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ABSTRACT

This paper describes efforts to develop indices of student achievement, school district effort, and school district efficiency. The challenge was to develop measures that are simple to understand, yet allow comparison among districts that are not distorted by socioeconomic differences. Measures were developed for average student achievement, average school district effectiveness, and school district efficiency. Data analysis ranked the top 10 and bottom 10 districts in western New York state along each index. Data were obtained from annual State Education Department reports, "The State of Learning" reports, and media rankings of districts. Some of the policy implications suggest better use and coordination of resources already available for educational and social-support services. Other implications point to the need for additional resources for school districts that serve high proportions of students from lower socioeconomic-status families. Values of the Comer School Development Program, Glassner's Quality-School approach, Slavin's Success for All network, the Accelerated Schools network, and Sizer's Coalition of Essential Schools are described. In conclusion, the consideration of more dimensions of school-district performance reveals that many districts, not normally recognized for their effectiveness, are making important contributions to the intellectual growth of their students. Five tables and appendices containing statistical tables are included. (Contains 47 references.) (LMI)

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School District Effects and Efficiency

Austin D. Swanson
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Since the publication of the report by The National Commission on Excellence in Education, A Nation at Risk, in 1983, there has been continuing concern over how well our children are doing academically in relation to others. The report pointed out the historic decline in average achievement test scores on college entrance examinations and the unfavorable achievement of American students compared to student achievement in other developed countries. It ignited a debate over reform of education policy that continues today. Among the reforms undertaken by several states, including New York State, in the 1980s was the implementation or expansion of testing programs to identify troubled schools and to monitor improvement efforts. Test results, aggregated at the district level, are now available to the public and routinely published. Unfortunately, published reports--especially those which make comparisons among school districts and schools--tend to oversimplify a very complex subject, frequently resulting in misleading conclusions.

The purpose of this paper is to report on efforts to develop indices of student achievement, school district effect, and school district efficiency that are relatively simple to

understand, yet permit comparisons among school districts which are not distorted by differences in socio-economic status (SES) of a school district's student population. The focus is on New York State, and Western New York in particular. Three types of measures are developed: average student achievement, average school district effect, and school district efficiency. Average student achievement is measured by three factor scores which combine results of state examinations at each of the following levels: elementary, middle, and high school. In addition, there are two outcomes measures: student retention rate (the inverse of dropout rate) and percent of graduates participating in postsecondary education. School district effect is estimated through a multiple regression process which removes environmental effect on student achievement from the five achievement factors. School district efficiency is measured through a linear programming technique known as data envelopment analysis (DEA). It produces an efficiency index ranging from zero to one, with one representing the most efficient state.

Data Sources

Chapter 655 of the New York State Laws of 1987 requires the Board of Regents and the State Education Department to submit an annual report to the Governor and the Legislature concerning, among other things, student achievement, student and teacher characteristics, and financial information. Data are reported by district, district type, ethnic group, etc. The report is due January first of each year and usually becomes available to the

public sometime in February in hard copy, New York: The State of Learning, and on computer disk. The report released in February of 1995 also published for the first time 1990 decennial census data for school districts which are useful in controlling for variations among school districts in socio-economic characteristics that influence student achievement. School districts usually report district information drawn from the state report to their residents; and, in recent years, the media have made their own inter-district analyses, e.g., Business First's annual ranking of school districts and the February 9, 1995 front page article in the Buffalo News.

The State of Learning publishes measures of pupil achievement by school district on various New York State tests including those in the Pupil Evaluation Program (PEP), Program Evaluation Tests, Preliminary Competency Tests, and Regents Examinations. Selected data are also published concerning student and teacher characteristics and school district finances. Analyses of the data are made for the state as a whole and broad sub-classifications. The analysis reported herein is based on data published in 1994 and on 1990 census data.

Average Student Achievement

Pupil achievement is popularly considered to be an indicator of how well students in a particular district are able to compete with students in other districts for entrance into institutions of higher learning and for employment. The State report publishes the average results by district for 24 separate tests

given in grades three through twelve. Because districts vary relative to one another on each test, it is extremely difficult to get a general sense of how well a district is doing without further analysis. To construct a global measure or measures of student achievement we subjected the results of the 24 test batteries to factor analysis and generated three factor scores reflecting achievement at the elementary, middle, and high schools respectively. The elementary achievement factor consists of the percent of students scoring above the state reference point on examinations in reading (grades three and six), mathematics (grades three and six), and social studies (grade six)--all weighted to maximize the total variance explained. The middle school achievement factor consists of the percent of students scoring above the state reference point on reading comprehension, writing, and social studies--all weighted to maximize the total variance explained. The high school achievement factor consists of percents of enrollment for an appropriate grade cohort passing Regents examinations in social studies, mathematics, the sciences, and English--each grouping weighted to maximize the total variance explained. In addition, each district is ranked separately on its retention rate and the percent of its graduates entering post-secondary education.

The ten top and bottom districts in Western New York in the resulting rankings of this analysis are presented in Table 1; the quartile rankings for all districts on the composite measure are reported in Appendix A. In Table 1, with the exception of

Table 1. The Ten Top and Bottom Ranked School Districts in Average Student Achievement for Western New York

District	District Rankings in Average Student Achievement						Ranking on School Effect
	Overall Average	Elementary School	Middle School	High School	Retention Rate	Percent to College	
Top Ten							
Williamsville	1	23	48	9	18	3	72
Orchard Park	2	46	43	6	9.5	1	23
Frontier	3	47	11	17	16	28	4
Clarence	4	24	29	4	55.5	8	29
Bemus Point	5	20	37	10	30	25	25
Eden	6	17	19	21	9.5	58	125
Iroquois	7	26	83	13	4	2	20
Lewiston-Porter	8	22	60	38	9.5	5	49
Sweet Home	9	44	12	32	44.5	12	39
Starpoint	10	31	47	14	51.5	6.5	16
Bottom Ten							
Jamestown	91	89	79	62	100	24	70
Ripley	92	90	22	77	78	95	90
Friendship	93	100	9	91	85.5	76	55.5
Salamanca	94	97	16	98	93.5	63.5	75
Hinsdale	95	1	100	92	81.5	96	99
Dunkirk	96	96	98	28	97	52.5	21
Gowanda	97	72	88	65	91.5	89	98
Buffalo	98	99	72	90	89	55	10
Limestone	99	87	90	95	38	100	100
Niagara Falls	100	86	55	96	99	97	95

Bemus Point, the top ten districts in student achievement are middle or upper-middle income suburbs in Erie and Niagara Counties. The bottom ten districts consist of several city districts in the region including Buffalo, Niagara Falls, Jamestown, Dunkirk, and Salamanca, and five very poor and very small rural districts. The table also shows the rankings on the components of the overall average. Districts are not consistently high or low on all components.

This procedure produces results similar to those obtained by the Business First analysis. A primary difference is that the Business First analysis also includes two input items, expenditure per pupil and pupils per teacher. Our student achievement measures only include data on student outputs and outcomes.

Average School District Effect

School district effectiveness is frequently judged erroneously on the basis of unadjusted student achievement. For example, in commenting on its 1995 Public School Honor Roll, Business First wrote, "The Amherst Central School District again ranks No. 1 among Western New York's 102 public-school systems, continuing a streak that began in 1993." But for the two input measures noted above, Business First's rankings are based on student achievement and lead to assumptions (at least by implication) that student achievement is chiefly a function of school effort. At least thirty years of research into the matter strongly suggest otherwise.

Research studies that explain differences in student achievement have shown it to be a function of many forces. The unique influence of formal schooling is relatively minor in comparison with other forces such as education level of parents, family environment, and peer group interaction (Sa' wski, 1995). The findings of a recent study by the RAND Corp. (Gissmer, Kirby, Berends, and Williamson, 1994) is consistent with earlier findings. The RAND study identified the most important family characteristic influencing student performance in school as parents' education. Income, family size, and mother's age at child's birth were modestly significant. Whether the mother worked or not had a negligible effect, after accounting for other family factors. Single-parent status by itself was not significant although single-parenthood is highly correlated with other factors which have negative effects on achievement such as low family income.

The presence of these factors affecting student achievement differ markedly among school district populations, meaning that the work of some school districts is assisted by favorable environmental factors and is frustrated by unfavorable environmental factors in others. Data on population characteristics for the ten top and bottom districts in our student achievement analysis reported in Table 2 illustrate the magnitude of the variation. The average household income for the top ten achieving districts is more than $16,000 above the average for the lowest ten and the per capita income difference

Table 2. Selected Census Data for Ten Top and Bottom Ranked School Districts in Average Student Achievement for Western New York

District	Average Household Income	Per Capita Income	% Public Assistance	% 16+ Unemployed	% 20+ High School Dropouts	% 20+ with BA Degree	% 6-19 At Risk	% 6-19 Speak Other Language at Home
Top Ten								
Williamsville	48,278	22,376	2.5	2.4	9.9	41.6	.1	7.2
Orchard Park	41,414	18,244	2.1	2.4	13.7	30.0	0.0	5.6
Frontier	33,479	14,000	4.1	3.3	19.8	13.2	.7	5.7
Clarence	41,815	17,561	2.5	2.5	13.8	28.2	.5	3.8
Bemus Point	28,210	14,378	4.2	2.8	21.9	21.3	1.8	4.6
Eden	35,906	14,056	3.0	3.1	19.0	16.7	1.2	2.4
Iroquois	40,548	18,904	3.0	2.9	15.0	20.3	0.0	3.6
Lewiston-Porter	40,447	16,502	2.6	2.9	11.2	26.8	0.0	3.6
Sweet Home	33,030	14,267	3.0	3.4	11.1	28.7	1.3	8.0
Sta point	36,901	14,506	3.4	3.3	17.2	12.9	0.7	2.8
Bottom Ten								
Jamestown	20,877	11,022	12.2	4.8	27.4	12.8	6.4	4.5
Ripley	23,731	9,270	9.0	4.2	27.2	9.3	1.6	1.0
Friendship	19,796	8,380	19.1	6.7	27.0	8.3	4.1	3.5
Salamanca	19,494	9,635	9.9	6.1	29.1	9.2	3.6	6.6
Hinsdale	24,659	10,004	9.5	4.8	20.3	8.9	1.0	3.9
Dunkirk	21,342	10,467	13.9	8.3	28.3	10.5	8.1	17.4
Gowanda	24,728	10,222	9.9	3.8	31.6	9.6	3.9	9.1
Buffalo	18,482	10,445	18.7	6.7	30.4	15.6	10.9	10.7
Limestone	24,760	9,873	2.9	5.2	23.9	5.5	2.4	1.1
Niagara Falls	20,641	10,904	12.7	6.2	30.6	9.8	4.7	5.2
Average Top Ten	38,003	16,479	3.0	2.9	15.3	24.0	.6	4.7
Average Bottom Ten	21,851	10,022	11.8	5.7	27.6	10.0	4.7	6.3

is over $6,000. The highest district in average household income in the low achieving group falls nearly $13,000 below the average for the highest group. The rate of public home assistance for the lowest group is nearly four times that of the high group and the rate of unemployment is nearly double. Among the high achievement districts, 24 percent, on average, of the residents over 20 years of age have earned a bachelors degree while only 10 percent have in the low group. In Williamsville, 41.6 percent of the over 20 age cohort hold the bachelor's degree and in Orchard Park, 30 percent do. In Buffalo, 15.6 percent hold BA degrees, in Niagara Falls, 9.8 percent, and in Limestone, only 5.5 percent. Less than one percent of the youth on average in the high achieving group are classified as being "at-risk" on the basis of socio-economic characteristics while 4.7 percent on average are so classified for the lower group of districts. Buffalo has the highest proportion of at-risk students, 10.9 percent as determined by the United States Census.

The differences in population characteristics shown in Table 2 between the two groups of school districts mean that the schools in each group must approach their work quite differently. In total, school takes up only about 13 percent of the waking hours of a person's first 18 years of life (Walberg, 1984). Children receive their initial instruction in the home and in the community, albeit informally, and those whose parents are well-educated usually come to school better prepared to function efficiently in an environment of abstract learnings than do

children whose parents are less well educated. Schools composed of children who already have developed good learning skills can begin their instruction at a more advanced level than can schools where most of the children enter with poor learning skills. The pervasiveness of the problem of poor entry level skills in American schools is recognized by the first of the eight national goals for public education set by Congress in 1993 as part of Goals 2000: "By the year 2000, all children in America will start school ready to learn."

Research in the United States on the impact of family socio-economic status (most importantly, education and income) on the achievement of children has been clouded by the issue of racial and ethnic group membership. Despite the minority focus, low socio-economic status has emerged as the dominating detracting factor from achievement with little, if any, effect being explained independently by minority group membership. This is not to deny that racial and cultural minority children experience discriminatory situations which have an additional negative impact on the development of self-concept and realistic aspirations and expectations. Some social scientists refer to the treatment of racial and cultural minorities in the United States as functioning more like a caste system than socio-economic differentiation (Ogbu, 1978; Brown, 1990).

Socio-economic characteristics are only proxies for interactions within families and society which tend to be related to socio-economic status. Home environment predicts academic

learning twice as well as socio-economic status of families (Walberg, 1984), but it is much more difficult to measure for research purposes. Correlational and status studies are useful in pointing out the overall impact of socio-economic status on pupil achievement, but they do little to advance our understanding of how the effect is transmitted or what educators can do to intervene.

The inter-relationships between environment and student achievement are too complex to be explained through the lens of a single discipline. Four main perspectives characterize the literature on school performance of children from lower SES families and racial and cultural minorities: the cultural continuity/discontinuity approach, the secondary cultural continuity approach, cultural reproduction theory, and the culture and cognition approach (Emihovich, 1994). Poor academic achievement by such children is attributed in these theories to a variety of factors including:

* differences between home and school in interactional, linguistic, and cognitive styles;
* effects of macroeconomic and social conditions, especially labor market forces and minority groups' beliefs about their access to employment and other social benefits;
* family values concerning the importance of education, adherence to prevailing social norms, and allegiance to community welfare rather than individual gain;

* the school's perceived role in reproducing the social order to maintain class and racial barriers to social mobility;
* student resistance to learning behaviors expected by school authorities which would bestow upon the students identities which are stigmatized among their peers; and,
* individual variations in performance as a function of culturally influenced cognitive capacities.

Several of the above perspectives have been unified through the concept of multiple literacies.

> [E]ach literacy is embedded within particular culturally organized settings, shaped by children's early experiences in the home and community environments, and influenced or modified by alternative literacies children encounter daily in schools and other social settings. In short, for children to be successful in school and society, they need to master a broad range of literacy competencies, almost in the sense of being multilingual, to cope with the diversity they can expect to encounter in written and oral formats across a wide array of situations. (Emihovich, 1994, p.1231)

Research clearly shows that language and cultural differences in students' lives are interwoven with economic and social conditions that facilitate or impede knowledge acquisition. This bonded relationship must be taken into account

in designing instructional strategies for children. It must also be factored into any assessment of school district performance.

To estimate the effect of school districts on student achievement, we have used residual scores derived from multiple-regression analysis with the measures of student achievement previously described serving as dependent variables and family and district characteristics serving as independent variables. Indicators of socio-economic status used include: average household and per capita income, percent holding four year college degrees, percent children at-risk, percent children qualifying for free lunch, percent children with limited English proficiency, and percents of children of various racial and ethnic groups.

Table 3 reports the results of the school district effect analysis. While the top ten in Table 1 were dominated by Erie and Niagara County suburbs, they are conspicuous by their absence in Table 3 once socio-economic status has been controlled. Only one of the original top ten districts remains in Table 3, Frontier, which moves from a rank of three to a rank of four. Buffalo makes a remarkable leap from a rank of 98 on student achievement in Table 1 to a rank of 10 on school district effect in Table 3. Other than Buffalo and Frontier, the districts in the top ten of Table 3 are rural districts. Williamsville, ranked #1 on student achievement drops to #72 on our measure of school district effect. This does not mean that the Williamsville schools are doing a poor job; rather, it means

Table 3. The Ten Top and Bottom Ranked School Districts in Average School District Effect for Western New York

District	District Rankings in Average School District Effect						Ranking on Average Student Achievement
	Overall Average	Elementary School	Middle School	High School	Retention Rate	Percent to College	
Top Ten							
Scio	1	20	23	26	22	38	24
LeRoy	2	37	16	31	14	2	11
Newfane	3	12	67	19	52	4	16
Frontier	4	56	16	12	34	39	3
Portville	5	83	22	8	45	1	14
Boliver	6	17	44	48	2	55	56
Pavilion	7	7	24	90	19	28	15
Belmont	8	62	4	77	25	2	25
Pine Valley	9	29	75	20	40	8	69
Buffalo	10	36	5	52	1	32	98
Bottom Ten							
Batavia	91.5	64	95	59	58	3	83
Holley	91.5	91	47	60	63	68	73
Wellsville	93.5	96	82	16	66	68	87
Mayville	93.5	90	92	1	86	59	76.5
Niagara Falls	95	54	11	91	92	4	100
Little Valley	96	4	61	98	100	81	90
North Tonawanda	97	36	50	74	93	96	81
Gowanda	98	89	86	31	85	97	98
Hinsdale	99	1	100	95	91	93	95
Limestone	100	92	88	96	31	100	99

that Williamsville families effectively complement the work of the schools, making the unique contribution of the schools to student achievement less than in relatively high achieving districts where the positive family effect is less. Other top ten suburban districts also experienced substantial drops in rank when the family effect was statistically controlled: Clarence dropped to #29, Sweet Home to #39, and Lewiston-Porter to #49. The other five districts dropped out of the top ten, but remained in the top quartile of school district effect.

There was more stability for the bottom ten districts in student achievement when family effect was statistically controlled than for the top ten. Niagara Falls, Gowanda, Hinsdale, and Limestone were in the bottom ten on both measures of student achievement and school district effect. All of the others in the bottom ten on the school district effect measure were also in the bottom quartile for student achievement. When controlling for socio-economic status, a few districts showed considerable improvement. We have already commented on Buffalo. Dunkirk moved from #96 to #21; Jamestown, Salamanca, and Friendship moved from the fourth quartile into the third quartile.

School District Efficiency

Taking the analysis one step further, we compared school district effect with resources used to establish a measure of school district efficiency. Organizations can achieve efficiency

in many ways. In order to be relatively efficient a decision making unit may have higher output levels than other units with the same level of inputs; it may even have output levels below average provided that the input levels are considerably lower than those of other decision making units. In education, we are not only concerned with the efficiency measure, but also with district effectiveness, that is, how well the district has met its educational objectives. While some minimum level of effectiveness should be an integral part of efficiency, it is possible for effective organizations to be inefficient. Furthermore, efficient organizations may be only moderately effective. In considering the relationship between efficiency and effectiveness, a number of possibilities arise. It should be noted that in all cases, additional investigation of a district's operations is required to determine which category is relevant to a particular district.

Efficient Districts. Dealing first with efficient districts, the following scenarios are possible.

- First, there are the efficient districts which are characterized by above average performance in terms of outputs. Such districts could be considered "star" performers and could serve as models for other districts attempting to improve their performance. Prior research has shown that such districts may span all expenditure quartiles, indicating that high expenditures and high

efficiency are not mutually exclusive. While most districts strive to be "star" performers, not all efficient districts fall into this category.

- There are also efficient districts whose performance is below average, but since their expenditures are quite low they were rated as efficient. These districts seem to be quite effective at controlling costs. The operational emphasis for these districts should be on improving performance, even if costs were to increase.

  For such districts, there may also be concerns regarding the adequacy of resources. Their relative performance is usually relatively good, given the resources available; however, these districts may not have adequate resources to enable them to improve performance. **Given the efficiency of these districts, it would be worthwhile to determine whether additional resources could be generated in order to improve student achievement.**

- On the other hand, these district may be able to purchase adequate educational resources due to favorable cost factors in the district.

Relatively Inefficient Districts. With respect to districts evaluated as relatively inefficient (quartiles two, three and four) we have a) districts whose performance is above average, but, whose expenditures are quite high and b) districts which have poor performance and high expenditures.

The inefficiency of the districts in *either* of these categories may be due to a number of reasons including:

- poor cost control
- administrators and/or teachers who are less skilled than in other districts
- significant cost factors beyond the district's control
- the purchase of resources providing outputs/outcomes which are not being measured
- economically disadvantaged children who require higher expenditures in order to attain acceptable performance.

Districts which find themselves in the last category, may receive additional funding to deal with disadvantaged children, however, acceptable performance may still be difficult to attain. Examples of expenditures which may not necessarily result in additional measured outputs/outcomes could include a more aesthetic environment, enhanced arts or athletic programs, an enhanced curriculum, etc. While such expenditures may not necessarily increase the measured outputs, they are often expected and supported by taxpayers, particularly in wealthier districts.

To measure school district efficiency, a process known as data envelopment analysis (DEA) was used. DEA uses linear programming concepts to determine the efficiency of an organization in using its resources in terms of outcomes achieved. Charnes, Cooper and Rhodes described DEA as "a method for adjusting data to prescribed theoretical requirements such as

optimal production surfaces, etc., prior to undertaking various statistical tests for public policy analysis." (Charnes, Cooper and Rhodes, 1978, 4). DEA is preferable to either ratio analysis or regression analysis in determining the efficiency of organizations which produce multiple outputs (see Bowlin, Charnes, Cooper and Sherman, 1985; Banker, Conrad and Strauss, 1986; Sherman, 1986; Sexton, 1986; Banker, Charnes, Cooper, Swarts & Thomas, 1989; Charnes, Cooper, Divine, Ruefli & Thomas, 1989; Seiford and Thrall, 1990). The following advantages of the DEA approach are particularly relevant to education (see Sexton, 1986; and Sexton, Silkman and Hogan, 1986):

1) DEA can simultaneously handle multiple inputs and outputs.
2) DEA does not require parametric specification of the relationships between inputs and outcomes.
3) Managerial strategies for improvement of inefficient decision-making units can be determined. Returns to scale information may also be available.
4) DEA can be used to determine either technical or economic efficiency, if appropriate information is available.

The primary limitation of DEA is that it is an extremal technique, and thus is more sensitive to inaccurate data. It is also unable to provide measures of statistical association between inputs and outputs and this makes it more difficult to choose among different model specifications.

It should be noted that DEA determines strict inefficiency. In some cases, good performance in some areas may result in a

relatively high efficiency rating even if performance in other areas is mediocre. Given the input and output combinations of all the organizations, data envelopment analysis attempts to optimize the relative efficiency rating of an organization. In determine relative efficiency, the DEA approach compares the district to all other districts in order to determine whether some weighted combination of those districts (subject to appropriate constraints) can outperform the district under consideration. If such a weighted combination can be determined, the district is deemed to be inefficient; it not, the district is regarded as efficient. Thus, if it is possible for an organization to be evaluated as efficient, the analysis will identify it as such. A district will be regarded as inefficient only if it truly is inefficient in relation to other districts. Thus, this technique errs toward efficiency, that is, placement of a district in the fourth quartile (least efficient) is most reliable and placement in one of the other quartiles is more likely to be subject to possible error.

The results of this analysis are presented in Table 4; districts are reported according to quartile with the most efficient districts being in the first quartile. Of the ten top school districts in effect, four also rank in the top four in efficiency. Three others rank in the second quartile. Of the ten bottom districts in effect, four also rank in the bottom quartile in efficiency and two others rank in the third quartile.

Table 4. Ranking of School Dsitricts in Efficiency by Quartile*			
Most Efficient Quartile	**Second Quartile**	**Third Quartile**	**Least Efficient Quartile**
ALBION ALLEGANY ATTICA BELFAST CASSADAGA VALLEY CATTARAUGUS CLYMER EDEN ELLICOTTVILLE FRANKLINVILLE FREWSBURG FRONTIER HINSDALE LOCKPORT NEWFANE PAVILION PORTVILLE RANDOLPH WESTFIELD WILSON YORKSHRE-PIONEER	AKRON ALFRED ALMOND BEMUS POINT BOLIVAR BUFFALO DEPEW FALCONER FILLMORE FORESTVILLE FREDONIA FRIENDSHIP HAMBURG HOLLAND IROQUOIS JAMESTOWN KENDALL LACKAWANNA LE ROY LETCHWORTH LEWISTON PORTER MAYVILLE MEDINA PANAMA PEMBROKE PERRY RICHBURG SALAMANCA SILVER CREEK SPRINGVILLE-GRIFF STARPOINT TONAWANDA WHITESVILLE	ALDEN ANDOVER ANGELICA BROCTON BYRON BERGEN CANASERAGA CHKTW-MARYVALE CLARENCE EAST AURORA ELBA GRAND ISLAND LITTLE VALLEY LYNDONVILLE NIAGARA FALLS NIAGARA WHEATFIELD NORTH TONAWANDA RIPLEY SCIO SHERMAN WELLSVILLE WEST SENECA WEST VALLEY	ALEXANDER AMHERST BARKER BATAVIA BELMONT CHAUTAUQUA CHEEKTOWAGA CHKTW-SLOAN CLEVELAND HILL DUNKIRK EVANS-BRANT GOWANDA HOLLEY KENMORE LANCASTER LIMESTONE NORTH COLLINS OLEAN ORCHARD RK PINE VALLEY ROYALTON HARTLAND SOUTHWESTERN SWEET HOME WARSAW WILLIAMSVILLE
21	32	22	25
The numbers of districts in each quartile vary due to ties in ranking districts by quartiles.			

Results for all districts on the three measures used in this study, student achievement, school district effect, and school district efficiency, are reported by quartile in the Appendix. Sixteen districts are ranked in the top quartile on both student achievement and school district effectiveness. This is a commendable accomplishment. Six of those districts, Eden, Frontier, Newfane, Pavilion, Portville, and Westfield, also received the highest efficiency rating; this is, indeed, an outstanding accomplishment.

Policy Implications of These Analyses

Some of the policy implications suggest better use and coordination of resources already available for educational and social support services. Other implications point to the need for additional resources for school districts that serve high proportions of students from lower socio-economic status families.

Coordinating Social Services. Heath and McLaughlin (1987) admonished that responses to the generally low achievement of children coming from low socio-economic families can be crafted only if we focus on the total functional requirements of a healthy, curious, productive and motivated child. This compels us to view the child as an actor in a large social system and to identify the primary networks that make up a child's environment. They suggested that this moves the school from the role of

"deliverer" of educational services to the role of "broker" of the multiple services that are available in support of the family and the child.

Heath and McLaughlin's observation reminds us of the often quoted African proverb that it takes a whole village to educate a child. It is impossible to bring the achievement levels of poor children up to the levels of middle class children by focusing only on the school where, as noted above, children spend only 13 percent of their waking hours. In order to affect the quality of the environment in which children from poor families spend the remaining 87 percent of their lives, school officials need to coordinate their efforts with other social service agencies which are already working to provide adequate shelter, nutrition, family counseling, and health services. They need to work closely with those providing families in need with prenatal counseling, parenting education, pre-school and after-school programs, and other recreational programs. They also need to work with the urban planners and law enforcement agencies to ensure communities that are safe and pleasant places in which to live (Adler and Gardner, 1994; Dryfoos, 1994).

Twelve states, including New York, currently support school based social services. Experimentation is going on in each. In California, for example, the City of San Diego is in the fourth year of a pilot project that takes an integrated approach to the delivery of social services. A social services center has been established at a school for the purpose of delivering

comprehensive services to children and their families in the school's attendance area. Using an expanded student registration, screening, and family assessment process, the center's staff can make initial assessments of family and student needs. The center also provides social services planning for families, ongoing case management, and various health services (Payzant, 1994). The school is the primary source of referrals. Having received training in problem identification and in the nature of support services available, classroom teachers refer children experiencing academic, behavioral, attendance, or health problems to the center. Teachers and center staff jointly assess whether the services provided are being helpful.

In Western New York, the Niagara Falls City School District is moving to coordinate its already extensive collaboration with community social service agencies. Even though a central coordinating structure does not yet exist, the Niagara Falls School Board recognizes the need for such and contracted with the Western New York Educational Service Council (1995) to develop a plan. The supporting study found much evidence that the informal relationships established over the years of sharing has resulted in an effective decentralized process for collaboration. The consultants found that a formal structure for collaboration is not needed, but they did recommend that an interagency collaboration committee be established and a full time coordinator of collaborations be appointed. Further, the consultants recommended that a pilot community school, similar to

that describe for San Diego, be established.

In looking at longitudinal achievement data from 1978 through 1990, the RAND (1994) study cited earlier concluded that the significant gains made by minority students may be attributable to a broad range of social policies.

> These results suggest that black student gains during this period and, to a lesser extent, those of Hispanic students may in part be attributable to public investments on families and schools and/or equal educational opportunity policies. This implies that programs targeted for minority students may have yielded important payoffs, but identifying which programs have worked and their relative cost-effectiveness especially for children placed at risk remains an important topic for future research. (RAND, 1994, p. 3)

Internal School Reform. There are also things that schools can do on their own to help poor children to improve their achievement. Some require additional resources; but others do not.

While educators need to make pedagogical accommodations in the schools for the influence of family in the socialization of children, they must also be cognizant of the schools' actual and potential impact for strengthening or for muting social class differences. Accepted school practices meant to overcome the achievement gap caused by social and ethnic backgrounds too often result in segregation, differentiation, and humiliation for many

children (Brantlinger, 1995). Formal tracking and informal clustering, for example, inform children of the stratified nature of society and their own comparative worth in it. According to Brantlinger (1995, p. 4), "schools and the public need to scrutinize assumptions and policies that undergird such practices. Teachers need to be aware of their own feelings toward members of different social groups and be sensitive to the ways that social class affiliations and the unique experiences of members of different classes influence students' subjectivities." Such behavior is particularly important in urban centers where students are much more culturally diverse than in most suburbs and where teachers are more likely to differ from their students in cultural and class orientation (Britzman, 1986; King, 1991; Ladson-Billings, 1992; Shujaa, in press).

Studies of the relationships between home and school show that it is important for parents and educators to work together to develop high achieving children (Bradley, et al., 1987; Comer, 1980; Durkin, 1984; Reynolds, 1991; and, Walberg, 1984). Walberg (1984) endorsed the concept of home/school partnerships designed to improve the learning environment of the home in support of the efforts of the school. Programs that target parent/teacher cooperation and focus on specific achievement goals showed the greatest learning effects.

A number of organizational strategies intended to make schools more effective--especially for at-risk children--have been developed over the past decade. Slavin (1994) pointed out

that classroom level change cannot be dictated from above; however, not every school needs to reinvent the school. School staffs and community representatives can select among a variety of existing, well-designed methods and materials that have been shown to be effective with at-risk children. Schools subscribing to a given set of organizing principles frequently form networks, usually under the direction of the model designer. A few such networks are described below.

The Comer School Development Program is such a network. The program was begun in 1968 by psychiatrist James Comer as a joint effort between the Child Study Center at Yale University and the New Haven Public Schools. His concepts have now received national attention. Comer's (1988) approach emphasizes connecting families with schools, helping school staffs appreciate and incorporate the values and perspectives of minority families into their teaching, and increase student self-esteem. The program does not have an explicit approach to curriculum, but does provide a process for making curricular decisions. The process involves systematic identification of a school's goals, planning, regular assessment of effort and progress, followed by design modifications as necessary. Three guiding principles are: no-fault problem solving, consensus decision making, and collaboration. All staff members and parents are involved at every level of school activity.

Another network has formed around William Glasser's (1990) The Quality School. The focus of the Quality School is on

student outcomes and careful attention is paid to alignment between schoolwide, grade-level, and student goals. Students are expected to assume much of the responsibility for managing their own learning. Considerable effort is given to helping students understand the worth of what they are doing and the contribution it can make to their personal and career goals. Formal grading is not stressed, but the only work accepted is that which is regarded to be of high quality by teachers and students. Emphasis is placed on noncoercive leadership. Internal and external research and data on students and the school are closely watched. Student progress is carefully monitored using authentic and performance-based means; corrective action (for individual student, classroom, and school) is based on analysis of the data collected. All of these efforts are enhanced through a targeted staff development program which equips individuals with precisely those skills they believe they need to function effectively in their work in this environment.

The central thrust of the Accelerated Schools network is academic acceleration for at-risk students. This schooling model was developed by Henry Levin (1994) of Stanford University in the mid-1980s. Now over 500 elementary and middle schools are implementing the model in 33 states. In a radical restructuring of school to create productive efficiency, Accelerated Schools were designed to bring at-risk students into the educational mainstream so that they are academically able and capable of benefiting from high-quality and high-content school experiences.

Accelerated Schools challenge the common practice among most public schools of remediation for at-risk children. The schools' strategy is based on the belief that such children must learn at a faster--not slower--rate than other children. Three central principles guide the strategy: unity of purpose, school-site empowerment, and building on the strengths of at-risk children rather than being pre-occupied with their deficiencies (Hopfenberg, Levin, et al., 1993).

Robert Slavin's Success for All network involves 59 school districts in 20 states. It is a comprehensive program for elementary schools serving disadvantaged children. The program incorporates: research-based prekindergarten and kindergarten programs; one-to-one tutoring for first graders experiencing difficulties in reading; extensive use of cooperative learning in grades 1-5 for reading, writing, and language arts; and an active family support program. A building facilitator coordinates ongoing professional development and monitors an eight-week assessment program to make sure all students are making adequate progress (Slavin, 1994; Slavin, Madden, et al., 1992).

Theodore Sizer's (1992) Coalition of Essential Schools has much in common with the networks already described; it applies concepts commonly accepted for elementary schools to provide nurturing and supportive environments to high schools. The first emphasis is to establish a clear and energizing sense of purpose and to continually articulate that purpose. Teamwork and

collaboration among staff and students is considered to be important. An atmosphere is developed which dispels fear, granting people the freedom and support needed in order to do work in which they can take pride. There is regular analysis and evaluation of student and teacher performance with positive feedback given to both. Students are trusted to do much of their own quality control; portfolios are used in a student assessment process keyed on authenticity and performance. The philosophy of the Coalition of Essential Schools served as an organizational guide for the New York [City] Network for School Renewal (Bradley, 1995) and for the phenomenally successful District #4 which serves one of the New York's most impoverished sections, Spanish Harlem (Fliegel, 1993).

Additional Financial Requirements. While much can be done to improve the effectiveness of learning experiences for at-risk children using only resources already allocated, to close the achievement gap significantly will require higher expenditures in districts serving large numbers of at-risk students. Table 5 shows the expenditures per pupil in enrollment and other information for the ten top and bottom school districts in student achievement in Western New York (Table 1). The bottom group, on average, actually spends a bit more than the top ten districts in student achievement when compensatory funds provided by the federal and state governments are included. When enrollment is adjusted to reflect differences in need for

Table 5. Expenditures per Pupil Enrolled, Unadjusted and Adjusted for Special Pupil Needs, 1992-93, for the Ten Top and Bottom Ranked Western New York School Districts on Student Achievement (Table1)

District	Total Expenditure Less Capital Outlay & Debt Service Per Pupil Enrolled	% Limited English Proficiency	% Pupils with Handicapping Disabilities	Estimated % Pupils Needing Compensatory Education	Total Expenditure Less Capital Outlay & Debt Service per Pupil Enrolled Adjusted for Special Needs
(1)	(2)	(3)	(4)	(5)	(6)
Top Ten in Student Achievement (Table 1)					
Williamsville	7,316	.8	10.0	1.6	6,447
Orchard Park	7,273	.1	14.5	3.8	6,079
Frontier	7,239	.3	13.5	2.6	6,127
Clarence	7,008	.2	6.1	.8	6,480
Bemus Point	6,564	.0	4.6	3.2	6,155
Eden	7,197	.0	10.9	2.8	6,274
Iroquois	7,602	.0	10.2	2.8	6,679
Lewiston-Porter	8,125	.1	9.8	3.6	7,162
Sweet Home	8,365	2.0	13.5	3.0	7,056
Starpoint	6,999	.2	8.4	3.6	6,268
Bottom Ten in Student Achievement (Table 1)					
Jamestown	6,395	1.9	14.7	7.4	5,287
Ripley	7,792	.0	9.9	3.0	6,868
Friendship	7,756	.0	14.2	9.6	6,262
Salamanca	7,597	12.5	13.5	6.2	6,263
Hinsdale	6,810	.0	13.2	4.0	5,766
Dunkirk	8,136	9.1	11.1	10.2	6,877
Gowanda	6,435	.3	9.7	8.2	5,602
Buffalo	7,766	6.0	17.8	16.6	6,083
Limestone	8,057	.0	4.1	12.8	7,486
Niagara Falls	7,965	.7	10.0	7.6	6,947
Top Ten Average	7,369	.4	10.1	2.8	6,473
Bottom Ten Average	7,471	3.1	11.8	8.6	6,344

educational services described above, the picture changes (column 6).

There are no absolute guides to measure adequacy of educational provision. A recent study by the U.S. Department of Education (DED) (Parrish, Matsumoto, and Fowler, 1995) used the following weightings for students with special educational needs: special education students (2.3); compensatory education students (1.2); and limited English proficiency students (1.2). This means that it costs 2.3 times as much to educate a special education student as it does to educate a student with no disabling handicaps in a regular classroom, and 1.2 times for compensatory education and limited English proficiency students. The special education weighting is based on research done by Moore, Stran, Schwartz, and Braddock (1988) and Chaikind, Danielson, and Brauen 1993). There are no nationally representative studies of the cost of providing compensatory education and limited English proficiency programs. Weightings used for these classifications in the DED study are based on estimates made by Levin (1989). Estimated average expenditure per pupil needed to bring about vertical equity using the DED assumptions are reported in column 6 of Table 5.

The distribution of state aid in New York State is based on an assumption of differential program costs: .5 for half-day Kindergarten; 1.0 for regular full-day K-6; 1.25 for K-6 at-risk pupils; 1.25 for regular 7-12 pupils; 1.50 for 7-12 at-risk pupils. Pupils classified as handicapped receive weightings

that vary from 1.13 to 2.70.

Because the lower achieving school districts tend to have a higher proportion of students with special educational needs, average expenditures per pupil adjusted for need are lower for low achieving school districts than for the high achieving group. That is because the lower achieving group of districts has nearly eight times the percent of children with limited English proficiency as does the high achieving group, and nearly three times as many pupils with special educational needs. Except for Buffalo, the distribution of percent handicapped does not differ greatly between the two groups. Buffalo is the district with the greatest proportion of pupils needing special accommodation; it has 30 percent of all children with disabling handicaps in Western New York and accounts for 25 percent of the expenditures on them. When the pupil count is not adjusted for special educational needs, Buffalo's expenditure per pupil enrolled, for example, exceeded Williamsville's by $450; with the adjustments, Williamsville exceeded Buffalo by $364 per pupil--or, in aggregate for Buffalo, nearly $17,000,000. More spending on education does not necessarily mean better results, however. This is where the concept of efficiency becomes very important. Money has to be wisely spent to achieve the results desired.

> What seems evident today is that despite the fact that schools look remarkably alike, the needs of students within those schools are vastly different. The needs of poor, and often limited English speaking students in our inner cities

> are vastly different from those of middle and upper class children in well-to-do suburbs across the continent. It seems therefore that if our schools are to succeed in the future, it is important that we provide local educators with the resources and tools they require to meet the specific needs of the children they serve, but at the same time allow them to design programs that are specifically targeted to those children. (Picus, 1995, p. 11)

Conclusion

The information generally available for making school district comparisons has left much of the story untold. Some of the analyses which have been done may serve a symbolic purpose, but they are of little strategic value in helping people to make beneficial changes in our educational systems (Richards and Shujaa, 1990). This study has added two dimensions, school district effect and school district efficiency, to the one normally considered, student achievement. In the process, we have highlighted the differences in challenges that school districts face. When more dimensions are considered, it is readily apparent that many school districts, not normally recognized for their effectiveness, are making important contributions to the intellectual growth of their students. The contribution of other districts commonly recognized as outstanding are put into perspective.

The United States is gradually becoming a nation of the rich and of the poor and success is closely linked to educational attainment (Commission on the Skills of the American Workforce, 1990). For the past twenty-five years, the middle class has been shrinking in proportion to those wealthier and those poorer. And during that time, the only group of persons not experiencing reductions in inflation-adjusted earning power is those holding four year college degrees. Today, a high school diploma has little more significance than an elementary school completion certificate did fifty years ago.

School districts serving upper-middle income children are well financed, well staffed, with modern curricula, and students are achieving at acceptable levels. Rural children in New York State don't have all the advantages of those in upper-middle income suburbs, but most live in supportive communities and many are doing reasonably well academically. Our greatest educational problems are in our urban centers. The educational challenges of urban centers are legion; but, they can--and must--be addressed if we are to avoid further polarization of our population.

It is unfortunate that some in the media have chosen to treat student achievement as a regional competition among districts with winners and losers--much as regional sport competitions. Parallels are even drawn with the Academy Awards. The education of our children is no game. If there are losers, we are all losers. Analysis can point to strengths and weaknesses, good practice and not so good practice. But, when we

find weaknesses and shortcomings, it is incumbent upon us to work together to correct those weaknesses and shortcomings no matter where they are found, making it possible for all children to achieve at an acceptable level.

Defining and measuring student achievement and school district effectiveness and efficiency is a highly complex matter. One score cannot capture the complexity. The measures included in this study add to commonly used measures, but even they are insufficient to guide the development of micro-policy. We hope, however, that this exercise has contributed to the general understanding of the forces contributing to student achievement and to the need for further research on the topic.

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Appendix

Table A-1 - Quartiles Based on Average Ranks			
District	Achievement	School Effect	Efficiency
AKRON	2	3	2
ALBION	3	2	1
ALDEN	2	2	3
ALEXANDER	3	4	4
ALFRED ALMOND	1	1	2
ALLEGANY	1	2	1
AMHERST	1	4	4
ANDOVER	3	2	3
ANGELICA	4	2	3
ATTICA	2	3	1
BARKER	3	2	4
BATAVIA	4	4	4
BELFAST	2	1	1
BELMONT	1	1	4
BEMUS POINT	1	1	2
BOLIVAR	3	1	2
BROCTON	4	3	3
BUFFALO	4	1	2
BYRON BERGEN	2	3	3
CANASERAGA	2	2	3
CASSADAGA VALLEY	3	2	1
CATTARAUGUS	2	1	1
CHAUTAUQUA	3	3	4
CHEEKTOWAGA	2	3	4
CHKTW-MARYVALE	2	2	3
CHKTW-SLOAN	1	1	4
CLARENCE	1	2	3
CLEVELAND HILL	2	1	4
CLYMER	3	2	1
DEPEW	2	2	2
DUNKIRK	4	1	4
EAST AURORA	1	4	3
EDEN	1	1	1
ELBA	2	2	3
ELLICOTTVILLE	3	3	1
EVANS-BRANT	2	2	4
FALCONER	3	3	2
FILLMORE	3	3	2
FORESTVILLE	4	3	2

Table A-1 - Quartiles Based on Average Ranks			
District	Achievement	School Effect	Efficiency
FRANKLINVILLE	4	4	1
FREDONIA	2	3	2
FREWSBURG	2	2	1
FRIENDSHIP	4	3	2
FRONTIER	1	1	1
GOWANDA	4	4	4
GRAND ISLAND	1	4	3
HAMBURG	2	4	2
HINSDALE	4	4	1
HOLLAND	2	3	2
HOLLEY	3	4	4
IROQUOIS	1	1	2
JAMESTOWN	4	3	2
KENDALL	2	2	2
KENMORE	1	2	4
LACKAWANNA	3	3	2
LANCASTER	3	4	4
LE ROY	1	1	2
LETCHWORTH	3	2	2
LEWISTON PORTER	1	2	2
LIMESTONE	4	4	4
LITTLE VALLEY	4	4	3
LOCKPORT	4	4	1
LYNDONVILLE	3	3	3
MAYVILLE	4	4	2
MEDINA	3	2	2
NEWFANE	1	1	1
NIAGARA FALLS	4	4	3
NIAGARA WHEATFIELD	2	2	3
NORTH COLLINS	4	3	4
NORTH TONAWANDA	4	4	3
OLEAN	4	4	4
ORCHARD PARK	1	1	4
PANAMA	4	4	2
PAVILION	1	1	1
PEMBROKE	2	3	2
PERRY	2	2	2
PINE VALLEY	3	1	4
PORTVILLE	1	1	1

Table A-1 - Quartiles Based on Average Ranks			
District	Achievement	School Effect	Efficiency
RANDOLPH	3	2	1
RICHBURG	3	3	2
RIPLEY	4	4	3
ROYALTON HARTLAND	3	4	4
SALAMANCA	4	3	2
SCIO	1	1	3
SHERMAN	4	3	3
SILVER CREEK	2	1	2
SOUTHWESTERN	2	4	4
SPRINGVILLE-GRIFFIN	2	2	2
STARPOINT	1	1	2
SWEET HOME	1	2	4
TONAWANDA	3	3	2
WARSAW	3	4	4
WELLSVILLE	4	4	3
WEST SENECA	1	1	3
WEST VALLEY	2	1	3
WESTFIELD	1	1	1
WHITESVILLE	3	3	2
WILLIAMSVILLE	1	3	4
WILSON	3	2	1
YORKSHRE-PIONEER	4	3	1

SPECIAL REPORT

SCHOOL DISTRICT EFFECTS AND EFFICIENCY

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April 1995

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Supplementary Tables

Notes to Tables

Tables B & C complement Table A-1 in the report Appendix by providing quartile rankings on the component scores making up the Achievement and School Effects scores. Table B provides the sub-component quartile rankings for the Achievement measure in Table A-1. Table C provides the sub-component quartile rankings for the School Effects measure.

Although closely related, Tables A, B and C were developed on slightly different bases, as follows.

- The Achievement and School Effects quartiles for Table A were based on the ***average ranks*** of the achievement and school effects component measures. These quartiles were calculated by i) determining a district's rank for each measure; ii) determining the average rank; then iii) determining the quartile assignments based on the average ranks.
- Tables B and C provide the quartile assignments for ***each*** measure used in the composite measures. These were calculated by i) determining a district's actual rank for each measure; ii) determining the quartile assignment for each measure, based on the district's rank.

While the quartiles provided in Tables B and C are closely related to those of Table A, a simple average of the quartiles in Tables B and C will **not** necessarily be the same as that shown in Table A.

Table B - Quartile Ranks for Achievement Measures					
District	Elementary School	Middle School	High School	Retention	College
AKRON	2	1	3	2	3
ALBION	4	2	1	3	3
ALDEN	3	3	3	1	2
ALEXANDER	3	1	2	4	4
ALFRED ALMOND	2	2	2	1	1
ALLEGANY	3	2	2	1	2
AMHERST	3	3	1	2	1
ANDOVER	1	1	4	2	4
ANGELICA	1	4	3	3	4
ATTICA	2	3	2	2	2
BARKER	4	3	1	3	3
BATAVIA	3	3	2	4	2
BELFAST	2	2	4	1	3
BELMONT	3	1	4	1	1
BEMUS POINT	1	2	1	2	1
BOLIVAR	2	3	3	1	4
BROCTON	4	1	4	3	2
BUFFALO	4	3	4	4	3
BYRON BERGEN	2	3	3	1	3
CANASERAGA	1	1	4	2	4
CASSADAGA VALLEY	4	4	1	4	2
CATTARAUGUS	2	1	4	3	3
CHAUTAUQUA	3	1	3	3	3
CHEEKTOWAGA	3	2	3	3	1
CHKTW-MARYVALE	3	1	2	3	3
CHKTW-SLOAN	3	1	3	1	2
CLARENCE	1	2	1	3	1
CLEVELAND HILL	4	3	2	1	1
CLYMER	1	4	1	2	4
DEPEW	4	1	3	1	1
DUNKIRK	4	4	2	4	3
EAST AURORA	3	2	1	2	2
EDEN	1	1	1	1	3
ELBA	1	4	3	1	3
ELLICOTTVILLE	1	4	4	1	4
EVANS-BRANT	3	2	3	2	2
FALCONER	3	3	3	3	3
FILLMORE	4	2	4	3	1
FORESTVILLE	4	2	1	3	4

Table B - Quartile Ranks for Achievement Measures					
District	Elementary School	Middle School	High School	Retention	College
FRANKLINVILLE	1	3	4	4	4
FREDONIA	1	4	3	2	2
FREWSBURG	4	1	4	1	2
FRIENDSHIP	4	1	4	4	3
FRONTIER	2	1	1	1	2
GOWANDA	3	4	3	4	4
GRAND ISLAND	2	4	1	2	1
HAMBURG	3	1	1	3	2
HINSDALE	1	4	4	4	4
HOLLAND	3	1	3	2	2
HOLLEY	4	2	3	2	3
IROQUOIS	2	4	1	1	1
JAMESTOWN	4	4	3	4	1
KENDALL	1	4	1	2	4
KENMORE	2	2	2	2	1
LACKAWANNA	1	4	4	4	1
LANCASTER	2	3	4	3	2
LE ROY	2	1	2	2	1
LETCHWORTH	3	2	2	4	3
LEWISTON PORTER	1	3	2	1	1
LIMESTONE	4	4	4	2	4
LITTLE VALLEY	1	3	4	4	4
LOCKPORT	4	3	2	4	2
LYNDONVILLE	3	3	4	1	3
MAYVILLE	4	4	1	4	3
MEDINA	4	2	3	3	2
NEWFANE	1	3	2	2	1
NIAGARA FALLS	4	3	4	4	4
NIAGARA WHEATFIELD	1	4	2	3	1
NORTH COLLINS	2	4	2	4	4
NORTH TONAWANDA	1	3	3	4	4
ODESSA MONTOUR	3	3	3	3	4
OLEAN	3	4	1	4	3
ORCHARD PARK	2	2	1	1	1
PANAMA	1	4	2	4	4
PAVILION	1	1	4	1	2
PEMBROKE	4	2	2	3	1
PERRY	3	2	1	4	2
PINE VALLEY	2	3	2	3	4
PORTVILLE	4	1	1	2	1

Table B - Quartile Ranks for Achievement Measures					
District	Elementary School	Middle School	High School	Retention	College
RANDOLPH	3	4	1	4	3
RICHBURG	4	1	4	1	4
RIPLEY	4	1	4	3	4
ROYALTON HARTLAND	3	3	3	3	2
SALAMANCA	4	1	4	4	3
SCIO	2	2	2	2	3
SHERMAN	2	3	4	4	4
SILVER CREEK	1	3	2	3	2
SOUTHWESTERN	3	2	2	1	3
SPRINGVILLE-GRIFF	2	3	2	1	2
STARPOINT	2	2	1	2	1
SWEET HOME	2	1	2	2	1
TONAWANDA	2	4	3	3	2
WARSAW	2	4	3	1	4
WELLSVILLE	4	4	1	3	3
WEST SENECA	2	1	2	2	1
WEST VALLEY	1	4	3	1	3
WESTFIELD	3	2	1	1	2
WHITESVILLE	1	3	3	3	4
WILLIAMSVILLE	1	2	1	1	1
WILSON	2	2	3	4	2
YORKSHRE-PIONEER	3	2	4	4	3

Table C - Quartile Ranks for School Effects Measures					
District	Elementary School	Middle School	High School	Retention	College
AKRON	3	1	3	2	4
ALBION	4	2	1	3	2
ALDEN	3	3	3	2	2
ALEXANDER	3	1	2	4	4
ALFRED ALMOND	2	3	3	1	3
ALLEGANY	3	2	3	1	4
AMHERST	4	3	1	3	3
ANDOVER	1	1	4	1	4
ANGELICA	1	4	2	2	4
ATTICA	2	3	2	2	3
BARKER	4	2	1	4	1
BATAVIA	3	3	3	4	3
BELFAST	1	1	4	1	2
BELMONT	3	1	4	1	1
BEMUS POINT	1	2	1	3	3
BOLIVAR	1	2	2	1	3
BROCTON	3	1	4	3	1
BUFFALO	4	1	3	1	2
BYRON BERGEN	2	3	3	1	3
CANASERAGA	1	2	4	1	4
CASSADAGA VALLEY	3	4	1	4	1
CATTARAUGUS	2	1	3	2	2
CHAUTAUQUA	3	1	4	2	4
CHEEKTOWAGA	3	3	3	4	1
CHKTW-MARYVALE	3	1	1	4	3
CHKTW-SLOAN	4	1	2	1	2
CLARENCE	2	2	2	3	2
CLEVELAND HILL	4	2	2	1	1
CLYMER	1	4	1	2	4
DEPEW	4	1	3	2	1
DUNKIRK	2	4	1	3	1
EAST AURORA	3	2	2	3	4
EDEN	1	2	2	1	3
ELBA	1	4	3	1	3
ELLICOTTVILLE	1	4	4	1	4
EVANS-BRANT	3	2	3	2	2
FALCONER	2	3	2	3	2
FILLMORE	4	2	4	2	1
FORESTVILLE	4	2	1	2	4

Table C - Quartile Ranks for School Effects Measures					
District	Elementary School	Middle School	High School	Retention	College
FRANKLINVILLE	1	3	4	3	3
FREDONIA	1	4	4	2	3
FREWSBURG	4	1	4	1	2
FRIENDSHIP	4	1	4	2	1
FRONTIER	3	1	1	2	2
GOWANDA	3	4	2	4	4
GRAND ISLAND	2	4	3	2	3
HAMBURG	4	2	1	4	4
HINSDALE	1	4	4	4	4
HOLLAND	3	1	4	3	3
HOLLEY	4	2	3	3	3
IROQUOIS	2	4	2	2	1
JAMESTOWN	3	3	2	4	1
KENDALL	1	4	1	1	3
KENMORE	3	2	3	3	2
LACKAWANNA	1	4	4	4	1
LANCASTER	2	3	4	4	2
LE ROY	2	2	2	1	1
LETCHWORTH	4	1	1	4	2
LEWISTON PORTER	2	4	4	2	2
LIMESTONE	4	4	4	2	4
LITTLE VALLEY	1	3	4	4	4
LOCKPORT	4	3	2	4	2
LYNDONVILLE	3	3	4	1	3
MAYVILLE	4	4	1	4	3
MEDINA	4	2	2	3	1
NEWFANE	1	3	1	2	1
NIAGARA FALLS	3	1	4	4	4
NIAGARA WHEATFIELD	1	4	2	3	1
NORTH COLLINS	2	4	1	4	3
NORTH TONAWANDA	2	2	3	4	4
ODESSA MONTOUR	2	4	3	3	4
OLEAN	3	4	1	3	3
ORCHARD PARK	3	3	2	2	1
PANAMA	1	4	2	4	4
PAVILION	1	1	4	1	2
PEMBROKE	4	3	1	3	1
PERRY	3	2	1	4	2
PINE VALLEY	2	3	1	2	1
PORTVILLE	4	1	1	2	1

Table C - Quartile Ranks for School Effects Measures					
District	Elementary School	Middle School	High School	Retention	College
RANDOLPH	2	4	1	4	2
RICHBURG	4	1	4	1	3
RIPLEY	4	1	3	3	4
ROYALTON HARTLAND	3	3	4	3	2
SALAMANCA	4	1	4	4	2
SCIO	1	1	2	1	2
SHERMAN	1	3	3	3	4
SILVER CREEK	1	3	2	2	3
SOUTHWESTERN	4	2	3	2	4
SPRINGVILLE-GRIFF	2	3	2	1	2
STARPOINT	2	3	1	3	1
SWEET HOME	2	1	3	3	3
TONAWANDA	2	4	3	3	1
WARSAW	2	4	3	1	4
WELLSVILLE	4	4	1	3	3
WEST SENECA	2	2	2	3	1
WEST VALLEY	1	3	2	1	2
WESTFIELD	3	2	1	1	3
WHITESVILLE	1	3	2	3	4
WILLIAMSVILLE	2	3	3	2	3
WILSON	2	2	3	4	1
YORKSHRE-PIONEER	3	2	3	4	2