Public School Academy

	Positive	Mixed	Negative
Norm Referenced	0 of 3	3 of 3	0 of 3
Criterion Referenced	0 of 8	0 of 8	8 of 8
TOTALS	0 of 11	3 of 11	8 of 11

The design behind the trends in the norm-referenced results are based on tracing individual students over three years. While some would argue that this is a better design than was used with the criterion-referenced results (tracing consecutive cohorts of students), one also has to consider the sample sizes. The sample size for the norm-referenced test was very small. On the other hand, the test administration procedures are likely to be more regulated for the state-mandated MEAP, and the results we have for these trends include a much larger proportion of the total enrollment at the school.