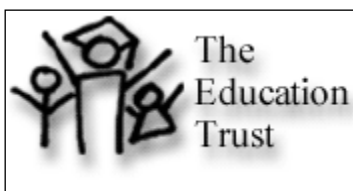


AN INTRODUCTORY GUIDE TO SCHOOL AND DISTRICT DATA ANALYSIS

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Table of Contents

Why Use Data?

Demographics of Your Building

Demographics of Your District

Defining the Education Pipeline in your School

Students Retained \Overage in Grade Level

Well Prepared teachers

Curriculum Mapping

Assignments and Student Work: Do they Meet Standards?

Homework assignments

Relationship between Grades and Test Performance

Excessive Absenteeism

Objective Measures of Achievement and Placement

Achievement Test Scores At Selected Grade Levels

WHY USE DATA?

No Child Left Behind and Education Yes! ask districts to become data driven. Data provides definite proof of whatever points you want to make -- it is hard to argue against real numbers as opposed to anecdotes from the neighbors or 'I heard from a friend that' Data can be used to track student and school progress for any indicators that a district selects. No longer are communities content to agree that students are generally making good progress; instead, the state and federal government are asking for proof. What value is being added to every child, every year in our schools?

This workbook includes a number of exercises to help you begin look at the value-added by your building or district. It's just a beginning, but should help you begin to ask the right questions to begin the process of data-driven decision-making. For each of the indicators, you should ask,

1. What does the data tell you? Are the numbers high or low or average? Are there any red flags (data elements that jump out as being unusual)? What does the data show?

2. How does the data for your community compare with similar communities elsewhere in the county, the state, or the nation?

How do the raw numbers compare (for example, Detroit accounts for half the population of Wayne County. Are the number of children in poverty in Detroit approximately half of Wayne County's poor children?)

Are the rates the same? (for example, is the poverty rate the same in all communities within a county?)

3. How does the data change over time? Has the data been changing over time? Are the numbers/rates increasing, decreasing, or remaining the same? How has the data changed relative to the population changes (*for example, is the increase in the number of infant deaths consistent with the population growth in the county?*)

4. What can be interpreted from the data? What do the numbers/rates tell you about what is happening? Do you know why it is happening? What could have caused the trend? What does the observed level or trend really tell you about this risk factor? What other factors or events could account for this result? *Example: if the rate of child abuse is going up, can we infer that the incidents of abuse are really rising or may other factors in the community contributing? Are there more social workers available to investigate abuse? Have teachers/health care workers been through a new program to encourage reporting of suspected cases of abuse? Is a new facility open in the community for abused women and children which would raise the level of awareness in the community?*

5. Are there relationships among risk factors that can be identified based on the data you have? Examine your data closely and look for linkages between indicators. *For example: if the number of boys dropping out of high school is increasing and the juvenile crime rate is rising, is there some connection between the two variables? Perhaps creating an afterschool tutoring and recreation program for students doing poorly in school would increase student success in school and encourage students to remain in school. Mentoring programs for middle school also keep at risk students in school longer.*

6. Make a decision as to which indicators show the greatest need for intervention or prevention programs. Consider the money you have to work with, the persons involved in program planning, and establish realistic goals and objectives.

Demographics of a School

As Michigan schools begin the 21st century, education is at a turning point. More than most other public services, education is inextricably linked to demographic trends. It is important for school leaders to ask how these changes affect schools and school districts.

Schools and school districts are a reflection of the communities that surround them. As the population of neighborhoods evolve, it is important that schools revise and change their programs. Curriculum that educated students 25 years ago, before the Internet, immigration flows from Asia and Latin America, and closure of the automobile plants, may no longer meet demands for the current economy.

How can we raise the achievement level of all students, set priorities for our schools, align resources to meet the goals of the district, and ensure that the entire community is engaged in local schools? School districts that take the time to analyze demographic, social and economic data will be better equipped to restructure their educational programs to meet the needs of a changing student population and realign programs to meet the needs of Michigan's changing economy.

School leaders should become familiar with the Census to understand the communities they serve. While demographics is never an excuse for children not making progress, knowing more about the characteristics of a community can be valuable for program planning and for needs assessment.

For your district, answer the following questions:

- How many people live in the district? _____
- About what percentage are children, of working age, or retired? _____
- What's the racial and ethnic composition? _____
- Describe the composition of households in the district. Are there lots of people living alone (and are they young or older?), how many families with children? How people without children? Among families with children, what's the percentage of single parents or grandparents or other relatives raising children?

- What type of jobs do people have in the district?

- What are the major sources of income in the district—wages and earnings, farm income, welfare, Social Security?
- How would you describe the income level of all households in the district? Is it different for families with children?

- What's the poverty rate? _____
- What is the education level of the district? Is it the same for families with children as for the community in general?

- Do people own or rent their homes? _____
- What percentage of children has attended school? _____
- Is mobility a factor in the district? Describe. _____

- How do neighborhoods vary? _____

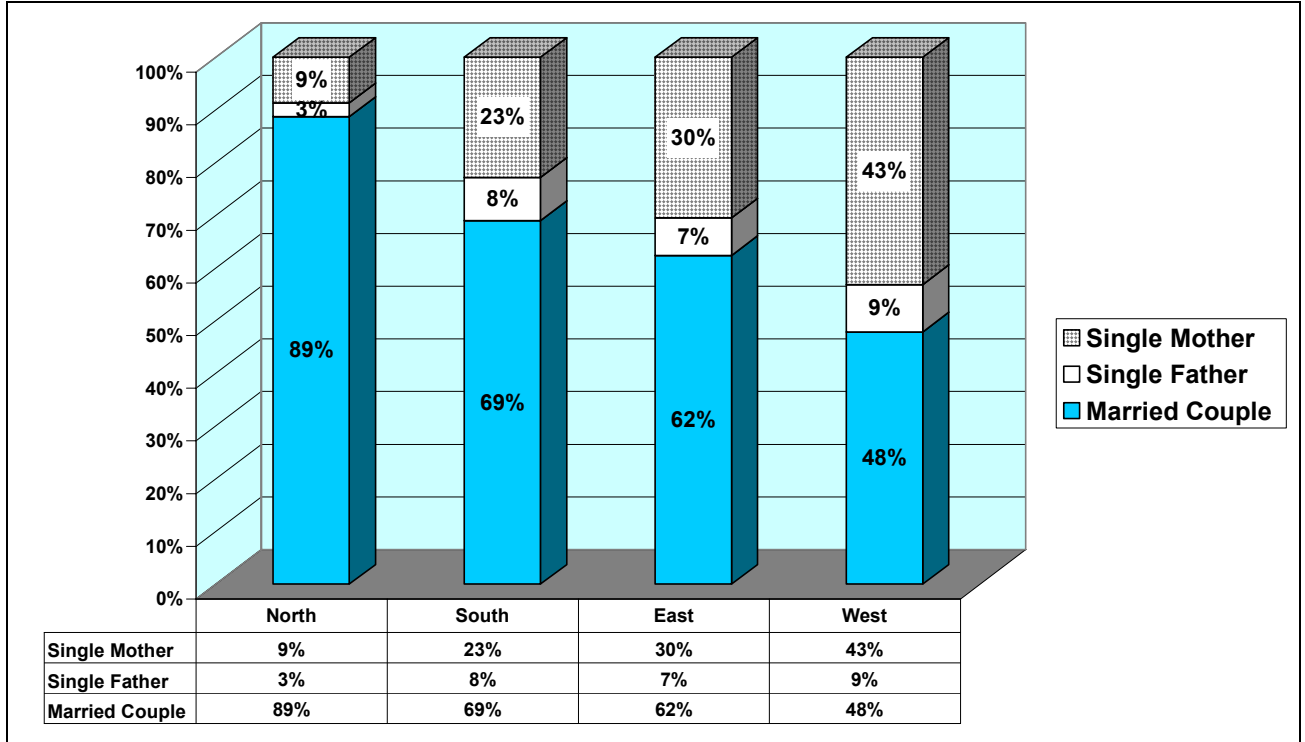
- How has your district changed in the last 10 years?

- What is the impact of choice on your district?

Analysis: Describe how this demographic data be used for school improvement, or for your NCA profiles or to pass a bond issue. What other groups in your community should be involved in the collection of data?

Demographics for School Building

Not all buildings within a district share the same community profile. For example, in one Michigan district, family composition is dramatically different from one building to another.



Compare your building to the district by building a profile.

- About what percentage of the neighborhood are children, of working age, or retired?

- What's the racial and ethnic composition? _____
- What percentage of children has attended preschool before? _____
- Describe the composition of households in the school neighborhood. Are there lots of people living alone (and are they young or older?), how many families with children? How people without children? Among families with children, what's the percentage of single parents or grandparents or other relatives raising children?

- How would you describe the income level of all households in the neighborhood? Is it different for families with children?

-
- What's the poverty rate? _____
 - What is the education level of the school community? Is it the same for families with children as for the community in general?

-
- Do people own or rent their homes? _____
 - What is the average age of homeowners? _____
 - Is mobility a factor in the district? Describe. _____

-
- How has your school's population changed in the last 10 years?

-
- What is the impact of choice on your building?
-
-

Analysis: Currently most districts allocated funds to buildings on a per student basis, without looking at the needs of the children in the building. What recommendation would you make to rethink how programs can be organized across the district? How much should districts consider demographic differences between buildings in ensuring that no child is left behind?

Defining the education pipeline in your school

In your building, describe a cohort of students with whom you are familiar. What happens to the children in your building as they move through the school?

Can you define who is likely to continue from grade to grade and remain in the district? Can you identify children who are likely to continue on to higher education?

For every 30 children who are in our first – for elementary -- (or 5th grade –for middle school--or 9th grade—for high school) in 19_____,

_____ were in class for half a year or less.

_____ were in class for $\frac{1}{2}$ to $\frac{3}{4}$ of a year.

_____ completed first grade.

_____ started second grade in our building.

_____ remained in our school for 2 years.

_____ finished in our building and, as far as I know, stayed in the district.

For every 30 children who receive free and reduced lunch who are in our first (or 5th grade or 9th grade) in 19_____,

_____ were in class for half a year or less.

_____ were in class for $\frac{1}{2}$ to $\frac{3}{4}$ of a year.

_____ completed first grade.

_____ started second grade in our building.

_____ remained in our school for 2 years.

_____ finished in our building and, as far as I know, stayed in the district.

For every 30 children who attended preschool as 3 and 4 year olds, who are in our first (or 5th grade or 9th grade) in 19_____,

_____ were in class for half a year or less.

_____ were in class for $\frac{1}{2}$ to $\frac{3}{4}$ of a year.

_____ completed first grade.

_____ started second grade in our building.

_____ remained in our school for 2 years.

_____ finished in our building and, as far as I know, stayed in the district.

For every 30 children whose parents come regularly to school conferences and Back to School Night, who are in our first (or 5th grade or 9th grade) in 19_____,

_____ were in class for half a year or less.

_____ were in class for $\frac{1}{2}$ to $\frac{3}{4}$ of a year.

_____ completed first grade.

_____ started second grade in our building.

_____ remained in our school for 2 years.

_____ finished in our building and, as far as I know, stayed in the district.

For high schools, for every 30 children who were in ninth grade in 19_____,

_____ graduated from high school with their class.

_____ were still enrolled 2 years later.

_____ graduated, "college ready."

_____ entered two year colleges or training programs.

_____ entered a four year college or university.

Analysis: What patterns do you see? How would you report this data? How can it be incorporated into planning for the school year? What additional detail would be helpful in your district? (eg disaggregating data by race/ethnicity). Draw a possible chart or graph to display this data.

Students Retained/overage in Grade

Retaining students in grade correlates both with eventual dropout and lower student achievement. Students who are two years overage for grade by ninth grade are likely to drop out. Even earlier, overage students are likely to disengage from school.

Elementary School Students Retained in Grade

	<u>Free lunch</u>	<u>Black or Latino</u>	<u>No preschool</u>	<u>Moved in last yr.</u>
Kindergarten				
Number	_____	_____	_____	_____
%	_____	_____	_____	_____
First Grade				
Number	_____	_____	_____	_____
%	_____	_____	_____	_____

Students Overage for Grade by Two Years of more, Grade 9

Ninth Grade				
Number	_____	_____	_____	_____
%	_____	_____	_____	_____

How would this correlate with the dropout data for your building?/district?

Analysis: What patterns do you see? How would you report this data? How can it be incorporated into planning for the school year? What additional detail would be helpful in your district? (eg disaggregating data by race/ethnicity). Draw a chart or graph to illustrate the results of this survey.

Well Prepared Teachers

Research suggests that teacher experience – as measured by things such as education, verbal ability and experience – is the single most powerful measurable in-school predictor of student performance. Simply put, teachers with greater expertise are better able to help their students reach high standards. Include whether teachers have a major or minor in the field being taught.

<u>Elementary Level</u>	<u>Number</u>	<u>Percent</u>
Not Permanent certified		
Certified, but less than 2 years experience		
3-5 years experience		
6-12 years experience		
More than 12 years exp.		

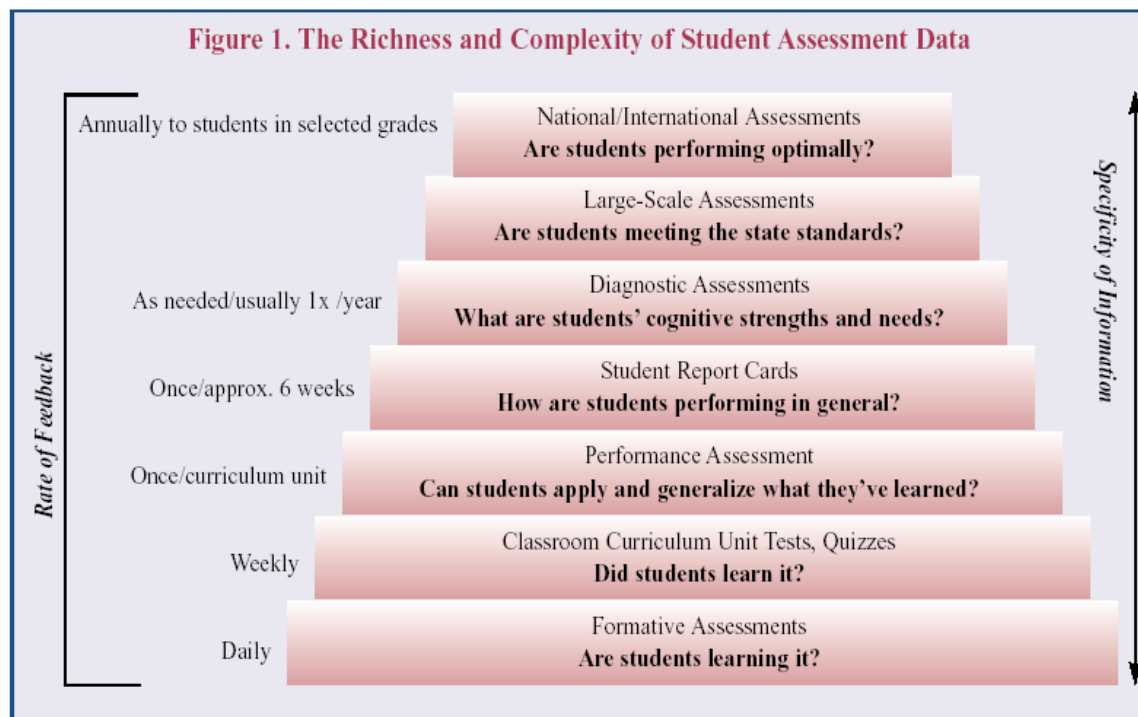
<u>Secondary Level</u>	<u>Total Course Sections (classes)</u>	<u># Sections taught by teacher teaching out of field</u>	<u>% Sections taught by teacher teaching out of field</u>
<u>Math</u>			
<u>Science</u>			
<u>English</u>			
<u>Foreign Lang</u>			
<u>All subjects</u>			

Analysis: Can you correlate student outcomes with teacher qualifications? Do outcomes differ when students receive free/reduced lunches? Or are ESL? Or are minorities? Or when teachers are compared by gender? What is the diversity of the teachers compared to the population of the school? Draw a sample graph to show the results.

Curriculum Mapping and Curriculum Gaps

The introduction of annual MEAP tests and the new report cards will mean that schools and school districts will have to look at how their curricula are implemented. Is the curriculum aligned with state standards and benchmarks? Curriculum mapping is the comparison of what is taught in the curriculum to the standards adopted by the state and school district. Curriculum mapping helps identify areas where specific standards are not being sufficiently addressed in the local curriculum. These deficiencies are known as “curriculum gaps.” Curriculum mapping also allows schools to identify elements of the curriculum that are being unnecessarily repeated in the same or in adjacent grades.

Learning standards for each grade should outline expectations for what students are expected to know and be able to do with minimal ambiguity. Teachers should be actively involved in developing curricula that satisfy local needs, are align with state frameworks, and can track student progress over time.



from “Using Student Assessment Data: What Can We Learn from Schools,” by Allison Cromley, published by NCREL, November, 2000. <http://www.ncrel.org/policy/pubs/pdfs/pivol6.pdf>

Analysis: What are the plans in your district to implement the new standards and benchmarks? How will this affect teachers and schools? Who will be involved in implementing changes? How will the school/district assessments be used to evaluate student achievement across the curriculum?

Achievement Test Scores at Selected Grade Levels

MEAP scores, Sat9s, Iowas, or other standardized tests can be disaggregated by a number of categories. For MEAP tests before 2003, Test Wiz, available at www.testwiz.org can be used. These tests have the ability to assess students and to divide students into groups for instructional purposes. Following are several analyses from Test Wiz that will be similar to what will soon be available electronically on the web.

While tests are, by no means, without flaws, by examining test scores and patterns of subgroups over the past three years, you can glean information about achievement in different subject areas. The following chart from Test Wiz could be used to set up class instruction groups, based on the mastery shown in the previous year.

Class List with Items																																								
MEAP Math & Reading Grade 4 2002																																								
Class: <input type="text"/>	School: <input type="text"/>																																			Test				
Grade: 4	District: <input type="text"/>																																			P				
Math Total																																								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	Corr.		
+	+	D	+	+	+	B	+	+	+	+	+	2.5	+	+	+	C	+	+	+	C	+	+	A	+	+	+	+	+	+	+	+	+	+	C	+	D	4.0	81%		
+	+	D	+	+	+	D	+	B	+	+	+	3.0	+	+	+	A	+	+	+	C	+	+	+	+	+	+	+	+	+	+	B	+	D	+	+	C	+	+	4.0	80%
D	+	+	C	+	+	+	+	+	+	+	+	2.0	+	+	+	D	C	+	+	D	+	+	+	+	+	+	+	+	+	+	+	+	B	+	A	D	3.0	75%		
+	+	+	D	+	+	+	+	C	+	#	D	0.0	D	+	B	+	+	+	B	+	+	+	+	+	+	+	+	+	+	D	+	C	+	D	+	+	+	2.0	64%	
+	+	A	D	+	+	D	+	B	+	+	+	1.0	D	+	+	+	+	+	D	+	+	+	C	C	A	+	+	D	+	+	A	+	+	+	+	+	4.0	68%		
+	+	+	+	+	+	+	+	+	+	+	+	4.0	+	+	+	+	+	+	C	+	+	+	+	+	+	+	+	+	+	D	+	+	+	+	+	+	+	4.0	95%	
+	+	+	+	+	+	+	+	+	+	+	+	2.5	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	4.0	97%	
+	+	+	+	+	+	+	+	+	+	+	+	1.0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	C	+	+	+	+	+	+	4.0	91%	
+	+	+	+	+	+	+	+	+	+	+	+	4.0	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	C	+	+	+	+	+	+	+	4.0	98%	
+	+	D	+	A	+	+	B	+	+	+	+	4.0	+	+	+	+	B	+	+	D	+	+	+	C	+	+	+	C	+	+	C	D	+	+	+	+	4.0	80%		
D	+	B	+	+	+	+	+	+	C	+	D	2.0	A	+	C	+	+	D	+	+	B	A	+	A	B	A	+	+	C	+	D	C	+	+	+	+	4.0	61%		
D	+	+	C	C	D	D	B	C	+	B	B	0.0	A	C	+	D	C	+	+	D	D	C	+	+	C	B	+	B	A	C	B	A	+	+	+	+	0.0	30%		
D	+	B	C	C	A	B	+	+	+	B	A	0.0	D	+	D	+	+	B	+	C	+	+	+	B	+	B	+	+	D	C	+	+	+	A	+	2.0	48%			

Another test can summarize how all classes within a school or district performed on the same test.

School Objectives Summary Report
MEAP Math & Reading Grade 4 2002

Test Date: 01/25/2002

Grade: 4

School:

Objective/Strand	Maximum Number	School Averages Based on 75 Students		District Averages Based on 251 Students	
		Percent Correct	Number Correct	Percent Correct	Number Correct
Math: STATE=66%					
PATTERNS: ST=71%	7	73	5.1	71	5.0
1.1 Patterns: ST=77%	5	78	3.9	77	3.9
1.2 Var.&Change:ST=57%	2	59	1.2	55	1.1
GEOMETRY&MEAS: ST=56%	11	66	7.2	56	6.2
2.1 Shapes&Reltns: ST=66%	4	78	3.1	67	2.7
2.2 Position: ST=61%	1	66	0.7	60	0.6
2.3 Measurement: ST=48%	6	57	3.4	49	2.9
DATA ANALYSIS: ST=73%	9	75	6.7	72	6.5
3.1 Data Collectn: ST=77%	2	74	1.5	74	1.5
3.2 Desc.&Interpr:ST=79%	3	82	2.5	81	2.4
3.3 Infer.&Predic: ST=73%	4	70	2.8	66	2.6
NUMBER SENSE: ST=67%	9	70	6.3	67	6.0
4.1 No. Concepts: ST=52%	1	56	0.6	53	0.5
4.2 Repr. of Nos.: ST=77%	3	78	2.3	76	2.3
4.3 No. Relations: ST=64%	5	68	3.4	64	3.2
NUMER/ALGEBR: ST=71%	6	70	4.2	70	4.2
5.1 Opertns&Props.:ST=81%	2	79	1.6	81	1.6
5.2 Anlyt Think: ST=67%	4	65	2.6	65	2.6
PROBABILITY: ST=63%	2	68	1.4	65	1.3
6.1 Probability: ST=77%	1	90	0.9	82	0.8
6.2 Discrete Math: ST=49%	1	47	0.5	48	0.5
READING: STATE=60%					

Data can also be disaggregated to see which students are close to a cut score.

District Report for Sex=Male and Students with SS bet. 550.00 and 565.00 on All Selected Subtests
MEAP Math & Reading Grade 4 2002

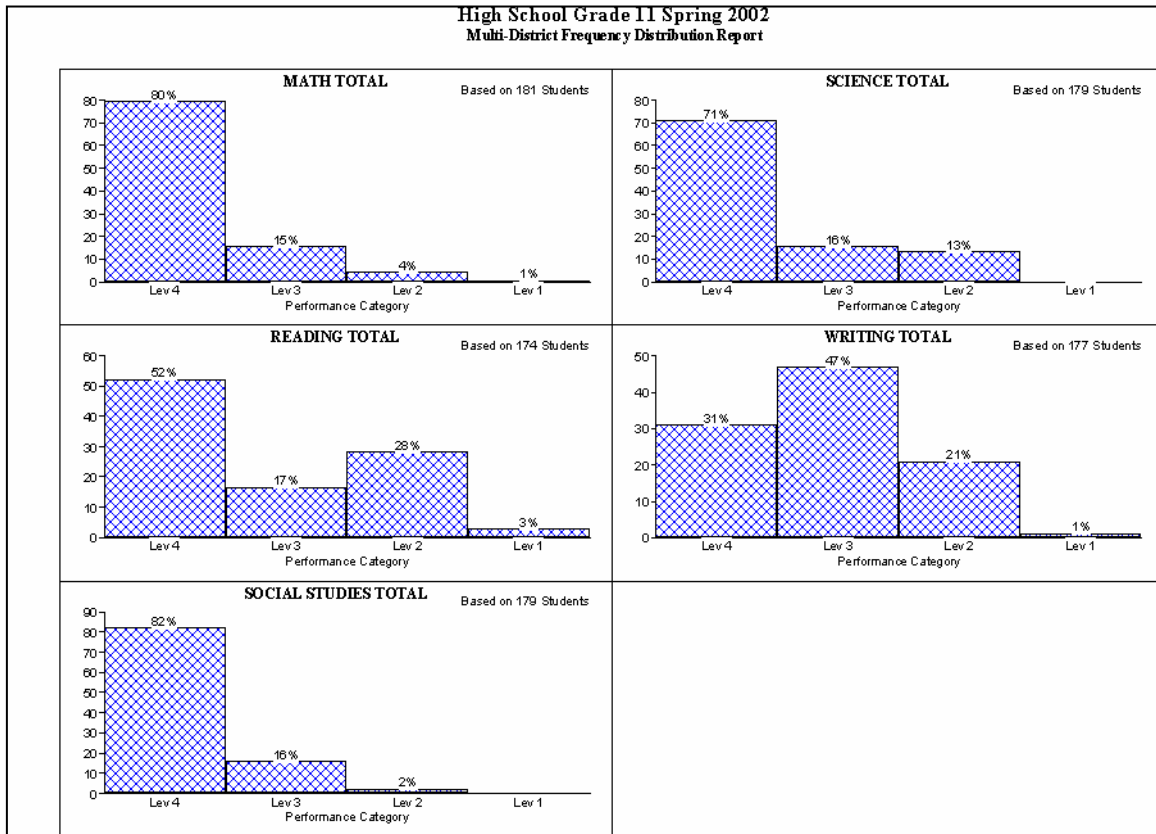
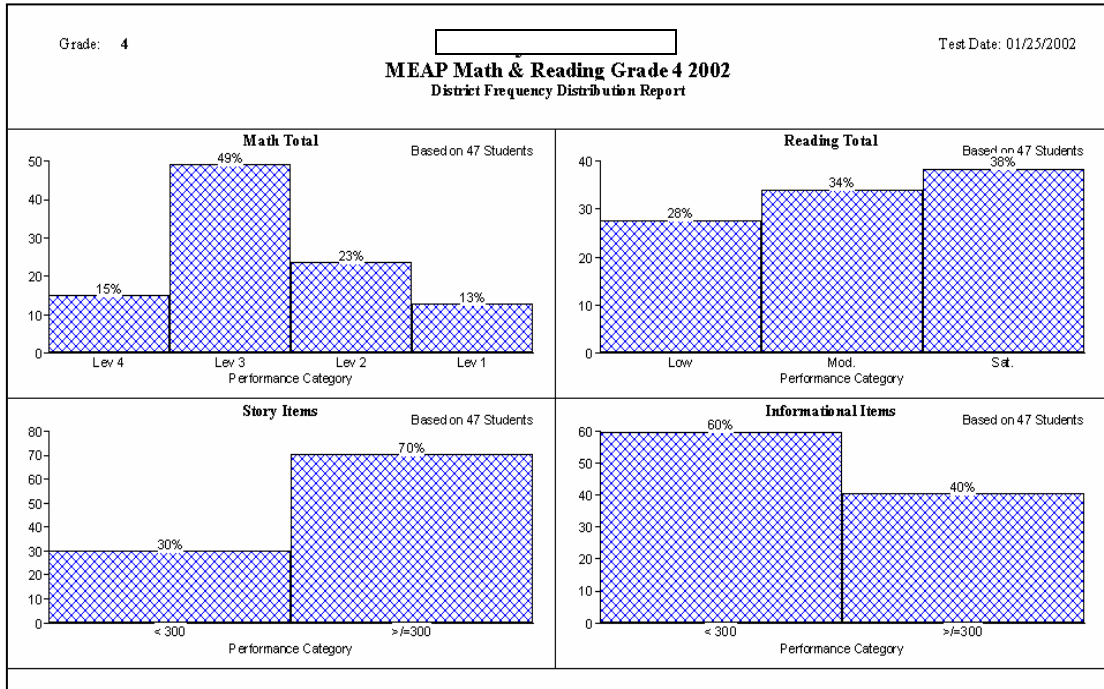
Test Date

Grade: 4

District:

	MATH	Pattn	Data	Prob	MathMC	MathHS	Geom	Numbr	Algeb
RS	35.0	7.0	8.0	1.0	29.0	6.0	6.0	8.0	5.0
%COR	80	100	89	50	81	75	55	89	83
SS	562								
PERF	Lev 2								
RS	35.0	7.0	7.0	2.0	28.0	7.0	9.0	6.0	4.0
%COR	80	100	78	100	78	88	82	67	67
SS	562								
PERF	Lev 2								
RS	35.5	6.0	9.0	1.0	30.0	5.5	7.5	8.0	4.0
%COR	81	86	100	50	83	69	68	89	67
SS	564								
PERF	Lev 2								
RS	32.5	4.0	6.5	1.0	28.0	4.5	6.0	9.0	6.0
%COR	74	57	72	50	78	56	55	100	100
SS	552								
PERF	Lev 2								
RS	32.0	5.0	8.0	2.0	29.0	3.0	4.0	8.0	5.0
%COR	73	71	89	100	81	38	36	89	83
SS	550								
PERF	Lev 2								

Data should also be shown as charts and graphs.



Analysis: How can your district/building use disaggregated data to meet the new federal requirements for NCLB and for school improvement? Does your district allocate time so teachers can analyze and reflect upon student assessment data, plan revisions to their curricula and teaching practices? Does your district provide in-service support on how to use student assessment data effectively?

What differences are you likely to find between achievement in elementary and middle schools?
How can the district coordinate curriculum between schools as well as within schools?

Assignments and Student Work: Do They Meet Standards?

This analysis is intended to have you examine teacher assignments and student work in relation to standards. How has your school integrated the state's standards and benchmarks into the daily instructional program?

Teachers have different standards for evaluating student work. Some teachers value correct answers above all, while others reward process, for example. When students are reshuffled each year, teachers often find that they couldn't assume that students had learned what was taught, or even if the curriculum in place was actually taught, or if teacher replaced the local curriculum with "pet" projects.

Looking at student work and teacher assignments has multiple purposes:

- What can we learn from the work about the teaching the students have received and the learning opportunities open to them
- How are we going to provide students with teaching and learning opportunities so their work will meet the standards?

How would you organize the process that would evaluate student work? How would you use this data with the previous sections? What connections can you make between teacher characteristics and student characteristics and neighborhood characteristics?

Homework Assignments

Research indicates that students who have regular homework learn more than students who do not. Completing challenging homework assignments is often an important form of learning, especially at the secondary school level. However, in some schools and communities, especially high poverty areas, teachers give less homework. Some teachers no longer assign homework because few of their students turn it in; others because the schools have insufficient textbooks or materials that can go home with students.

There are a number of ways to look at homework quantity, quality, and completion rates. One way to start is to ask every teacher in the school to give you the homework assignments that they gave during a particular week. For each assignment, the teacher should provide information on how many students completed the assignment in a satisfactory manner. Then review the information received from the teachers, looking for differences among subject areas, teachers, levels of courses, and so on.

Teacher Survey

Teacher _____

Subject _____

Grade Level _____

Number of students in class _____

Assignment	Students Attempting		Students Completing	
	#	%	#	%

Student Survey

Assignment	Minutes to Complete	What I Got out of it

Parent Survey

Assignment	Minutes child Needed to complete	Clear? Yes/No	Needed Help Yes/No	Quality Good Med Poor

Analysis: How would you evaluate homework from the student's perspective? Does it suggest that students are effectively engaged in out-of-school learning? How would you use information from the parent's perspective? How would you analyze the quality and relevance of homework? How can this information be used in your building?

Relationship between Grades and Test Performance

One way to identify differences in a school is to compare test performance and grades received for students in general and for subgroups. Generally, students who do well in their academic courses perform better on standardized tests of achievement than do other students. But in some schools, academic standards have slipped lower in other schools, and an “A” means something quite different from an “A” in another school. An “A” in a school serving high concentrations of low income students may have a different meaning than an “A” in a school serving high income students. Some states are now basing college acceptances on students who graduated in the top 10% of their class. So what is an “A?”

Grades and Test Performance

Grade _____			
Letter Grades in Math:		Mean Test Score: Math	
All students earning:	School		
All students earning:			
A			
B			
C			
D			
E/F			
Grade _____			
Letter Grades in Language Arts/English		Mean Test Score: Language Arts	
All students earning:	School		
All students earning:			
A			
B			
C			
D			
E/F			

Analysis: Compare the data for individual schools with data for the district as a whole; look for patterns by SES and/or racial composition of the schools. If data isn’t available for the entire district, use the data from different teachers within a building to see what it says about standards. This comparison works best for elementary schools.

Objective Measures of Achievement and Placement

In College Prep Courses, by Disaggregated Groups

Sometimes, teachers and parents respond to the inequities obvious in comparisons of course-taking patterns by arguing that the system is “fair” and objective – that students are placed in these courses on the basis of past performance. However, placement practices are not always as fair as people think. It is important to look at how students are placed into courses and at how “fair” the system is.

Look at the methods that your district uses for course placement purposes and examine how subgroups are actually placed.

Performance on Standardized Tests and Course Placement, by Subgroups

Grade 8 or 9			
Top Quartile Performers	Number	# Enrolled in Algebra 1	% Enrolled in Algebra 1
Low income			
Diverse Students			
Moved recently			
Male			
Female			
Total			
Second Quartile Performers	Number	# Enrolled in Algebra 1	% Enrolled in Algebra 1
Low income			
Diverse Students			
Moved recently			
Male			
Female			
Total			

Analysis: How would you present this data? What additional information is important to provide?

Excessive Absenteeism

Students who are not in a classroom obviously learn less than students who attend school regularly. Research suggests that students absent 15% or more during a school year often end up repeating a grade or dropping out. Indeed, in high school excessive absences may indicate dropout in all but name. This indicator is important for the community to understand the relationship between attendance and achievement.

Excessive Absenteeism (Students who miss 15% or more of the school year)

Selected Grade Levels	Free/red. Lunch		Diverse students		No Preschool		Moved last year	
	#	%	#	%	#	%	#	%
	Elementary school							
grade 1								
grade 2								
Total								
Middle School								
grade 6								
grade 7								
Total								
High School								
grade 9								
Total								

Analysis: Begin by focusing on the first year at each level, and concentrate on getting students on the right path early. Ask the district office to report this data for each quarter of the school year or as often as report cards are issued.

How can you calculate the learning time lost?