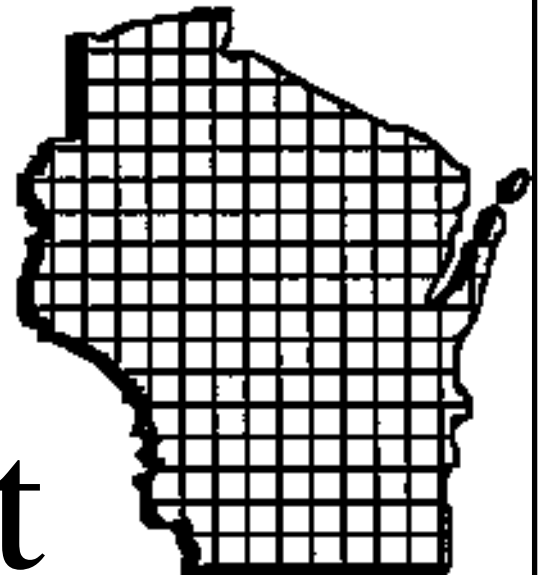


Wisconsin

Policy
Research
Institute

Report



January 2006

Volume 19, Number 1

**The Status of
High School
Education in
Wisconsin**

A Tale of Two Wisconsins


REPORT FROM THE PRESIDENT:

For years the liberal advocates have told us that the real problem in education is the disparity in funding between rich and poor districts. It is an idea that has been built on rhetoric rather than facts. We asked Phil McDade, a former reporter with the *Wisconsin State Journal* and a current school board member, to examine learning gaps among high school students in Wisconsin.

In this paper McDade makes a very interesting point — on the Wisconsin Knowledge and Concepts Exam (WKCE), given to all 10th graders in the state's public schools, the gap between the top-performing ten percent of the districts in the state and the bottom-performing ten percent is growing wider. In 2003-04, 86.4% of students in the top-performing districts scored proficient or advanced. For the low-performing districts, only 60.7% of students achieved at this level. The gap has grown over a seven-year period. In 1996-97 the low-performing districts were 13.7% below the state average; by 2003-04 that had changed to 17.3% below the state average. At the same time the difference in spending between the best-performing and worst-performing districts moved to less than \$200 per child per year. That is hardly a reason to re-direct hundreds of millions of dollars to our worst-performing districts. More to the point, it raises another disquieting fact — the gap isn't just between white students and black students, it is between upscale students and poor students. That is something that has to be factored in to educational policy in Wisconsin.

Another observation that jumps off the pages is how school districts across Wisconsin at every level have raised their test results on the WKCE. The reason is pretty simple: in 2003 the Department of Public Instruction changed the test grading. "Dumbing down" is probably a term that would probably explain the enormous jump in test scores across Wisconsin — a jump that was not noticeable in ACT results from the same districts.

Finally, McDade has some interesting suggestions that ought to be seriously discussed in Wisconsin. These recommendations include implementing a high school graduation exam He also advocates tougher admissions standards for the UW system schools. There is one other suggestion that also merits serious discussion. Wisconsin now requires 1.5 years of physical education, but only 2 years of math and science. We suspect that this is probably not the best policy to be internationally competitive in the twenty-first century.



James H. Miller

WISCONSIN POLICY

RESEARCH INSTITUTE, INC.

P.O. Box 487 • Thiensville, WI 53092

(262) 242-6409 • Fax: (262) 242-6459

E-mail: wpri@wpri.org • Internet: www.wpri.org

THE STATUS OF HIGH SCHOOL EDUCATION IN WISCONSIN

A Tale of Two Wisconsins

PHILIP J. MCDADE

	PAGE
EXECUTIVE SUMMARY	1
HIGH SCHOOL REFORM EFFORTS	2
STUDY METHODOLOGY	3
THE PERFORMANCE GAP IN WISCONSIN HIGH SCHOOLS	4
A GROWING ACHIEVEMENT GAP	10
EXPLODING THE MYTH: SPENDING AND STUDENT ACHIEVEMENT	13
THE ACT ACHIEVEMENT GAP	14
THE ELEMENTARY SCHOOL-HIGH SCHOOL GAP	16
POLICY CONSIDERATIONS	16
APPENDIX: NOTES REGARDING USE OF REGRESSION ANALYSIS	18
NOTES	19

BOARD OF DIRECTORS

Robert Buchanan, *Chairman*

David Baumgarten

Catherine C. Dellin

James Klauser

Dennis Kuester

David J. Lubar

San Orr, Jr.

Robert O'Toole

Timothy Sheehy

Edward Zore

James Miller, *President*

EXECUTIVE SUMMARY

High schools across America are under the microscope. Reform is in the air, being pushed by the federal government and some of the nation's highest profile private foundations. Not to be outdone, Wisconsin's state Superintendent of Public Instruction has targeted high school education for reform. But where should reform be directed?

This study takes a fresh approach in probing the state of high school education in Wisconsin. It uncovers some disquieting facts about our high schools, pinpointing an expanding gap between high- and low-performing high schools. Further, the study uncovers a finding that should give pause to those policy makers who reflexively seek to solve educational issues with additional money.

Wisconsin has long prided itself on the academic performance of the state's high schools. For the past decade, the state has consistently led or finished among the top two states in the country on student performance on the college-entrance ACT exam. Other less-utilized standardized tests, such as the SAT and the National Assessment of Student Performance (NAEP — also known as the Nation's Report Card), also show Wisconsin students performing well compared to their peers from throughout the country.

But an analysis of scores on standardized tests taken by all high school students in Wisconsin shows a different picture — one with a sizable achievement gap between the state's high-performing and low-performing school districts. And the achievement gap is growing.

From the data in this study, a picture of two Wisconsins emerges. In Wisconsin's top tier high schools 86% of the students score proficient or higher on the tenth grade test. This contrasts sharply with the lowest tier high schools, where only 60% score proficient or better. The averages of this lower tier are affected by the disturbing performance of the state's two lowest-performing districts — Menominee and Milwaukee — in which approximately 30% of the students score proficient or higher. However, when data from these two districts are excluded, only 62% of students in the lower tier districts score proficient or higher on standardized tests.

Significantly the study finds that the gap between high- and low-achieving high schools is getting worse rather than better. Over the eight years examined, the performance of high school students in top tier districts has skyrocketed compared to other districts. In 1996-97 their scores were 10.7% above the statewide average. By 2003-04 they had reached a point 21.3% above average. Contrast this with the performance of the lowest tier districts. During the same eight-year period, the performance of students in the lower-tier districts fell from a point 13.7% below average to 17.3% below average. Thus, a picture of the two Wisconsins emerges from this study.

An unexpected finding is that the growing gap between the performance of top and bottom tier high schools occurred during a time when the spending gap between these two groups of schools remained relatively constant. In fact, during the seven years studied, spending in low-tier districts actually got closer to spending in high-tier districts. Yet, during that period, the achievement gap widened. The performance gap seems to be unaffected by spending.

Further, the study also includes a statistical analysis of the relationship between high school test scores and spending for all districts in Wisconsin. This analysis found there to be an insignificant relationship between spending and student test scores. In short, money cannot close the performance gap. Therefore, policy makers looking to close the performance gap need not consider spending as a primary solution.

The study did find that the growing performance gap is largely influenced by socioeconomic factors beyond the influence of schools. Property wealth, poverty and race were found to affect student performance. It might be tempting to look for ways to spend additional money to address these issues. However, the lesson from this study is that the higher spending that has been tried has proven ineffective in addressing the performance gap.

Finally, the study suggests a series of steps that should be pursued to elevate the performance of high school students. These include boosting high school graduation requirements, elevating admission standards for the UW system, and considering implementation of a high school graduation test.

HIGH SCHOOL REFORM EFFORTS

In the past few years, high schools have emerged as the focus of educational reform efforts throughout the country.

At the federal level, the Bush administration has driven high schools to the top of its reform agenda. The administration has:

- Pushed an aggressive plan for high-stakes testing in all but the 12th grade of a student's high school career.¹
- Maintained a commitment to the central driving principle of the No Child Left Behind legislation (NCLB), which allows parents to remove their children from schools designated as failing and enroll them in schools they view as potentially more successful. Studies in several states, including Wisconsin, that have open enrollment laws — in which the concept of switching schools is a key component of the NCLB legislation — show students in high schools are more likely to switch schools than those in either elementary or middle schools, where parents are more likely to keep students closer to home during their initial years of education.
- Kept up public pressure on high schools to embrace educational reform, in part by implementing more rigorous curriculums and testing students more frequently.

For their part, the nation's governors in recent months have endorsed a sweeping series of proposals aimed at improving the performance of high schools. One broad goal of the governors, as endorsed by the National Governor's Association is to show that education reform ought to be a national effort — rather than state-by-state tinkering — and be done in bipartisan fashion.² The governors have also urged districts in their states to adopt more rigorous high school curriculums and focus on programs that prepare students for four-year colleges.

In Wisconsin, state Superintendent of Public Instruction Elizabeth Burmaster — a former principal of Madison West High School, regarded as one of the state's top high schools — has launched her own reform effort, appointing a 53-member statewide task force in January 2005. Burmaster's charge to the task force: to identify "best practices" among Wisconsin's high schools, raise student achievement, and investigate new methods of teaching and learning.³

All of these efforts parallel similar initiatives undertaken by an array of private groups focused on the nation's high schools. Among the notable ones:

- The Bill and Melinda Gates Foundation — the charitable arm of the billionaire founder of Microsoft and his wife — has been financing efforts aimed at reforming high schools and making them more academically rigorous. The Gates Foundation has poured more than \$1 billion worth of grants into school districts across the country, including Milwaukee's school system, by far the largest in Wisconsin. Part of the Gates Foundation effort is to make large, urban high schools smaller and more manageable, and thus able to more easily adapt educational reform programs.⁴
- The National High School Alliance has recently pushed high school reform through its "Call to Action: Transforming High School for All Youth" initiative, which seeks to increase high school achievement by focusing on the creation of smaller schools and adoption of a more rigorous course curriculum.⁵ The Alliance was established in 2002 as a partnership of more than forty national organizations aimed at fostering high achievement among students, closing achievement gaps between groups of students, and promoting civic and cultural awareness among students. It is based at the Institute for Educational Leadership in Washington, D.C.
- The American Diploma Project seeks to establish new benchmarks for what constitutes a high school diploma, arguing many high school students end up with an education that ill-suits them for the rigors of both college and the modern-day workplace.⁶ The American Diploma Project was created by three Washington, D.C.-based education groups — the Education Trust; the Thomas B. Fordham Foundation; and Achieve, Inc. — to identify the knowledge and skills needed for post-secondary education and well-paid jobs.

Moreover, these non-partisan efforts are bracketed by calls for reform by groups on the right and left of the political spectrum. Broadly speaking, the high school reform efforts focus on two main themes — making high school more rigorous for all students, and closing what's known as the "achievement gap" in high schools between white and minority students.

In Wisconsin, a broader kind of achievement gap is evident among some of the state's high school students. This achievement gap, between students who attend the state's top academically performing high schools and those from the lowest-performing schools, appears to center on several factors — not just race, but also including poverty and property wealth.

By contrast, the achievement gap appears to have little to do with how much money districts spend on their students.

An analysis of test scores taken at the high school level by all Wisconsin students shows that socioeconomic factors such as poverty and local property wealth are better predictors for student achievement than school district expenditures. That is, high school students are more likely to score better on the state's standardized test if they live in school districts with fewer poor students and higher property values than students who live in higher-poverty, lower-property value districts. In addition, a school district's racial composition is also a good predictor of test scores at the high school level.

In addition, the analysis of high school tests scores in Wisconsin shows that spending — at least when it comes to the amount of money districts spend on the education of children (not ancillary costs unique to districts such as bussing or debt service) — bears little relation to the outcome of standardized tests taken by high school students. In fact, the study shows mixed evidence of the relationship between per-student spending and test outcomes. Some high-spending districts have high school students who perform well on standardized tests, but so do some low-spending districts. Some low-spending districts have high school students who perform poorly in standardized tests, but so do some high-spending districts.

In short, student spending appears to have little impact on high school student achievement on standardized tests. Other factors — poverty and local property wealth among them — appear to be better indicators of how high school students will perform on the standardized tests.

The Wisconsin Achievement Gap—Another Perspective

In Wisconsin, state Superintendent Burmaster has repeatedly stressed a desire to close the achievement gap between the state's white and minority students. Much of that effort seems, at first glance, to be justified. Wisconsin has one of the largest racial achievement gaps in the country. For instance, the graduation rate of black students in Wisconsin (50%) is barely half that of the state's white students (91%). That's a bigger gap than in other states, such as New York and Illinois, with large numbers of under-performing minority students.⁷

But another, less-noticed achievement gap has taken hold in Wisconsin's high schools — between students in wealthy and middle-class districts and students in poor districts. This achievement gap — as measured by comparing students in Wisconsin's top-performing, or top-tier, high schools to those in its lowest-performing, or bottom-tier, high schools — dovetails with the national debate about how best to reform the nation's high schools. It also should shape the continued debate in Wisconsin about how the state's public school districts should be funded, and whether the state's funding mechanisms foster different educational outcomes in Wisconsin school districts.

Wisconsin has always had top-shelf public high schools. In the Milwaukee area, high schools such as Glendale Nicolet, Mequon Homestead and Whitefish Bay are generally considered the academic equal of private high schools in the metropolitan area. Madison high schools such as West and Memorial regularly send their graduates off to universities such as Harvard, Yale and Johns Hopkins.⁸

In addition, state leaders annually tout the achievements of Wisconsin's college-bound students, when it comes to their test-taking acumen in the ACT college-entrance exam.⁹ Wisconsin students' average score on the ACT test has historically ranked first, or tied for first, among those states whose students primarily take the ACT test (although the state finished second this past year to Minnesota, ending its run of first-place finishes).

But because the ACT is a self-selecting test — only those students seriously considering college take it — it's probably not the best measure to assess the overall performance of Wisconsin's high schools.¹⁰

STUDY METHODOLOGY

Wisconsin has nearly 400 school districts with high schools. Some students at those high schools perform well on state standardized tests; other, less well. For purposes of this study, the analysis focused on school districts identified by the Wisconsin Taxpayers Alliance (WTA) as having students who performed in the top 10% and the bottom 10% of all districts statewide on the 10th grade Wisconsin Knowledge and Concepts Exam (WKCE).

The use of a top 10% and bottom 10% cohort is, to some extent, arbitrary. The analysis is not meant to be a comprehensive review of the academic performance of high school students in all of Wisconsin's school districts. Instead, the utilization of a small cohort allows for a detailed analysis of the academic performance of about 75 Wisconsin

school districts, and to examine some of the characteristics of those districts where students score well on the test and compare them to the characteristics of districts where students score poorly.

Educators argue school districts should not be judged solely on the basis of one particular grade-level standardized test. They suggest many factors can be used to assess high schools, such as the breadth of course offerings, rigor of a school's curriculum, and performance on other standardized tests not as widely taken as the WKCE tests. In addition, educational researchers argue other factors — such as teacher training, school size, and parental expectations and educational attainment — can be crucial factors in influencing student performance on standardized tests.

Using the WKCE test to assess the performance of school district high schools is also to some extent limited, because the test is taken midway through a 10th grader's first semester — less than a year-and-a-half into a student's high school academic career. The Bush administration wants to adopt a national mandate that would require all states to have their students take a standardized test in the 11th grade. And some high school academic reform advocates argue high school seniors should be required to pass a high-stakes, standardized test before being allowed to graduate. But so far, those efforts have failed to gain a foothold in Wisconsin. The WKCE 10th grade test remains the sole statewide assessment that allows comparison of student — and school district — performance at the high school level.

All high school students in Wisconsin take only one common test — the 10th grade Wisconsin Knowledge and Concept Exam. The 10th grade WKCE test — similar to those taken by all 4th and 8th graders in the state — assesses student competency in five areas — reading, math, science, social studies, and language arts. (The statewide third-grade reading test measures literacy; student competency in subjects such as math, science and social studies is not tested statewide until the 4th grade WKCE exam.) Because all school districts know their students will be tested in the 10th grade, the WKCE has — to some degree — the effect of standardizing core parts of the high school curriculum throughout the state.

Students taking the WKCE tests are assessed and assigned to one of four categories for their performance. Ranging from highest to lowest, they are: advanced, proficient, basic, and minimal. Although the four categories don't exactly parallel a traditional A-B-C-D-F grading scale, they come close. School districts generally seek to have their students score either proficient (a grade of B) or advanced (an A) on the tests. Basic is considered keeping up with grade-level curriculum (a grade of C). Students who score in the minimal range, although not often discussed this way by either the state or local school districts, are generally considered in need of remedial intervention (D) or failing (F).

School districts tend to highlight how many of their students, taken together, score in the proficient or advanced categories when the state annually releases its WKCE test data. (Both individual districts and the state, in publicizing standardized test scores, tend to combine students who score proficient and advanced, suggesting they regard the “proficient” standard as the key level of achievement to attain in terms of comparing district scores.) In addition, districts with high numbers of minority students will often promote how many of their students have moved from the minimal or basic category and into the proficient category. Thus, it wasn't surprising to see Superintendent Burmaster trumpet the latest round of 3rd-grade reading scores this year, which showed that 87% of the state's 3rd graders had scored proficient or advanced in the test — the sixth time in the past seven years that Wisconsin school districts had increased the number of 3rd graders scoring at least proficient in the test.¹¹

Far less trumpeting occurred with the release of Wisconsin high school test scores. Fewer 10th graders (74%) scored proficient or advanced on the reading portion of the WKCE test in 2004. Tenth-grade reading scores have failed to see the kind of advances as 3rd-grade reading scores in recent years.¹² In fact, test scores among Wisconsin students decline as students get older. All students in Wisconsin are assessed in five subject areas in the WKCE test in the 4th, 8th and 10th grades. In none of those subject areas do 10th graders score as well as 4th graders. In general, 8th graders do worse on the WKCE test than 4th graders, and 10th graders fare worse than 8th graders.

(The use of the term "score" in this paper refers to the percentage of students whose performance placed them in the proficient or advanced category of the WKCE assessment test. Thus, a district which had 45% of its students score "proficient" on the WKCE test and 35% of its students score "advanced" has a "score" of 80%.)

THE PERFORMANCE GAP IN WISCONSIN HIGH SCHOOLS

An analysis of high school test scores shows there is a wide gap between the state's top-tier high schools and its bottom-tier high schools on student performance on the WKCE 10th-grade test. This study uses school district rank-

ings as determined by the Wisconsin Taxpayers Alliance in its annual *SchoolFacts* report. The WTA, in its annual assessment of school district performance on state standardized tests, ranks schools based on a decile system, in which school districts in the top 10% are grouped together and ranked as a “1,” schools in the second 10% are grouped together and ranked as a “2,” and so on. For purposes on this study, the WTA’s rank for a district’s composite test grade point average was used to determine its place among the top 10% and bottom 10% of districts statewide.¹³

To analyze the learning gap over time, two years were studied and compared — 1996-97 and 2003-04, the first and latest years of comprehensive school data compiled by the WTA. School districts have moved in and out of both the top 10% and bottom 10% tiers in the two years studied. But there are some common characteristics in both lists. In the top 10% tier for both years listed are a number of Milwaukee and Madison suburban districts. In the bottom 10% tier are a number of low-enrollment, rural districts.

A key factor in the achievement gaps between top-tier and bottom-tier districts appears to be a wide gap in the rates of poverty between students from top-tier districts and those from bottom-tier districts, as well as differences in property wealth and income between top-tier and bottom-tier districts.

What is also clear from recent data is that per-student spending levels — the amount of money each district spends to educate a student — appears to have little relationship to the scores achieved by students at either top-tier or bottom-tier districts.

Scores from tests taken during the 2003-04 school year show that the top 10% of Wisconsin’s high schools had, on average, 86.4% of their students score proficient or advanced on the five graded sections of the WKCE 10th-grade test (see accompanying Chart 3). That compared to a statewide average of 71.3% scoring proficient or advanced in 2003-04.

Compare that to the bottom 10% of Wisconsin’s high schools, which had on average only 60.7% of their students scoring proficient or advanced on the five sections of the WKCE test (see accompanying Chart 4).

CHART 1: 1996-97 TOP TEN PERCENT

School District	Average Score	Poverty Rate	Income	Property value per student	Per-student spending	Percent minority
Kohler (3)	70.4	N/A	\$54,450	\$432,708	\$7,869	3.1
Shorewood	69.8	11.2	47,701	368,681	8,996	22.6
Mequon-Thiensville	69.0	3.3	59,157	571,441	7,579	11.5
Hilbert	68.2	10.9	35,624	194,946	6,021	2.1
Whitefish Bay (3)	68.0	N/A	71,480	396,630	8,167	18.7
Verona	67.4	8.9	46,049	258,135	5,940	9.2
Elmbrook	67.4	5.0	71,936	633,330	8,028	11.4
Glendale-Nicolet (1)	66.6	7.2	70,184	1,012,396	11,373	21.6
Middleton-Cross Plains	66.4	8.4	45,884	400,102	6,347	6.9
Rib Lake	66.2	21.3	23,121	129,737	5,648	2.1
Onalaska	65.6	13.2	39,766	231,144	5,941	7.9
Wisconsin Heights	65.6	10.6	36,082	203,715	6,594	2.8
Washington Island (3)	65.4	N/A	29,763	1,033,208	7,859	0.0
New Berlin	65.0	3.9	49,000	451,491	8,517	6.9
Monticello	64.6	15.3	26,521	194,742	5,678	1.1
Cuba City	64.4	20.0	26,589	175,141	6,109	0.0
Madison	64.2	27.9	37,087	396,905	7,940	30.0
Pittsville	64.2	21.2	26,837	150,054	5,356	4.3
Belmont	64.2	13.5	21,234	214,488	6,301	0.7
Cedarburg	64.0	2.0	47,922	399,634	6,864	1.9

CHART 1: 1996-97 TOP TEN PERCENT (CONTINUED)

School District	Average Score	Poverty Rate	Income	Property value per student	Per-student spending	Percent minority
Monona Grove	64.0	6.7	40,881	333,017	6,800	5.2
Port Edwards	64.0	20.3	39,415	245,154	7,331	12.2
Southwestern	64.0	20.7	27,699	155,909	6,772	1.1
Three Lakes	64.0	20.7	28,685	589,960	6,597	1.9
Wabeno	64.0	46.1	21,435	330,881	6,620	17.0
Greendale	63.6	10.0	42,106	416,815	8,393	13.0
Waunakee	63.6	3.5	40,367	277,301	6,029	1.8
DePere	63.6	8.2	44,075	251,952	5,559	2.6
Luxemburg-Casco	63.4	8.1	29,916	211,635	4,762	0.6
Mercer	63.4	28.7	21,458	468,581	6,288	0.0
Hartland-Arrowhead (2) (3)	63.2	N/A	51,765	594,907	6,772	2.1
Mukwanago	63.2	4.4	40,384	258,422	6,215	2.1
South Shore	63.2	52.1	20,968	183,559	7,134	4.3
Eau Claire	63.0	27.2	31,473	223,724	6,363	12.7
Altoona	62.8	24.7	34,277	163,549	6,221	5.0
Average	65.1	15.7	39,466	358,685	6,885	7.0

Notes for Chart 1:

1) Glendale-Nicolet is a united high school district; the Wisconsin Taxpayers Alliance SchoolFacts97 does not list an average income for the district. The average income is derived from averaging the incomes for the three K-8 school districts that directly provide students to Glendale-Nicolet – Foxpoint-Bayside, Glendale-River Hills, and Maple Dale-Indian Hill.

2) Hartland-Arrowhead is a united high school district; the Wisconsin Taxpayers Alliance SchoolFacts97 does not list an average income for the district. The average income is derived from averaging the incomes for the seven K-8 school districts that directly provide students to Hartland-Arrowhead – Hartland-Lakeside, Lake Country, North Lake, Swallow, Richmond, Merton and Stone Bank.

3) Poverty rates for Kohler, Whitefish Bay, Washington Island, and Hartland-Arrowhead are not available for 1996-97. The districts are not figured in the calculations for Chart 1.

CHART 2: 1996-97 BOTTOM TEN PERCENT

School District	Average Score	Poverty Rate	Income	Property value per student	Spending per student	Percent minority
Menominee Indian	36.4	74.0	\$13,458	\$115,843	\$9,417	99.6
Fall River	43.2	7.1	34,207	173,358	6,683	2.4
Milwaukee	43.6	71.0	25,413	144,899	6,561	77.8
Gillett	47.6	21.4	23,666	136,507	5,607	3.2
Crandon	49.2	44.5	22,642	225,644	5,883	24.6
Weston	50.2	25.7	23,938	170,826	6,525	0.0
Hurley	50.6	25.7	23,938	166,232	6,592	2.5
Necedah	51.2	38.3	28,469	225,806	6,504	4.7
Adams-Friendship	52.2	46.0	21,633	246,176	6,078	5.9
Augusta	52.2	39.6	20,467	143,227	6,257	3.5
Flambeau	52.4	52.0	20,890	106,106	7,746	2.7
Juda	52.6	24.5	28,473	235,720	6,879	2.1
Laona	52.6	48.0	22,845	155,552	7,481	8.7
Lena	52.6	20.8	23,846	159,110	6,334	1.1

CHART 2: 1996-97 BOTTOM TEN PERCENT (CONTINUED)

School District	Average Score	Poverty Rate	Income	Property value per student	Spending per student	Percent minority
Winter	52.6	51.9	19,737	235,448	6,875	18.3
Mellen	52.8	35.6	22,356	147,883	7,790	5.0
Beloit	53.0	37.3	35,202	130,959	7,587	37.9
Frederic	53.0	36.9	23,038	135,361	5,733	3.6
Lake Geneva (1)	53.0	7	35,502	1,470,884	7,220	7.9
Turtle Lake	53.2	36.2	23,474	247,901	6,371	5.4
Glidden	53.4	54.9	18,767	128,043	6,371	0.0
LaFarge	53.4	33.3	18,845	116,446	6,935	1.8
North Fond du Lac	53.4	12.2	28,310	178,020	5,943	1.7
Manawa	53.4	18.0	29,862	165,396	5,791	1.0
Shiocton	53.4	15.0	30,132	152,980	5,989	7.0
Webster	53.4	46.1	21,907	471,687	5,964	23.6
Brodhead	53.6	12	29,057	177,249	6,355	1.0
Seneca	53.8	34.1	19,107	132,737	6,410	1.1
Siren	53.8	50.1	20,555	233,046	7,247	20.7
Belleville	54.0	11.8	33,714	226,691	6,517	1.0
Bloomer	54.0	23.3	26,387	157,971	6,576	0.4
Elcho	54.0	42.6	20,923	570,191	7,325	0.2
Hayward	54.0	39.4	23,463	418,903	5,888	25.1
Pepin	54.0	23.5	22,695	204,557	7,199	1.1
Superior	54.0	42.2	26,903	151,535	5,897	8.8
Average	51.7	34.3	24,681	235,968	6,644	11.8
Average without Milwaukee and Menominee	52.4	32.0	24,998	242,368	6,562	7.1

Notes for Chart 2:

1) Lake Geneva is a united high school district; the Wisconsin Taxpayers Alliance SchoolFacts97 does not list an average income for the district. The average income is derived from averaging the incomes for the four elementary and middle school districts that directly provide students to Lake Geneva – Lake Geneva Joint #1, Linn Joint #4, Geneva Joint #4, and Genoa City Joint #4.

CHART 3: 2003-04 TOP TEN PERCENT

School District	Average Score	Poverty Rate	Income per student	Property value	Spending per student	Percent minority
Kohler (3)	95.2	N/A	\$64,995	\$806,021	\$9,172	5.2
Oostburg	93.2	5.8	42,666	414,458	7,493	3.1
Phelps	93.0	37.8	29,092	1,942,856	11,739	4.8
Turtle Lake	89.6	39.8	30,288	624,884	8,997	7
Elmbrook	88.8	6.1	76,008	865,191	9,267	12.9
Deerfield	88.6	13.4	43,923	313,833	9,251	8.1
New Berlin	88.6	5.2	54,141	729,446	10,446	9.5
Sevastopol	88.2	18.3	33,820	1,603,811	9,807	7.0

CHART 3: 2003-04 TOP TEN PERCENT (CONTINUED)

School District	Average Score	Poverty Rate	Income per student	Property value	Spending per student	Percent minority
Chetek	88.0	38.5	30,548	444,273	7,818	2.9
Marathon City	88.0	12.3	39,482	364,527	6,918	3.1
Hartland-Arrowhead (2) (3)	87.6	N/A	69,939	1,669,299	8,217	1.6
Glendale-Nicolet (1)	87.6	6.5	72,293	2,625,512	13,081	26.7
Cedarburg	87.4	2.9	55,987	558,026	8,044	2.4
Owen-Withee	87.4	38.3	25,871	245,155	7,694	3.0
River Falls	87.2	11.3	46,236	292,205	7,809	5.9
Darlington	86.4	15.5	31,127	215,366	7,909	1.3
Dodgeville	86.4	23.7	37,270	408,930	8,753	2.0
Highland	86.0	15.9	34,967	259,532	8,811	1.6
Middleton-Cross Plains	86.0	11.4	60,216	649,081	8,581	11.6
Niagra	86.0	33.1	33,050	241,402	9,283	1.4
Grafton	85.8	5.8	47,128	580,654	8,649	3.3
Mukwanago	85.8	5.2	53,649	457,100	7,919	3.9
Pewaukee	85.8	5.8	55,951	795,967	8,267	7.6
Washington Island (3)	85.4	N/A	39,424	2,517,234	11,242	1.9
DePere	85.0	9.2	48,646	351,048	6,965	4.7
Mequon-Thiensville	84.8	4.3	75,731	928,816	9,256	11.7
Port Washington	84.8	12.1	43,829	402,736	8,377	6.7
McFarland	84.4	5.0	52,604	380,471	7,860	7.3
Weyerhauser	84.0	49.1	27,805	563,821	10,121	1.3
Kettle Moraine	83.6	3.5	66,088	561,917	7,811	3.5
Whitefish Bay (3)	83.6	N/A	92,999	598,326	10,192	18.6
Cedar Grove-Belgium	83.2	10.0	41,363	419,742	7,594	7.3
Waunakee	83.2	3.9	54,198	430,985	7,519	3.2
Shorewood	83.0	9.2	58,983	629,766	10,558	24.9
Belleville	82.8	10.3	43,124	315,495	8,576	3.0
Verona	82.8	16.8	63,353	421,262	8,632	19.4
Cornell	81.2	49.0	27,654	212,709	7,601	2.5
Average	86.4	16.2	48,769	698,429	8,817	6.8

Notes for Chart 3

1) Glendale-Nicolet is a united high school district; the Wisconsin Taxpayers Alliance SchoolFacts04 does not list an average income for the district. The average income is derived from averaging the incomes for the three K-8 school districts that directly provide students to Glendale-Nicolet — Foxpoint-Bayside, Glendale-River Hills, and Maple Dale-Indian Hill.

2) Hartland-Arrowhead is a united high school district; the Wisconsin Taxpayers Alliance SchoolFacts04 does not list an average income for the district. The average income is derived from averaging the incomes for the seven K-8 school districts that directly provide students to Hartland-Arrowhead — Hartland-Lakeside, Lake Country, North Lake, Swallow, Richmond, Merton and Stone Bank.

3) Poverty rates for Kohler, Whitefish Bay, Washington Island, and Hartland-Arrowhead are not available for 2003-04. The districts are not figured in the calculations for Chart 3. For comparison purposes, the districts reported the following poverty rates in 2000-01: Kohler - 8 %; Hartland-Arrowhead - 5.1%; Washington Island - 37.8%. Whitefish Bay did not report a poverty rate for 2000-01.

CHART 4: 2003-04 BOTTOM TEN PERCENT

School District	Average Score	Poverty Rate	Income	Property value per student	Spending per student	Percent minority
Menominee Indian	27.2	81.1	\$16,462	\$220,638	\$14,875	99.8
Milwaukee	31.4	76.8	30,674	215,044	9,076	82.7
Flambeau	50.8	48.0	27,930	238,738	8,967	2.9
Almond-Bancroft	51.2	35.2	35,968	253,991	8,130	12.3
Racine	52.6	36.8	41,955	324,344	8,508	43.7
Laona	53.4	44.7	30,307	383,048	10,779	10.7
Beloit	54.0	50.0	30,747	179,013	9,172	45.0
Gilmantown	54.6	42.9	25,649	244,207	8,911	1.3
Wabeno	55.0	67.9	28,166	874,198	8,269	23.0
Bowler	60.0	50.6	25,811	205,788	9,533	39.8
Norwalk-Ontario	60.0	37.6	30,040	180,982	7,775	6.0
Manawa	60.2	21.6	33,970	276,257	7,920	2.6
Spencer	61.6	17.0	35,206	227,955	8,243	0.6
Adams-Friendship	61.8	56.5	26,794	436,431	8,745	6.9
Wonewoc	61.8	37.3	26,297	388,924	8,087	1.8
Pardeeville	62.6	16.5	37,843	373,647	7,626	3.8
Weston	63.2	24.0	31,029	289,787	9,458	0.0
Westfield	63.6	36.2	34,300	565,093	8,252	6.9
Fennimore	64.4	23.8	30,262	213,584	7,965	2.0
Wautoma	64.4	45.3	30,239	504,805	9,110	16.3
Blair-Taylor	64.6	34.8	27,616	230,195	7,848	2.3
Crandon	64.8	43.0	28,122	540,660	8,368	31.5
Boscobel	65.0	38.1	29,046	201,563	8,449	2.0
Cochrane	65.0	18.6	34,228	340,050	7,961	2.4
Superior	65.4	37.4	33,306	300,081	8,194	9.8
Albany	65.4	15.4	34,176	297,882	8,242	3.9
Cadott	65.6	29.8	30,268	234,905	7,834	1.7
Winter	65.6	47.2	24,942	735,779	9,653	20.0
Argyle	65.8	22.3	29,135	259,207	8,431	3.8
Menasha	66.0	29.5	40,121	324,191	8,218	18.2
Westby	66.0	23.7	32,613	236,680	8,102	2.1
Bangor	66.2	26.2	33,641	254,671	8,026	2.9
Weyauwega	66.6	23.3	35,136	387,105	7,762	2.8
Tri-County Area	67.0	47.7	31,221	336,869	8,997	16.7
Antigo	68.4	40.3	31,860	298,551	8,936	4.0
Stanley-Boyd	69.0	42.8	26,327	224,793	8,147	2.1
Tigerton	69.0	37.2	28,363	244,671	8,594	5.2
Bruce	69.2	51.9	26,958	368,360	8,213	3.5
Average	60.7	38.4	30,703	326,650	8,668	14.3
Average without Milwaukee and Menominee	62.5	36.1	31,100	332,695	8,484	10.0

CHART 5: SUMMARY OF DATA

School District	Average Score	Poverty Rate	Income	Property value per student	Spending per student	Percent minority
1996-97 Top 10 Percent	65.1	15.7	39,466	358,685	6,885	7.0
1996-97 Bottom 10 Percent	51.7	34.3	24,681	235,968	6,644	11.8
1996-97 Bottom 10 Percent without Milwaukee and Menominee Indian	52.4	32.0	24,998	242,368	6,562	7.1
<hr/>						
2003-04 Top 10 Percent	86.4	16.2	48,769	698,429	8,817	6.8
2003-04 Bottom 10 Percent	60.7	38.4	30,703	326,650	8,668	14.3
2003-04 Bottom 10 Percent without Milwaukee and Menominee Indian	62.5	36.1	31,100	332,695	8,484	10.0

Notes on all charts:

1. "Average score" represents the percentage of students in a school district who scored proficient or advanced on the four sections of the WKCE 10th-grade test. The average score figures differ considerably in 1996-97 from 2003-04 because the Wisconsin Department of Public Instruction in 2002 changed the criteria by which student attain the proficiency or advanced levels, and thus changed the scoring ranges for the entire test.
2. "Poverty rate" is the percentage of students in a school district who are eligible through income measurements to receive a free or reduced-price lunch at school.
3. "Income" is the average adjusted gross income reported on income tax returns for residents in a school district. For charts 1 and 2, the figure is from 1995; for charts 3 and 4, the figure is from 2002.
4. "Property value per student" is the equalized value of a school district divided by its enrollment.
5. "Spending per student" is the average education-related expenditures spent per student in a school district. The figure excludes costs unique to individual districts, such as bussing and debt service.
6. "Percent minority" is the percentage of minority students in a school district's enrollment.
7. Source: *SchoolFacts97* and *SchoolFacts04*, published by the Wisconsin Taxpayers Alliance.

A GROWING ACHIEVEMENT GAP

Another key finding from the analysis of WKCE 10th grade test scores is that the achievement gap between top-tier high schools and bottom-tier high schools is growing. Direct comparison of the scores between 1996-97 and 2003-04 is not possible, as state education officials in 2002-03 changed the criteria by which student scores placed them into one of the four achievement levels: advanced, proficient, minimal, and basic.

However, comparisons can be made by looking at the achievement gap in 1996-97 between top-tier and bottom-tier schools, and analyzing how that compares to the gap in 2003-04. That measurement shows that the gap between the top-tier and bottom-tier schools is growing. In 1996-97, top-tier districts had 65.1% of their students score proficient or advanced on the WKCE 10th-grade test. That was 10.7% higher than the state average that year of 58.8%. Bottom-tier districts, meanwhile, had 51.7% of their students score proficient or advanced on the test, or 13.7% lower than the state average.

Compare those differences to the state average to results from the 2003-04 WKCE test. That year, top-tier schools had 86.4% of their students score proficient or advanced on the test. That was 21.3% higher than the state average of 71.2% who scored proficient or advanced. Bottom-tier districts, meanwhile, had 60.7% of their students score proficient or advanced on the test, or 17.3% lower than the state average.

In short, top-tier districts are doing better relative to the state average than in 1996-97. Bottom-tier districts are doing worse.

Poverty and Performance

What factors account for the disparity in test scores? Most academic researchers who study student achievement point toward poverty and race. Indeed, poverty is a strong factor in the performance of Wisconsin high school students. Students at bottom-tier school districts are much more likely to be poor than those at the top-tier high schools. Bottom-tier school districts had an average poverty rate of 38.4% in the 2003-04 school year, compared to an average poverty rate of 16.2% for top-tier districts. The statewide poverty rate for K-12 districts in 2003-04 was 29.2%.

“Poverty rates” is the phrase used by most school district officials to describe the percentage of students participating in the free or reduced-price National School Lunch Program, and are compiled by the WTA in its SchoolFacts report. Poverty rates are listed by district, not individual schools. Poverty rates can vary among individual schools in a district, but school officials in Wisconsin argue poverty rates for high schools are generally reflective, within a few percentage points, of a district’s overall poverty rate.¹⁴

To determine whether poverty rates played a definitive role in test scores, regression analysis was utilized to assess data among all school districts with high schools in the state. The analysis verified that the influence of poverty on student achievement is statistically significant. Subsequently, a portion of the increasing WKCE score gap between students at top-tier districts and bottom-tier districts can be attributed to the increasing gap in poverty levels between these districts. ($R^2=0.466$)

In other words, the analysis showed that poverty levels were a statistically significant factor in the test score gap.

The analysis also showed that poverty was a statistically significant factor in the test score gap even when the state's two lowest-performing districts — the 1,100-student district for the Menominee Indian Reservation in northern Wisconsin, and Milwaukee, which educates roughly one out of every 10 high school students in the state — were removed from the calculation. The two districts had average 10th-grade WKCE scores of 27.2 (Menominee) and 31.4 (Milwaukee), by far the two lowest averages among the state's districts with high schools. In addition, the two districts enroll two of the lowest income student bodies in the states, with more than three-fourths of all students in each district at or below the poverty level. (At Menominee Indian, the poverty rate is 81.1%; in Milwaukee it’s 76.8%.)

The case for excluding bottom-performing Milwaukee and Menominee, and not similarly placed top-performing districts, is this: Milwaukee and Menominee had average scores well below all of their bottom-tier peers in 2003-04. See Chart 2. Top-tier districts were more closely aligned; the top three districts in 2003-04, for instance, scored on average between 93 and 95.2, and the next highest seven districts all scored on average between 88 and 89.6.

State data also indicates that the poverty gap between top-tier and bottom-tier districts is growing. In 2003-04, the state's top-tier districts have average poverty rates of 16.2%, compared to 38.4% for bottom-tier districts. Bottom-tier district poverty rates were 137% higher than top-tier district poverty rates. That's a bigger gap than existed in 1996-97, when top-tier districts in 1996-97 had an average poverty rate of 15.7%, compared to 34.3% for bottom-tier districts. That year, bottom-tier districts had an average poverty rate 118% higher than top-tier districts.

The poverty gap is still growing even if Milwaukee and Menominee Indian are taken out of the equation. In 1996-97, bottom-tier districts — excluding Menominee Indian and Milwaukee — had poverty rates that averaged 32%, compared to the 15.7% poverty rate of top-tier districts. The bottom-tier districts had poverty rates 104% higher than top-tier districts. By 2003-04, bottom-tier districts — again, excluding Menominee Indian and Milwaukee — had average poverty rates of 36.1%, or 123% higher than the top-tier district average poverty rate of 16.2%.

Numerous academic studies have shown a link between poor academic performance and poverty. Many of those studies focus on the relationship between poverty levels and the academic performance of elementary students on standardized tests.

For example, researchers at Clemson University examined the relationship between poverty levels at South Carolina public elementary schools and performance on the Palmetto Achievement Talent Test (PACT), a standardized test given to all elementary students in the state. The research found that data from 1999 and 2000 PACT tests shows that for every two-percentage point increase in a given school's poverty rate (as measured by students eligible for free or reduced-price lunch programs), there was a one-percentage point loss in students meeting state-established standards on the PACT.¹⁵

Researchers at Carnegie Mellon University who examined national test data available from the National Education Longitudinal Study also showed that test scores are linked to poverty rates. However, the Carnegie Mellon study said the impact of poverty on test scores differed among student groups. For example, poverty turns out to be a significant factor in predicting performance on standardized tests among white students, but not for black students. By the same token, the study found no statistically significant difference between the test scores of poor, but high-performing white students and poor, high-performing black students. But the study did find a statistically significant difference between test scores of poor, low-performing white students and poor, low-performing black students.¹⁶

National data also suggest a link between poverty and student performance on standardized test. Data compiled by the National Center for Education Statistics shows that schools with higher concentrations of poverty had lower test scores than schools with lower concentrations of poverty. Schools with poverty rates of more than 40% scored more than 20% lower on standardized tests than schools with poverty rates of no more than 5%.¹⁷

The analysis of test scores in Wisconsin appears to reinforce those studies when it comes to comparing the academic performance of high school students on standardized tests and the poverty rates of the school districts they attend.

Property Wealth, Income and Student Performance

In addition, regression analysis indicates that a district's property wealth is a key indicator of student performance on the 10th-grade tests. The analysis showed that property values were a statistically significant variable in the difference in test scores between the districts. (Coefficient = .0000024)

Students at the bottom-tier high schools are much more likely to come from districts with lower property values than those at top-tier school districts. School districts in the top tier had on average a property value of \$698,429 for every student they enrolled in 2003-04, compared to \$326,650 for every student enrolled in bottom-tier districts. The statewide average property value per student in 2003-04 for K-12 districts was \$394,510. The Wisconsin Department of Revenue calculates an "equalized value" for every school district in the state, as a way to determine how much state aid a district receives. In general, districts with higher property values receive less state aid than districts with lower property values. The state's 426 school districts have varying property values, so one way to compare the relative wealth of one district to another is to calculate its equalized value per student.¹⁸

The regression analysis that examined the relationship between property values and test scores also showed property values were a statistically significant variable even when Menominee Indian and Milwaukee were removed from the equation. Although the two districts have lower property values per student than the state average, they are not the lowest in the state. Several small, rural districts in southern and central Wisconsin have lower property values per student than Menominee Indian and Milwaukee. Menominee's property value per student, in fact, has nearly doubled in the past seven years, a reflection of rising property values in many parts of northern Wisconsin in recent years.

State data also indicates the property value gap between top-tier and bottom-tier districts is growing. In 1996-97, the average property value per student among top-tier districts was \$358,685; compared to \$235,968 for bottom-tier districts. Considered another way, property values per student in 2003-04 in top-tier districts were 114% higher than those in bottom-tier districts. In 1996-97, property values in top-tier districts were 52% higher than in bottom-tier districts.

Additional state data shows that students from bottom-tier high schools are much more likely to come from families that earn less money than those at top-tier high schools. School districts with top-tier high schools in 2003-04 reported adjusted gross incomes of \$48,769; compared to \$30,703 at bottom-tier school districts.¹⁹ A regression analysis that examined the relationship between income and test scores showed that income was a statistically significant variable on the test scores for the 2003-04 school year.

However, the property wealth gap between top-tier and bottom-tier districts is growing at a much greater rate than the income gap. One explanation might be the growth in housing values in Wisconsin relative to the growth in income. Housing values have generally outpaced income gains during the past decade, according to state housing and income data. For example, between 1997 and 2003 (the last year available for statewide data), median housing values have increased 37% statewide, going from \$102,500 to \$140,000.²⁰ State per capita total personal income grew 25% during the same time period, going from \$24,514 in 1997 to \$30,685.²¹

In particular, housing values have grown rapidly in areas of the state that are home to many of the state's top-tier districts. Median housing values in southeastern Wisconsin and south-central Wisconsin (including the counties of Sheboygan, Milwaukee, Waukesha, Ozaukee, and Dane, where nearly two-thirds of the 2003-04 top-tier school districts are located) average more than \$180,000; by far the highest of the six regional areas tracked by the Wisconsin Realtors Association, a statewide trade organization.

Race and Student Performance

In addition, school district racial composition appears to be a statistically significant predictor of student performance on the 10th-grade WKCE test. School districts with top-tier high schools had, on average, lower percentages of minority students (6.8% of the overall student body) than districts with bottom-tier high schools (10% of the overall student body; that figure increases to 14.3% if Milwaukee and Menominee — the two highest minority-enrollment districts in the state — are included) in the 2003-04 school year. A regression analysis showed that for 2003-04 test data, racial composition of a school district played a statistically significant role in the performance of students on the 10th-grade test (even when Milwaukee and Menominee are excluded from the regression analysis). In other words, students in districts with higher percentages of minority students are likely to do worse on the test than students in districts with smaller percentages of minority students.

That's a significant change from the 1996-97 school year. That year, the number of minority students in the top-tier and bottom-tier districts was virtually the same — 7% for top-tier districts, compared to 7.1% for bottom-tier districts (excluding Milwaukee and Menominee.)

(For the 1996-97 school year, bottom-tier districts had an overall minority enrollment of 11.8% if Milwaukee and Menominee are included in the average. Bottom-tier districts in 2003-04, including Milwaukee and Menominee, had an overall minority enrollment of 14.3%, reflecting the higher percentages of minority enrollments in the non-Milwaukee and Menominee bottom-tier districts.)

EXPLODING THE MYTH: SPENDING AND STUDENT PERFORMANCE

Those socioeconomic factors contrast sharply with the impact of school district spending on student performance; socioeconomic factors matter, spending does not. Using data from the Wisconsin Taxpayers Alliance, Chart 5 shows that in 1996-97, per-student spending in low-tier districts averaged \$6,644. This was 3.6% below the \$6,885 average per-student spending in high-tier districts. In 2003-04 spending in low-tier districts actually came closer to spending in high tier districts. The \$8,668 per-student spending in low-tier districts was just 1.7% below the \$8,817 per-student spending in high-tier districts.

(The WTA computes a “comparative expenditure” amount per student. The figure is the amount of “education-related” money a district spends per student. Expenditures on items such as bussing, debt service — including payment for building referendums — and one-time capital expenses unique to each district in the state are not counted in the comparative expenditure calculation. However, the figure does include school district expenditures on such items as administrative expenses, pupil services, and building and grounds upkeep that are not necessarily tied directly to classroom instruction, but support the overall education of students.²²)

The spending data contrasts sharply with the data on student achievement, which has seen the difference between top-tier and bottom-tier school districts grow larger. Spending, on the other hand, has somewhat narrowed between top-tier and bottom-tier districts.

In effect, state spending policies for public K-12 education during the past seven years have increased the average spending per student for both top-tier and bottom-tier students by about a third (from \$6,885 to \$8,817 for top-

tier districts; and \$6,644 to \$8,668 for bottom-tier districts). Spending for all districts throughout the state has also gone up by about a third — from \$6,340 per student in 1996-97 to \$8,409 per student in 2003-04. But the amount of money a district spends per student appears not to make much of a difference when it comes to high school test scores of Wisconsin's top-tier and bottom-tier districts.

The finding parallels a recent study by the Wisconsin Taxpayers Alliance on 4th grade WKCE test results. The WTA study, "Testing Wisconsin Students," examined the relationship between student scores on the 4th grade WKCE tests and school district demographics. The study found that adult educational levels, family income and ethnic backgrounds all were factors on student performance on the WKCE test. But the study also found that student-teacher ratios and school spending levels had little or no significant impact on student test scores.²³

It also parallels findings in national research studies that show little correspondence between school district spending and student achievement on standardized tests.²⁴

Yet per-student school spending appears to be the focus of the next round of educational financing reform efforts in the legislature. Much of the recent debate about how to change the state's system of financing schools centers around what's known in education circles as the "foundation plan," trumpeted by several legislators and educational interest groups. Those who favor a foundation plan argue it would level out school spending by establishing a floor of money per child — or foundation — which every district in the state would receive. Furthermore, proponents of the foundation plan argue it would even out the disparities in per-student spending that they argue have resulted in uneven educational opportunities for Wisconsin students, depending on where they live.²⁵

(The current state system of financing schools is not designed to level out spending levels among school districts. Instead, it's largely designed to equalize tax burdens between citizens who live in property-wealthy areas of the state and those who live in property-poor areas of the state. Put another way, it attempts to minimize the disparities among districts in their capacity to fund education. In essence, the current state system funnels more state aid to property-poor districts, and less to property-rich districts. It's designed to impose the same tax burden on citizens who live in similar-spending districts, regardless of how much property wealth that district may have. So, for example, a citizen who lives in property-poor district A which spends \$8,000 per student would pay the same tax rate as a citizen who lives in property-rich district B that also spends \$8,000 per student. The tax rate paid by the two citizens would remain the same, if the two districts spend the same amount of money, regardless of how much money the districts spend.)

THE ACT ACHIEVEMENT GAP

Other disparities in student achievement reveal themselves when comparing the state's top-tier and bottom-tier high schools. Take ACT scores, for instance.

Wisconsin has long prided itself on the scores its students attain on the college-entrance exam. Wisconsin students have traditionally scored well on the test, compared to students in other states, usually ranking first in the country. But the Wisconsin ACT achievement comes with several caveats. For starters, it's the primary college-entrance exam for only about half the country. Students in states on the East and West coasts — including heavily populated states like New York and California — tend to take the SAT test, in part because colleges and universities there often require the SAT test as part of their entrance requirements.

Secondly, the average Wisconsin ACT test score has increased only slightly in the past decade, according to state-by-state reports filed by the testing company. In 1994, for instance, Wisconsin students averaged 21.9 on the test (on a scale from 0 to 36). Ten years later, the average score in 2004 had increased to 22.2.

Finally, not all Wisconsin high school students take the ACT test. A few states, notably Illinois, have moved in recent years to require all high school students to take the ACT. But in Wisconsin in 2003, only 57% of the state's high school seniors took the test.²⁶

Not surprisingly, students at Wisconsin's top-tier high schools perform much better on the ACT test than those at bottom-tier high schools. Students at top-tier high schools in 2003 scored an average of 22.8 on the test, compared to 21.2 for students in bottom-tier high schools. The state average in 2003 was 22.2.²⁷ And the achievement gap between top-tier and bottom-tier high schools on the ACT test is slowly growing.²⁸

Perhaps more critically, students at top-tier high schools are more likely to take the ACT test than those at bottom-tier high schools. Nearly two-thirds (65.9%) of all students at top-tier high schools took the ACT test in 2003, compared to less than half (48%) of the students at bottom-tier high schools.

A comparison of a few top-tier and bottom-tier schools reflects some of the disparity of the ACT experience at Wisconsin high schools. In Whitefish Bay, for instance, not only do the students score well on the ACT test (an average score of 25.9 in 2003), but most of the school's seniors (80.3%) took the test. The same holds true in other top-tier districts like Kohler, Elmbrook, Glendale-Nicolet, Middleton-Cross Plains, Mequon-Thiensville, and Shorewood — all of which averaged a score of 24 or better on the ACT and had three-fourths or more of their seniors take the test.

Contrast that to the experience of bottom-tier high school Flambeau, in northern Wisconsin, where students averaged a solid 23 on the ACT in 2003. But only 38% of the school's seniors took the test, well below the state average. More typical results among bottom-tier schools can be found in districts such as Beloit, Wabeno, Adams-Friendship, Wonewoc, Crandon, Albany and Winter — all of which had average ACT scores of 21.2 (a full point below the state average) or lower, and had fewer than half of their seniors take the test.

Numerous factors may account for why more students at one high school take the ACT test than those at another high school. Family and community expectations, high school curriculums, economics — all play a role. But it's clear that numerous top-tier high schools foster an environment in which taking the ACT test, and doing well on it, is considered the norm. At Hartland-Arrowhead High School, for instance, students starting in the 9th grade take a series of “pre-tests” developed by either the ACT or SAT to prepare them for what they will face when they encounter the ACT test in their senior year. Students at Hartland-Arrowhead scored an average of 23.8 on the ACT in 2004, one of the highest averages in the state.

“It helps with what the ACT folks call “test witness,” just giving kids an opportunity to sample a test that's the same as the ACT,” said Martin Van Hule, a principal at Pewaukee High School, another top-tier high school.²⁹

In addition, it's clear that success on the ACT can be traced back to the rigor and breadth of a high school's curriculum. According to ACT statistics, students who take what's known as “ACT core courses” score much better on the test than those that don't. The ACT defines core courses as: four years of English; three or more years of mathematics; three or more years of science; and three or more years of social sciences. The core course recommendations go beyond Wisconsin's high school graduation requirements, which mandate four years of English and three years of social studies, but only two years each of math and science. (Wisconsin requires nearly as many credit years — 1.5 — in physical education as it does in math and science.)

According to the ACT, Wisconsin students who reported taking the recommended core course curriculum scored an average of 22.9 on the ACT test in 2003. That compares to an average score of 20.9 for Wisconsin students who did not take the recommended core course curriculum. Significant numbers of Wisconsin students who take the ACT are among those who fail to take the core courses; the ACT reported that more than a third (35%) of the nearly 46,000 Wisconsin high school students who took the ACT test in 2003-04 did not complete the core course sequence.

The “core course” gap has held steady for the past 10 years, according to the ACT, with core course students scoring at least two points higher on the test than non-core course students. The Wisconsin experience mirrors national trends, where core course students averaged 21.8 on the ACT test in 2003, compared to 19.3 for non-core course students.

CHART 6: STATEWIDE WKCE TEST RESULTS

4th grade	2003-04	2004-05
Reading	82	82
Language Arts	79	79
Math	74	72
Science	80	78
Social Studies	90	91
8th grade		
Reading	79	85
Language Arts	67	65
Math	65	73
Science	69	73
Social Studies	84	83
10th grade		
Reading	69	74
Language Arts	67	69
Math	69	72
Science	70	70
Social Studies	73	73

Notes on chart:

1) Numbers represent the percentage of students in Wisconsin who scored proficient or advanced on the WKCE test. The test measures aptitude in five subject areas: reading, language arts, mathematics, science and social studies.

2) Source: Wisconsin Department of Public Instruction.

THE ELEMENTARY SCHOOL-HIGH SCHOOL GAP

Finally, one other kind of achievement gap rears its head when assessing the 10th-grade WKCE test scores. Students tend to perform worse on the state's standardized tests as they get older (see accompanying Chart 6).

This analysis did not compile an assessment of top-performing and bottom-performing school districts for the 4th-grade and 8th-grade WKCE standardized tests. But it's clear from statewide test data that fewer students are reaching the achievement threshold — proficient or advanced competency — desired by local and state education officials.

Take the subject of social studies. On the latest round of WKCE test results, 91% of the state's 4th-grade students tested proficient or advanced on the test. That figure drops to 83% for the state's 8th-graders, and 73% for 10th-graders.

In none of the five subject areas assessed by the WKCE test are the state's 10th-graders performing better than 4th-grade students. In three of the five subject areas — language arts, science and social studies — 4th-graders outperform their 8th-grade students. And those 8th-graders also perform better than 10th-grade students in all but one of the subject areas

POLICY CONSIDERATIONS

One of the more vexing issues for public policy makers in education is how to improve student achievement. Wisconsin has adopted a number of measures in the recent past — adoption of state academic standards in core academic areas like mathematics and social studies, subsidizing smaller class sizes at the elementary grades at targeted districts, and most notably the Milwaukee school voucher program — aimed at improving student academic performance.

When it comes to high school academic performance, the analysis of top-tier and bottom-tier districts suggests that spending has little to do with how well, or poorly, students perform on the state's lone standardized test at the high school level. Deeply rooted socioeconomic factors — poverty, property wealth, income and race — play larger roles in student academic performance at the high school level.

Still, state policy makers may want to consider several options in an attempt to boost the academic performance of high school students, and close the achievement gap between top-tier and bottom-tier districts. Among them:

- Boosting high school graduation requirements. Wisconsin currently requires nearly as many credits in physical education — 1.5 (1 being a year's worth of coursework) — as it does in math and science — two years for each subject — to graduate from high school. State statistics from 2003-04 show that less than a third of the state's districts with high schools (113) required their students to take more than two years of credits in mathematics; barely a fifth of them (80) required their students to take more than two years of science. More than half of the states (28) require three years of math, and 21 states require three years of science. At a time when national education, civic and business leaders³⁰ say the United States risks losing its technical education edge to countries like China and India, Wisconsin may want to consider strengthening its graduation requirements in math and science.³¹
- Continued support for tougher admissions standards to University of Wisconsin campuses. Several UW campuses—notably UW-Madison, but others such as UW-LaCrosse, UW-Stevens Point, and UW-Eau Claire—have become in recent years more selective in their admissions criteria for Wisconsin students. In addition, the average ACT score of entering UW freshmen has gone from 22.6 in 1994 to 23.2 in 2004,³² at a time when the national ACT average has gone from 20.8 to 20.9. One corresponding impact—less need for remedial classwork when high school students make the transition to college. For example, the number of UW students needing remedial work in math has been cut nearly in half in recent years, going from 20.6% in 1990-91 to 11.7% in 2001-02. Students needing remedial work in English has also gone down over the same time.³³ UW officials say their tougher admissions standards appear to be playing an incentive role for Wisconsin high schools to better prepare their students for the rigors of college coursework.
- Increase the emphasis in high school on students going to college. Less than half (48.4%) of Wisconsin's high school students in 2002-03 said they planned to attend a four-year college after graduation, a percent-

age that has remained stagnant since 1996-97. National civic and business leaders argue the United States has to produce more college-educated students to compete in an increasingly educated world.³⁴ Recent high school student surveys also suggest students want more demanding classes, and would work harder in school if challenged academically more often.³⁵

- Reconsider implementation of some form of a high school graduation test. Wisconsin did pass legislation requiring a high school graduation test, to debut in the 2002-03 school year, but the test was repealed in 2003. The test requirement was repealed over continued political objections to how it would be administered, as well as increasing costs of implementing the test. Twenty states now require a high school graduation exam, and four more will phase them in by 2006.³⁶ Although high school graduation tests generate considerable controversy, both nationally and in Wisconsin, there is some evidence that states requiring such tests "experience significantly higher student achievement and a larger proportion of students attending college. These states also have smaller achievement gaps between low-income and higher-income students."³⁷
- Create incentives for students to perform better on the 10th grade WKCE test. Students report there is little incentive to do well on the test, prompting one Dane County school district to require students to take a remedial class or pass a different test in similar subject areas if they do not score proficient or advanced on the test.³⁸

Author's Note:

The author is indebted to the following for their help and information in the preparation of this paper: Chad Cotti, a fellow at the Wisconsin Policy Research Institute, for the regression analysis of test scores and various socioeconomic factors influencing test scores; Bill Breisch, director of curriculum and instruction, Monona Grove School District; and Ed O'Connor, school psychologist and data administrator, Monona Grove School District, for their insights into student achievement and the use of data in analyzing scores on standardized tests. All observations, opinions and conclusions are those of the author.

APPENDIX : NOTES REGARDING USE OF REGRESSION ANALYSIS:

Ordinary least squares regression analysis techniques were used to estimate the effects of certain demographic characteristics on Wisconsin school district academic performance. A model of the following form was estimated:

$$\text{Score}_i = b_0 + b_1 * \text{Spending Per Student} + b_2 * \text{Average Income} + b_3 * \text{EPV} + b_4 * \text{Percent Free Lunch} + b_5 * \text{Percent Minority} + e_i$$

where Score_i is the average achievement score on the 2004 10th grade Wisconsin Knowledge and Concept Exam (WKCE) for school district i . The model's intercept term is b_0 . Terms b_1 through b_5 represent parameter estimates and the error term is e_i . The following school district level control variables were selected: spending per student, average gross income per return, equivalent property value (EPV), percent minority, and percent participating in the free lunch program. Data on these variables covers every school district in Wisconsin that provides education at the high school level and was provided by the Wisconsin Taxpayers Alliance. Descriptive statistics appear in Table A.

TABLE A: DESCRIPTIVE STATISTICS

Variable	Mean	Standard Deviation	Minimum	Maximum
Achievement Scores	77.05	8.08	28.00	95.20
Spending Per Student	8,233	886	6,594	13,594
Average Income	38,233	9320	16,029	104,209
Equivalent Property Value	467,951	372,959	162,877	4,718,352
Percent Minority	7.47	10.11	0.00	99.78
Percent Free Lunch	25.58	13.33	0.00	81.25

Empirical Results

Ordinary least squares regression was used to estimate the model. The R^2 of the model is 0.4664, suggesting that over 46% of the variation in school district achievement scores are explained by the controlled variables discussed above. Table B reports the results from the regression analysis. All variables used in the estimation are significant except for spending per student. These findings indicate that the socioeconomic characteristics of the community that a school district is located in has a greater impact on achievement scores than per-student spending. Further, these results are consistent with several published research papers, which have studied the returns to school spending¹.

TABLE B: REGRESSION ANALYSIS RESULTS (N=367, R2=0.466)

Variable	Parameter Estimate	Standard Error	Z-Score
Intercept	72.66**	4.15	17.50
Spending Per Student	.00029	.00043	0.67
Average Income	.00020**	.00005	3.91
Equivalent Property Value	.0000024**	.0000009	2.56
Percent Minority	-.31995**	.03648	-8.77
Percent Free Lunch	-.17442**	.00043	-4.48

Table Notes: **= significant at the 1% level

NOTES

1. "Bush promotes plan for high school tests," Nov. 9, 2004, *Education Week*.
2. "Push to reform high school gaining," July 15, 2005, www.stateline.org.
3. "Burmester convenes high school task force," Feb. 21, 2005, Wisconsin Department of Public Instruction media release.
4. "Community input sought on transformation of Highline high schools," June 8, 2005, Highline (Wash.) Schools Foundation for Excellence media release.
5. "A Call to Action," April 11, 2005, National High School Alliance media release (see www.hsalliance.org).
6. "States must beef up diploma demands, study maintains," Feb. 11, 2004, *Education Week*.
7. "The Lesson," May 2005, *Milwaukee Magazine*.
8. "Dane County Graduates: Top 4 percent, Class of 2005," May 25, 2005, published jointly by *Wisconsin State Journal* and (Madison) *Capital Times*.
9. "Minnesota matches Wisconsin ACT: Two states tie for test's bragging rights," Aug. 18, 2004, (Madison) *Capital Times*.
10. A total of 57 percent of Wisconsin's high school seniors took the ACT test in 2003, pg. IV, *SchoolFacts04*, Wisconsin Taxpayers Alliance.
11. "Third grade reading scores improve statewide; 71% of MPS students proficient or better," July 13, 2005, *Milwaukee Journal Sentinel*.
12. "Education gains are lost on high school students," July 15, 2005, *Milwaukee Journal Sentinel*.
13. See pages A 1-2, *SchoolFacts04*, published by WTA.
14. See poverty rates, listed as "% Free Lunch" in tables for individual districts, in *SchoolFacts04* and *SchoolFacts97*, WTA.
15. See, "Understanding Poor Performance: Palmetto Achievement Challenge Test (PACT) Scores and Poverty," Gregory Hawkins, assistant director and research coordinator, Jim Self Center on the Future, Strom Thurmond Institute, Clemson University.
16. See, "Why do black kids fail: The effects of poverty on racial gaps in test scores," Susan McElroy, Carnegie Mellon University; www.aera.net/grantsprogram/abstract_list/Abstracts/Abs-RG-00032966.html
17. See, "Academic Achievement of 10th Graders," pp. 28-29, National Center for Education Statistics publication: <http://nces.ed.gov/pubs/96184ch2.pdf>
18. *SchoolFacts04*, page A-3, WTA. See, "equalized value per student" charts in *SchoolFacts04* and *SchoolFacts97*.
19. Adjusted gross income tabulated for individual school districts, *SchoolFacts04*.
20. See data on statewide housing values compiled by the Wisconsin Realtors Association at: www.wra.org/consumer_resources/about_Wisconsin/housingstats.asp
21. See State Data Center on "social, economic and housing characteristics" at the State of Wisconsin Department of Administration website at: www.doa.state.wi.us.
22. See page A-4, *SchoolFacts04*, WTA. Milwaukee and Menominee are included in all comparisons of spending per student. In the comparisons of test scores, poverty rates and minority enrollment, Milwaukee and Menominee are excluded from some of the comparison — and regression analyses — because their performance and demographics are considerably different than many of the other bottom-tier districts. However, when it comes to spending per student, Milwaukee and Menominee are in line with — and in Menominee's case, well above — spending by other bottom-tier districts.
23. See, "Testing Wisconsin Students," WTA, Sept. 23, 2004.
24. See, Eric A. Hanushek, "The Economics of Schooling: Production and Efficiency in Public Schools" *Journal of Economic Literature*, Sept 86, Vol. 24 Issue 3; and Eric A. Hanushek (1997) "Assessing the Effects of School Resources on Student Performance: An Update." *Educational Evaluation and Policy Analysis*, vol. 19 (2), pp. 141-164.
25. See, "Doyle rethinks school funding," Jan. 12, 2003, *Milwaukee Journal Sentinel* for a general overview of a foundation plan promoted by state Sen. Michael Ellis, R-Neenah. See "Group proposes base dollar amount per student to revamp school funding," Jan. 16, 2003, *Milwaukee Journal Sentinel*, for an alternative foundation plan.
26. See Note #10.
27. See charts for ACT scores for individual school districts, *SchoolFacts04* and *SchoolFacts97*, WTA.

28. The gap between ACT scores for top-tier and bottom-tier high schools has increased slightly since 1995-96. Top-tier high schools in 1995-96 averaged 22.7 on the test, compared to 21.3 for bottom-tier schools. Considered another way, top-tier high schools on average scored 6.5% higher on the ACT test in 1995-96 than bottom-tier schools; they scored on average 7.5% higher in the 2002-03 school year.
29. "County scores high on ACTs," Aug. 18, 2004, *Milwaukee Journal Sentinel*.
30. See, January 2005 Wisconsin Legislative Fiscal Bureau paper, "Pupil Assessment," as well as "CEOs: U.S. lagging in math and science," July 27, 2005 *Capital Times* (Madison).
31. Governor James Doyle said he is open to the idea of adding a third year of math and science to the state's high school graduation requirements. See Feb. 28, 2005 *Green Bay Press Gazette*.
32. See, "The New Freshman Class: Fall 2004," UW System informational memo, May 2005.
33. See, Frank Goldberg, associate vice president in the UW System Office of Policy Analysis and Research, "Remedial Education in the UW System," June 2003.
34. See, for one example, "Tapping America's Potential," published by the Business Roundtable, July 2005, an initiative that seeks to double the number of bachelor's degrees in science, technology, mathematics and engineering by 2015, in part by urging high schools to adopt more rigorous curriculums.
35. See "Students Say High Schools Let Them Down," July 16, 2005, *New York Times*.
36. See, "High school exit exams on the rise," Stateline.org, May 23, 2005.
37. See, "Improving High School: A Strategic Approach," Elizabeth Hill, State of California Legislative Analyst's Office, May 2005.
38. See "Raising results by raising stakes," May 28, 2005, *Wisconsin State Journal*.

ABOUT THE INSTITUTE

The **Wisconsin Policy Research Institute** is a not-for-profit institute established to study public-policy issues affecting the state of Wisconsin.

Under the new federalism, government policy increasingly is made at the state and local levels. These public-policy decisions affect the life of every citizen in the state. Our goal is to provide nonpartisan research on key issues affecting Wisconsinites, so that their elected representatives can make informed decisions to improve the quality of life and future of the state.

Our major priority is to increase the accountability of Wisconsin's government. State and local governments must be responsive to the citizenry, both in terms of the programs they devise and the tax money they spend. Accountability should apply in every area to which the state devotes the public's funds.

The Institute's agenda encompasses the following issues: education, welfare and social services, criminal justice, taxes and spending, and economic development.

We believe that the views of the citizens of Wisconsin should guide the decisions of government officials. To help accomplish this, we also conduct regular public-opinion polls that are designed to inform public officials about how the citizenry views major statewide issues. These polls are disseminated through the media and are made available to the general public and the legislative and executive branches of state government. It is essential that elected officials remember that all of the programs they create and all of the money they spend comes from the citizens of Wisconsin and is made available through their taxes. Public policy should reflect the real needs and concerns of all of the citizens of the state and not those of specific special-interest groups.