



# La Follette Policy Report

Robert M. La Follette School of Public Affairs

Volume 17, Number 1, Spring-Summer 2007

## Director's Perspective

### La Follette School focuses on education

Access to education is a priority that most societies have in common. The more educated a people, the more benefits a society accrues. Individuals with more education earn more, generally are healthier, and have more life options available to them.

The challenge is how governments and societies can structure and fund educational systems that guarantee access to every qualified would-be student and provide high quality, challenging education at a level appropriate for each child. Across developed countries, the public sector allocates an average of more than 5 percent of gross domestic product to education, 3.6 percent of this to primary and secondary schooling.

In the United States, the latest data (2004-05) on public expenditures for elementary and secondary

*continued on page 20*

### In This Issue

How Successful are Research Universities in Enrolling Low-Income Students? .....	1
Financing Schools in the New South Africa .....	3
The Performance of Charter Schools in Wisconsin .....	11

## How Successful are Research Universities in Enrolling Low-Income Students?

**Matthew P. Steinberg, Patrizio Piraino, and Robert Haveman**

*Matthew Steinberg is a graduate student at the La Follette School of Public Affairs, University of Wisconsin-Madison. Patrizio Piraino is a graduate student at the University of Siena, Italy, and a visiting scholar at the Institute for Research on Poverty, University of Wisconsin-Madison. Robert Haveman is professor emeritus of public affairs and economics, University of Wisconsin-Madison. Financial support for the paper on which this article is based comes from a grant from the Mellon Foundation. A more extensive version of this article is available online as La Follette School Working Paper No. 2007-018 at [www.lafollette.wisc.edu/publications/workingpapers](http://www.lafollette.wisc.edu/publications/workingpapers).*

Concerns regarding access to and economic diversity in U.S. higher education are increasingly on the public policy agenda. Although the combination of increasing tuition and decreasing state support has made this issue most pressing for public institutions, qualified students from middle and lower income families are facing a financial squeeze that limits their access to public and private higher education. Indeed, evidence shows that the distribution of higher education opportunities in the United States has become increasingly concentrated on students from families with high income and wealth.

The private and social benefits of a college education are well-documented. For the individual, additional educational attainment leads to higher earnings and other nonmarketed benefits, including improved consumer choices and better health. At the societal level, additional investment in higher education is associated with greater community involvement, reduced unemployment, reduced crime, and increased charitable contributions of time and money. These social and private benefits, in turn, are of value to other important institutions, such as governments at all levels. Because of these gains, tax revenues are increased, and expenditures on welfare and assistance programs are reduced.

Traditionally, the goal of expanding access to college for youths from middle and lower income families is high on the agenda of higher education policymakers. However, limited availability of data regarding the income distribution of students in specific colleges and universities has resulted in

relatively little information about the participation rate of low-income students across U.S. higher education institutions.

This article addresses this information gap by focusing on the prevalence of undergraduate students supported by Pell Grants, a universal grant targeted to low-income students—as a measure of the economic diversity of colleges and universities. While the variation in the prevalence of Pell Grant recipients has been well documented, we are not aware of studies that have provided an analytical framework in which to interpret this value as an indicator of the extent of economic diversity among U.S. higher education institutions.

This analysis treats such needs-based financial assistance as an indicator of the prevalence of low-income students attending institutions of higher education across the United States. It identifies independent institution- and state-specific factors potentially related to the prevalence of Pell recipients among U.S. research universities. The findings show that these factors explain a substantial proportion of the variation in the prevalence of Pell Grant recipients. This study uses these estimated relationships to assess the success of public and private institutions in attaining economic diversity goals.

## Trends in Higher Education Finance

Although a more educated citizenry benefits individuals and the society, recent trends in the cost of and the financing of higher education have impeded the realization of these benefits. In 2003-04, a college student attending a public four-year institution paid an average of \$4,694 in tuition and fees. This compares to inflation-adjusted costs of \$2,074 in 1983-84, and \$3,188 in 1993-94. As the average tuition at state universities has more than doubled during the last 20 years, state and local appropriations have contributed a much smaller share of total revenue provided to public institutions. In 1980-81, approximately half the revenues of public institutions came from state and local appropriations. However, by 1999-2000, this proportion declined to nearly one-third.

While providing financial support to public universities, states also give aid—approximately \$7.3 billion in 2003-04—directly to individual students who attend public or private in-state universities. However, this state aid has shifted away from need-based grants. Ninety percent of state aid was in the form of need-based grants in 1993-94. This dropped to 74 percent in the succeeding decade. While total need-based grant aid grew by 103 percent in the

same time period, non-need grant aid increased by 532 percent. These trends have implications for the opportunities of low-income students.

Federal aid has followed the same path, shifting away from need-based assistance. Since the early 1980s, loans have become an increasingly larger share of federal aid for higher education. By 2002-03, loans made up nearly 70 percent of federal student financial aid.

## The Pell Grant Program

The federal Pell Grant remains the one form of grant aid guaranteed to low-income students. With few exceptions, a Pell Grant in some amount is guaranteed to dependent students from families with household income less than \$40,000. Indeed, 84 percent of

*continued on page 15*

### The Robert M. La Follette School of Public Affairs

University of Wisconsin–Madison  
1225 Observatory Drive  
Madison, WI 53706  
(608) 262-3581  
Fax: (608) 265-3233  
policyreport@lafollette.wisc.edu  
www.lafollette.wisc.edu

#### Staff

Barbara Wolfe . . . . . Director  
Karen Holden . . . . . Associate Director  
Craig Allan . . . . . Information Systems Manager  
Karen Faster . . . . . Publications Director  
Andrew Lambert . . . . . Information Technology Specialist  
Gregory Lynch . . . . . Faculty Assistant  
Mary Mead . . . . . Student Services  
Bridget Pirsch . . . . . Outreach Specialist  
Barbara Prigge . . . . . Financial Specialist  
Tim Reckinger . . . . . Payroll and Benefits Specialist  
Andrew Reschovsky . . . . . Policy Report Editor  
Kari Reynolds . . . . . Administrator  
Terry Shelton . . . . . Outreach Director  
Mary Treleven . . . . . Student Services Coordinator

#### Centers of the La Follette School

Center for Public Policy and the Status of Women  
Center for Research on the Wisconsin Economy  
Center for Wisconsin State, Local, and Tribal Governance

#### The La Follette School has cooperative relationships with these units at the University of Wisconsin–Madison:

Center for World Affairs and the Global Economy  
Department of Urban and Regional Planning  
Nelson Institute for Environmental Studies  
Institute for Research on Poverty  
International Institute  
Law School  
Wisconsin Center for Education Research

The *La Follette Policy Report* is a semiannual publication of the Robert M. La Follette School of Public Affairs. The school is a nonpartisan teaching and research department of the College of Letters and Science at the University of Wisconsin–Madison. The school takes no stand on policy issues; opinions expressed in these pages reflect the views of individual researchers and authors.



© 2007 Board of Regents of the University of  
Wisconsin System and the Robert M. La Follette  
School of Public Affairs

# Financing Schools in the New South Africa

**Andrew Reschovsky**

*Andrew Reschovsky is editor of the Policy Report and a professor of public affairs and applied economics at the La Follette School of Public Affairs. A more extensive version of this paper appears in the February 2006 issue of the journal Comparative Education Review, volume 50, number 1.*

Race was the dominant fact in explaining all aspects of life in apartheid South Africa. In April 1994, with the election of Nelson Mandela as president, the new, nonracial government committed to providing access to a wide range of public services, including education, to all South Africans, regardless of race or economic circumstance. Public education in South Africa has been transformed from an amalgam of separate and highly unequal educational systems, defined in terms of the race and residence of students, into a unified system based on the principle of providing equal access to high quality education to all South Africans.

Although funding and resource disparities in the public education system have been dramatically reduced since 1994, significant inequalities remain. While some schools have highly qualified teachers and a full range of facilities, other schools rely on unqualified teachers, and lack basic facilities and supplies.

This article traces the changes in education finance since 1994, especially the decentralization of financial responsibility for primary and secondary education to nine new provincial governments. I assess the success of the government in meeting its constitutional mandate to provide all South Africans with a “basic education,” paying particular attention to the challenges of allocating adequate resources to schools that serve the nation’s historically disadvantaged students, and finding an appropriate mix of school fees paid by parents and public funds.

## Financing Public Education During the Apartheid Era

Long before (and certainly after) the establishment of the apartheid government in 1949, whites in South Africa enjoyed democratic institutions of government, a well-developed system of public infrastructure, and a full array of public services generally on par with governmental services delivered in the developed nations of the world. In stark contrast, blacks had very few economic and political rights, benefited from no effective democratic representation in government affairs, and had very limited access to government-provided public services. For

those classified as Asians and colored, the reality was somewhere in between.

Even before apartheid, government policy physically separated the races. Although whites made up less than 15 percent of the population, 87 percent of South Africa’s land area during apartheid was reserved for them. Most whites lived in urban areas in one of four provinces, while most blacks were relegated to homelands in the most inhospitable portions of the country. Large urban centers, the exclusive domain of whites, were generally surrounded by “townships” that housed black workers whose families were forced to remain in the homelands.

Between 1935 and 1993, the average white public school pupil-teacher ratio ranged from the lower 20s to the high teens. It was just below 20 in 1993. Black public school pupils faced consistently higher pupil-teacher ratios, climbing from around 40 in 1930-55 to 70 in the mid 1950s to mid-1960s, then dropping to 50-60 through 1993. In addition, real expenditures per white pupil far exceeded expenditures per black pupil every year. For example, between 1983 and 1993, spending per pupil was nearly seven times greater for whites than for blacks. These spending gaps translated into dramatic disparities in teacher salaries, facilities, and supplies.

Given these contrasts, large racial differences in educational attainment are not surprising. Among South Africans who were 30 years old in 1993, whites on average had completed slightly more than 12 years of education, while the average black had completed eight years. Among 45-year-olds, whites averaged 11 years of schooling and blacks less than six years. According to the South African Department of Education, 66 percent of youth and adults between 16 and 34 were functionally illiterate in 1990, with most of the illiteracy found among blacks.

## The Challenge of Providing Educational Opportunities to All

With the end of apartheid, a major challenge facing the new government was to convert separate and highly unequal race-based education systems into a single system of public education that provided equal

opportunities to all South Africans. The constitution adopted in October 1996 established a framework of a public education system that guarantees the right “to basic education, including adult basic education; and to further education, which the state, through reasonable measures, must make progressively available and accessible.” The constitution specifies that the national and provincial governments are to share responsibility for basic education functions.

Given constitutional restrictions on the use of broad-based taxes, province-raised revenues account for, on average, less than 4 percent of total provincial revenues. Although the restrictions on the ability of provinces to raise revenues reduce their ability to finance discretionary spending, this restriction limits the inequalities that would result because of disparities in provinces’ fiscal capacities. The consequence of making provinces responsible for a wide range of public services while severely restricting their ability to raise their own revenues is the creation of a large fiscal gap between the amount of money provinces need to fulfill their fiscal responsibilities and the amount of revenue they can raise.

The South African constitution implicitly recognizes the fiscal gap by establishing an intergovernmental system, known as the “equitable share,” that calls for distribution of a portion of nationally raised revenues to provinces and local governments. The constitution also states that each province’s equitable share allocation should be sufficient to “enable it to provide basic services and perform the functions allocated to it.” Each year the Parliament must enact a division-of-revenues bill that specifies the vertical split of the equitable share among the three levels of government (national, provincial, and local) and the horizontal split among the nine provinces. In practice, the Parliament generally accepts the allocations the National Treasury proposes.

## **Education Finance in Post-Apartheid South Africa**

The constitution gives the nine provincial governments the responsibility of providing education. Although the democratically elected provincial governments each have a substantial amount of autonomy in administering educational policy, the

constitution’s principle of cooperative governance requires that provincial decisions must be made within the context of educational policy as determined by the national government in consultation with the provinces. In practice, this perhaps uniquely South African system of federalism means that while the national government provides most provincial government revenues through an unconditional grant, provincial governments must utilize fiscal resources in ways consistent with national norms and standards.

Although provincial departments of education are responsible for the provision of education, their fiscal

autonomy is constrained. Public employees in South Africa, including teachers and other school personnel, belong to a single national civil service system and one of several national unions, and their salaries are set at the national level. In recent years, personnel remuneration has accounted for about 90 percent of provincial education budgets,

which makes provinces’ discretionary budgets for education quite limited. Fiscal discretion is further limited by the National Norms and Standards for School Funding, which requires that provincial departments allocate funds for books and other school supplies in a way that favors the neediest students (defined in terms of the degree of poverty in the communities in which schools are located).

Although the National Treasury formula to determine each province’s annual equitable share allocation has been revised several times, its basic structure, established in fiscal year 1997-98, has remained unchanged. The formula comprises six components. Fifty-one percent of the 135 billion rand distributed in 2005-06 through the provincial equitable share was allocated through the education component of the formula. The division of the education component among the provinces is made more or less on a per-pupil basis, according to a formula that considers each province’s primary and secondary school enrollment and its population ages 5 to 17 years.

Although there is a separate educational component to the provincial equitable share formula as specified in the constitution, equitable share allocations are to be treated as unconditional grants. This fiscal autonomy, however, is tempered by the requirement that all South Africans receive “basic” public education as government standards define it.

---

**Although provincial departments  
of education are responsible  
for the provision of education,  
their fiscal autonomy is constrained.  
Provincial departments must allocate  
funds for books and supplies in a way  
that favors the neediest students.**

---

## Reducing Inequities in the Funding of Education

Since 1994, total spending on primary and secondary education has grown from 31.8 billion to 60.3 billion rand in fiscal year 2003-04. Per-pupil expenditures rose from 2,222 rand in 1994-95 to 5,011 rand in 2003-4, representing a real (inflation-adjusted) annual increase in per learner expenditures of about 12 percent.

Given the government's commitment to redress inequities, differences in expenditures per pupil across the nine provinces have been shrinking. In 1995-96, the two provinces with the highest poverty rates—Eastern Cape and Limpopo (then called Northern Province)—had the lowest per-pupil expenditures, while the three provinces with the lowest poverty rates and the lowest share of black residents—Gauteng, Northern Cape, and Western Cape—had the highest levels of per-pupil spending. Although a decade later the poorest provinces still had lower levels of spending per pupil than the richest provinces, the differences in spending levels have been dramatically reduced. The differences in per-

pupil expenditures, as measured by the coefficient of variation, have been reduced by about two-thirds.

The last column of Table 1 shows that between fiscal years 1996 and 2006, per-pupil expenditures rose by more than 130 percent in Eastern Cape, the Free State, Limpopo, Mpumalanga, and the North West provinces. In contrast, per-pupil spending grew at rates between 43 and 64 percent in Gauteng, Northern Cape, and Western Cape, the three highest spending provinces in 1995-96.

South Africa adopted a macroeconomic policy by the name of Growth, Employment, and Redistribution in 1996 to attract foreign investment by limiting inflation and reducing the deficit. The policy was controversial because, to meet its goals, the government had to limit the growth of spending, especially for social programs. The anemic economic growth rate of less than 3 percent per year between 1997 and 2002 further reduced the ability of the government to increase spending on education and other basic services. Thus, between fiscal years 1997 and 2001, after adjusting for inflation, the national average expenditures per pupil remained essentially unchanged. Because total education funding remained flat in real terms, equalization of spending among provinces occurred primarily by redistributing money from rich to poor provinces.

**Table 1:  
Provincial Government Expenditures  
per Full-Time-Equivalent Pupil (in Rand)**

Province	1995-96	2005-06*	Percentage
			change from 1995-96 to 2005-06
Eastern Cape	1,984	4,593	131.5
Free State	2,357	5,768	144.7
Gauteng	3,134	5,142	64.1
KwaZulu-Natal	2,213	4,860	119.6
Limpopo†	1,847	4,574	147.6
Mpumalanga	2,065	5,454	164.1
North West	2,252	6,167	173.8
Northern Cape	4,027	5,822	44.6
Western Cape	3,950	5,631	42.6
National Average	2,346	5,070	116.1
National Average in 1995 rand	2,346	2,901	23.7
Range	2,180	1,593	
Standard Deviation	843	571	
Coefficient of variation	0.359	0.113	

\*Preliminary data

†Until 2002, Limpopo was called Northern Province.

## Increasing Equality in Pupil-Teacher Ratios

Although differences in pupil-teacher ratios continue to exist within provinces, since 1995-96 variation of pupil-teacher ratios has been reduced across provinces. The pupil-teacher ratios declined substantially in the poorest provinces—for example, from 40 to 33 in 2004-05 in the Eastern Cape—while they increased in the three provinces where nonblack South Africans are concentrated—Gauteng, Northern Cape, and Western Cape. For example, in the Northern Cape the ratio went from 24 in 1995-96 to 31 in 2004-05. These changes reflect not only the policy of the government to equalize spending among students independent of race but an explicit policy to reallocate “excess teachers” to locations where shortages existed.

In a number of schools, reductions in pupil-teacher ratios did not translate directly into reductions in class sizes. A widespread shortage of classrooms in some provinces means that the average class size remains substantially higher than the size implied by the pupil-teacher ratio. For example, in Eastern Cape in 2000, the average pupil-teacher ratio was 32, but the average class size was 43.

## Variations in Teacher Salaries

One important reason for higher per-pupil spending in Gauteng, Northern Cape, and Western Cape is higher average teacher salaries in these provinces. Although the salary schedule is set nationally, more experienced and more highly qualified teachers (in terms of years of formal training) are paid higher salaries. Because the national Department of Education is unable to reassign teachers across provinces, provinces with the highest concentrations of whites had more experienced and much more highly qualified teachers than the provinces carved out of black homelands. Although average teacher remuneration remains higher than average in Gauteng, Northern Cape, and Western Cape, the variance in average remuneration among the provinces is getting smaller. For example, average remuneration in the Western Cape declined from 21 percent to 14 percent above the national average from 1995–96 to 1998–99.

## The Financing of Learner Support Materials

In addition to salaries, provincial expenditures on education pay for a range of nonpersonnel spending, including learner support materials such as textbooks, pencils, paper, electricity, water, school maintenance, computer and science laboratory equipment, and miscellaneous teacher supplies. During the postapartheid period, rising teacher salaries have had the effect of crowding out expenditures on learner support materials and on other nonpersonnel items. To increase the availability of learner support materials and especially textbooks, the government committed itself to increasing the education component of the equitable share and enacting policies to ensure that funding for learner support materials was made available to schools with the most need. Thus, between 2000-01 and 2003-04, provincial government support for learner support materials increased from 870 million rand to 2.2 billion rand. However, the Department of Education concluded that despite these increases, the funds were not enough for many parts of the country.

To address this perceived underfunding, the national Department of Education issued Norms and Standards for School Funding in 2006 that mandated that provincial governments guarantee that the poorest schools receive adequate funds for learner sup-

port material. Under the new Norms and Standards, all schools are placed in a poverty quintile based on national poverty standards. For each year, the national government defines “targets” for the learner support material allocation to each quintile, with the middle quintile allocation defined as the minimum amount of money per student believed to be needed and with schools assigned to the fourth and fifth quintiles (those receiving the smallest provincial allocations) expected to finance learner support materials through a combination of the provincial allocation and school fees.

The new Norms and Standards policy raises important questions. Is increased spending on textbooks and other school supplies the most effective way of improving the quality of education in South Africa, especially in schools serving children from poor families? Does the requirement place too stringent limits on the ability of provincial governments to decide how best to meet their constitutional responsibility to educate all students? For instance, although considerable empirical evidence shows that the provision of textbooks improves student educational performance in developing countries, some recent research suggests that much of the empirical literature overestimates the impact of textbooks and other school inputs on student performance because it fails to control for the influence of other factors that effect student performance. Thus, a national policy that mandates minimum per-student spending on learner support materials may not be advisable because increasing school supplies, including textbooks, may be highly effective in some schools but not in others.

In issuing its Norms and Standards for School Funding, South Africa has not mentioned standards or norms for student performance. Instead, the government has focused almost entirely on prescribing how provincial

departments of education should allocate nonsalary funds to individual schools. Although the Norms and Standards policy indicates that provincial education departments may spend more or less than the target, it makes clear that these targets are really obligatory minimum spending levels. This reduces the fiscal autonomy of provincial governments and places conditions on how they spend their equitable share allocations, contrary to the constitutional prescription that the equitable share be considered unconditional allocations to provincial and local governments.

---

**Because total education funding remained flat in real terms, equalization of spending among provinces occurred primarily by redistributing money from rich to poor provinces.**

---

## The Role of School Fees in the Funding of Education

The South African Schools Act of 1996 gives public schools the right to levy student fees through a vote by the majority of parents attending a meeting convened for that purpose. The decision to allow fees to play a role in public education funding was controversial. While some argued that fees would discourage school attendance by poor students and that fees would perpetuate existing inequities in education funding, others claimed that school fees are an important way to supplement public education resources and a means of encouraging middle-class, and particularly white, parents to continue sending their children to (and advocating for) public schools.

To prevent students from being denied admission to a school because their parents cannot afford the school fees, the National Norms and Standards for School Funding policy specifies that students from low-income families must be granted complete or partial fee exemptions. The size of the exemption depends on family income relative to the fee. However, although the issue has not been systematically studied, the National Treasury cites unspecified “evidence” that students whose parents cannot afford fees have been either denied exemptions or excluded from schools.

A 1997 study in seven of South Africa’s nine provinces revealed that black students paid annual school fees that averaged 50 rand per pupil, while the average school fee paid by white students equaled 881 rand. A 2001 study finds that in the Western Cape the average annual school fee in primary schools was 45 rand in schools that were formerly black and 2,077 rand in schools that were formerly white; for secondary schools, the comparable numbers were 105 rand and 2,701 rand. Not surprisingly, in the Western Cape (at least) formerly white schools spend substantially more money per student than formerly black schools, a fact that allows those schools to expand the number of teachers they employ by nearly 30 percent. This has significant implications for intergroup differences in educational opportunities, in that in 2001 nearly all students attending formerly black schools were black and nearly all white students were attending formerly white schools (even though 36 percent of students in formerly white schools were nonwhite).

The unequal distribution of school fees raises several important public policy issues, one of which is whether fees discourage school attendance or influence which schools nonwhite students attend. A number of developing countries, many in sub-Saharan Africa, have eliminated fees associated with primary school attendance, which generally led to a substantial increase in primary school enrollment.

However, in South Africa, school fees do not seem to discourage primary school enrollment. One explanation is that few low-income families pay school fees. Many schools serving primarily poor children do not charge fees, and nonpayment by poor families is common. Fees may reduce secondary school enrollments, however. For instance, although other factors contribute, the secondary school enrollment rate in South Africa was 62 percent, which is low relative to primary school enrollment but much higher than secondary school enrollment in most sub-Saharan African countries, where enrollment averages about 25 percent.

Effective in January 2007, the use of school fees is prohibited in any school that is classified as poor (i.e., within the bottom two national poverty quintiles) and that receives a funding allocation from its provincial education department that is at least as large as the government-defined adequacy benchmark.

However, this new school fee policy is unlikely to have a major impact,

because it fails to address the fundamental structural problem of school fee exemptions. Rather than using general tax revenue to finance fee exemptions for children from poor families, the policy requires, in schools where fees are allowed, that parents of fee-eligible students in effect fund their children’s classmates who are not required to pay the fees. Experience from around the world suggests that such a “Robin Hood” funding scheme provides strong incentives for those who must pay to undermine or subvert the schemes. Although the government has promised to take renewed steps to prevent local school governing bodies from discriminating against students from poor families, any such effort is unlikely to be effective, given the strong incentive fee-paying parents have to exclude students eligible for fee exemptions, and given the many subtle ways that can be found to exclude or discourage school attendance by children from poor families.

---

**In South Africa, fees do not seem to discourage primary school enrollment. Many schools serving primarily poor children do not charge fees. Fees may reduce secondary school enrollments, however.**

---

While the current policy of allowing parents in each public school to determine the level of school fees has kept most middle-income families in the public school system, it is increasingly creating a system where a relatively small number of schools, serving primarily students from middle- and upper-middle-income families, are able to provide a much higher quality education than is possible in the vast majority of South African schools. The existence of what is in effect a two-tier system of public education raises two fundamental policy questions: Should the government establish a system of publicly funded need-based scholarships, which might eliminate the financial incentive for higher income parents to exclude or discourage the school attendance of children from poor families? And should the government attempt to prevent the emergence of a two-tier education system by placing limits on the use of school fees within the public education system?

Although at first sight the “no school fees” policy seems sensible, there are at least three reasons why it may not be a desirable option. First, in a developing country with limited public resources, the revenue from school fees makes an important contribution and in effect frees up public resources that can be used for schools serving children from poor families. Second, prohibiting school fees would lead many families to send their children to private (i.e., independent) schools, while children from families with more modest incomes would remain in schools with diminished resources. And third, schools with relatively high fees may be producing many of South Africa’s best-educated students, who are likely to make significant contributions to the country’s economic growth and prosperity.

## Providing Quality Education for All Students

Equalizing financial resources is a noteworthy goal, but overcoming the legacy of apartheid also requires reforming the system of public education so that receiving a high-quality education is independent of one’s race, income, or place of residence. Although progress has been made, South Africa is still far from reaching its goal of providing equal educational opportunities to all citizens.

The test of any school funding system is ultimately

how good a job the public schools do in educating the nation’s children. In South Africa, the only measure of student performance that is available in all provinces is the pass rate on the matriculation exams. A student must pass this set of exams to graduate from high school, and the scores inform higher-education institutions’ admission decisions.

The data on students who took the matriculation exams in each year since 1994 indicate that between 1994 and 1997, the pass rate declined from 58 percent to 47.4 percent, while the number of students taking the exams increased. In 1998, this pattern was reversed, with the pass rate climbing but the number of students taking the exams declining through 2003.

Since 2003, the number of students sitting for the exams has risen, and, although the pass rates have declined modestly, the 68.3 percent pass rate in 2005 represents a 45 percent increase relative to 1997.

While the Department of Education has hailed the rapid rise in the passing rate as evidence of improvement in the quality of education, some critics have argued that the increase shows only that a “watering down of standards” has occurred. Other critics note that an increasing proportion of students who enter grade 12 are not taking the exams, indicating that the weakest students (e.g., overage students, repeaters, and others who would probably fail) are being discouraged from taking them.

Passing rates on the matriculation exams provide only a very partial measure of the quality of primary and secondary education in South Africa, because over the past few years only about 45 percent of the appropriate age cohort actually took the matriculation exams. It is not known whether those who left school before sitting for the exams or those 12th-graders who did not take the exams received education that prepared them quite well for employment or for further, vocational training. While the national Department of Education provides an ever-increasing amount of data on resources, it has yet to develop comprehensive measures of what students are, or are not, actually learning. Even without a comprehensive assessment of student learning, the existing inequities in funding, the shortage of classrooms, the low levels of learner support materials, and the prevalence of poorly trained teachers all suggest that, despite likely improvements in recent years, many students are not receiving a high-quality constitutionally mandated basic education.

---

**The unequal distribution of school fees raises several important public policy issues. One of these is whether fees discourage school attendance or influence which schools nonwhite students attend.**

---

## Reforming the Equitable Share Formula

Improving the quality of education and assuring that all students have access to quality basic education require more than just getting the financing right. While resources are clearly important, adequate resources alone do not guarantee that students will receive quality education. An effective curriculum must exist, students must be prepared to learn, and a system must hold schools and teachers accountable for the academic performance of their students. Nevertheless, an important prerequisite for achieving the goal of providing students with a basic education is that their schools have enough money.

### Fundamental Reform to Enable All Provinces to Provide a “Basic Education”

Because provinces are prohibited from raising much revenue from provincial taxes and local school governing bodies have no tax-raising authority, revenue the national government raises is the main source of funding for education. For the past few years the Financial and Fiscal Commission (an independent body established in the constitution and given the mandate to advise the government and Parliament on intergovernmental finance) has been urging the government to change the way it allocates the equitable share among the provinces. In 2000, the commission argued that the equitable share should be allocated among provinces so each has sufficient resources to fulfill its constitutional obligations to provide basic services, including basic education. To design a grant allocation formula that meets this goal, it is necessary to determine the minimum amount of fiscal resources (or cost) schools in each province require to provide a basic education.

A prerequisite for the design of such a formula is a precise definition of what is meant by “basic education” (i.e., which curricular inputs and which academic achievements). Measuring the costs of providing such a basic education is complicated, involving details on student academic performance, student and family characteristics, and the characteristics of schools and the environment in which they operate. Despite these difficulties, countries have developed intergovernmental grant formulas that take explicit account of the costs of providing public services. In South Africa, based on a statistical analysis of public education in Gauteng and Northern Cape, researchers conclude that the costs of edu-

cation are greater in schools with high concentrations of children from poor families, and, controlling for poverty, costs tend to be higher in rural areas. The limited evidence from South Africa, plus empirical evidence from elsewhere, suggests that guaranteeing that all South Africans receive at least a basic education will require that larger amounts of money per student be spent in parts of the country where South Africa’s historically disadvantaged citizens are concentrated.

The Financial and Fiscal Commission recommended again in 2005 that the provincial equitable share formula take account of the higher costs needed to provide basic services (including education) to some segments of the population. The government’s response was that, “while conceptually appealing,” the proposals could not be implemented “at this stage.” The government’s major argument was that data were not yet available to precisely define standards associated with basic service levels and to calculate the costs of achieving those standards.

## Conclusions

A little more than a decade has passed since the end of apartheid. In that short period, South Africa has moved from explicitly race-based and unequal systems of public education to a single national system intended to provide all South Africans with equal educational opportunities. Government proposals are designed to continue efforts to redress the

impacts of apartheid. The proposals call for increased targeting of public funds to schools serving South Africa’s poorest students.

Despite improvements in funding equity, many students, especially in rural South Africa, continue to

face dilapidated schools, poorly trained teachers, and a lack of textbooks and school supplies. Even in the absence of comprehensive data on student academic performance, many South African children do not yet have access to a constitutionally mandated “basic education.” Although more money alone will not guarantee an improvement in the quality of education, the absence of sufficient financial resources almost certainly ensures that students will remain undereducated.

South Africa has been increasing its public resources devoted to the funding of primary and sec-

---

**In South Africa the costs of education are greater in schools with high concentrations of children from poor families. Controlling for poverty, costs tend to be higher in rural areas.**

---

ondary education, although the rate of growth of real per student spending has been quite modest. From health care, to housing, to public safety, to providing potable water, South Africa, like most developing countries, faces a wide range of competing demands for limited public funding. Although the choices the government must make are certainly difficult, there is little question that meeting its constitutional mandate to provide all children with basic education will require additional public funding.

Moreover, it is very important to develop a system of school funding where children from families with low incomes are not excluded from gaining an education that goes beyond “basic.” The current system combines public funding with the widespread use of school fees. To counter the unequal effects of school fees, the government has pursued policies that provide less public money for nonpersonnel expenditures to schools serving students from higher-income families than to schools educating children from poorer families. The government also has established a system of fee exemptions for students from poor families. Neither of these policies is likely to be very effective in guaranteeing access of students from poor families to high-quality schooling.

In a country like South Africa, with limited public funds, the revenue from private fees plays an important role in financing high-quality education. The government faces the difficult task of developing policies that will encourage fee-paying parents to keep their children in the public education system while guaranteeing that children from poorer families are not excluded from the nation’s best schools and a high-quality education. One important step

would be to switch the financing of fee exemptions for low-income families from other parents to public funds. This involves converting the existing system of full and partial exemptions to a system of publicly funded, need-based scholarships.

Another policy initiative would be to give students from poor families additional weight in the equitable share formula. This would have the effect of directing more funding to the provinces with the highest concentrations of students

from poor families. Ample evidence from elsewhere shows that more resources are needed to achieve any given educational outcome for children from poor families compared to chil-

dren from families with higher incomes. In addition, there is evidence that the higher the concentration of poor children within a school, the less feasible it is to raise school resources from school fees. Thus, a case can be made for adding a poverty weight to the educational component of the equitable share, even though further research needs to determine the appropriate weight.

A final policy initiative would be to expand funding, either through an increase in the equitable share or through conditional grants to provinces. In fact, the constitution states that “everyone has the right ... to further education, which the state, through reasonable measures, must make progressively available and accessible.” Developing an equitable and efficient policy for the funding of “further” education will be difficult. Nevertheless, it is a critical next step if South Africa is going to complete the transformation of its primary and secondary education system and continue progress on redressing the education funding inequities of the apartheid era. ♦

---

**One important step would be  
to switch the financing of fee exemptions  
for low-income families from other  
parents to public funds.**

---

## **More public affairs research from the La Follette School**

is available online through the  
La Follette School Working Paper Series  
[www.lafollette.wisc.edu/publications/workingpapers](http://www.lafollette.wisc.edu/publications/workingpapers)

# The Performance of Charter Schools in Wisconsin

John Witte, David Weimer, Arnold Shober, and Paul Schlomer

*John Witte and David Weimer are professors of public affairs and political science at the La Follette School of Public Affairs at the University of Wisconsin–Madison, where Paul Schlomer is a doctoral candidate in political science. Arnold Shober is an assistant professor of political science at Lawrence University. The authors thank Martin Carnoy for helpful advice and the U.S. Department of Education for financial support. The findings and conclusions reported are the sole responsibility of the authors. A longer, more detailed version of this article appears in the summer 2007 issue of the Journal of Policy Analysis and Management, volume 26, no. 3.*

Research on school choice has exploded since its modest beginning less than two decades ago. In addition to producing general works on the benefits or pathologies of a competitive marketplace for education, scholars have devoted substantial attention to two other questions: First, does the academic performance of students who exercise choice improve? Second, does school choice improve the performance and accountability of the traditional public system overall?

School choice takes four forms: intra-district choice, which allows students to go to any traditional public school of their choosing; inter-district choice, which extends that choice across district boundaries; charter schools; and voucher schools. Much scholarly interest has focused on the most controversial form, voucher schools, in which parents receive public money to send their children to private schools. Though few such voucher programs operate, a large number of studies assess their impact. These studies have produced little consensus.

School choice based on charter schools has been less politically controversial. Charter schools are public schools that operate under a management contract. A charter school submits to the requirements of a contract with its authorizing agency in exchange for exemptions from many of the rules and regulations that govern traditional public schools. In theory, if a school does not meet the obligations of its charter, then the authorizing agency will revoke the contract and close the school. If choice and competition work, then poor quality schools will not be tolerated. Most advocates of charter schools see improved educational performance as the primary goal, although others cite the importance of additional goals, such as competition. Regardless, charter schools have gained advocates across the political spectrum. Both the Republican and Democratic parties called for more charter schools across

the country in 2000 and in 2004. And, as of September 2006, more than 3,900 charter schools were open in 41 states and the District of Columbia.

Research on the relative effectiveness of charter over traditional schools has not been without controversy, however. National-level studies have reported advantages, disadvantages, and mixed results. At times, the debate among researchers has spilled over to the pages of the *New York Times* and been described as a “dustup.” State-level studies offer conflicting assessments for Michigan, North Carolina, and California. Two unpublished studies that consider Wisconsin in the context of national studies based on National Assessment of Educational Progress data suggest some advantages for charters.

We assess the performance of charter schools in Wisconsin at the individual student and school levels. Our data come from two sources: first, data on individual students in Milwaukee in charter and traditional schools for the academic years 1998–99 through 2001–02; second, school-level state data on standardized tests in the fourth and eighth grades for two academic years, 2000–01 and 2001–02. For the school-level data, we apply a statistical analysis that harnesses the plethora of publicly available aggregated data generated by the No Child Left Behind law. We believe this method will help scholars improve their analyses of schools, especially when performance data on individual students are not available.

We find generally positive results for the effects of charter schools relative to traditional schools, although not uniformly so. Both individual-student and school-level analyses show this relative advantage for charter schools, although for one year, eighth-grade results favor traditional public schools. Our school-level analyses suggest that charter schools attain their advantage primarily by moving

---

**We find generally positive results  
for the effects of charter schools  
relative to traditional schools.**

---

poorly performing students to proficiency rather than moving proficient students to advanced levels.

## Charter Schools in Wisconsin

Despite Wisconsin's leadership in school choice initiatives, including the nation's first voucher program, laws facilitating charter schools developed slowly. The initial authorization in 1993 allowed only 20 schools statewide. Subsequent laws removed this restriction and, more importantly, allowed several universities, the City of Milwaukee, a technical college, and school districts to issue charters. By the 2002-03 school year, the number of charter schools had risen to 130, with more than 19,000 enrolled students, approximately 2 percent of all public school students in Wisconsin. Charter schools in Milwaukee, Wisconsin's largest city, enroll minority students at approximately the same rate as traditional schools, while charter schools elsewhere in the state tend to enroll somewhat higher percentages of minorities. Charter schools in Milwaukee have about one-quarter fewer free-lunch qualified students than traditional schools. This trend is consistent with the tendency of charter schools to use the free-lunch program less than traditional schools. In addition, high schools make up a disproportionately large share of charter schools, and high school students in general are less likely to participate in the free-lunch program. A 2005 study of California charters found that those created by conversion of existing traditional schools to charter status were more effective than newly created charters, and that those with a higher proportion of instruction in traditional classroom settings were more effective. As more than two-thirds of Wisconsin charter schools are startups rather than conversions, they should be somewhat disadvantaged. Although our data do not allow us to assess in detail the method of instruction in charters, we were able to estimate that about half of Wisconsin charter schools were directed primarily toward at-risk students. In all of the 19 charter schools we visited throughout the state during the course of the study, school personnel sought to improve the achievement of at-risk students, often outside of traditional classroom settings. Consequently, the deck seems stacked against finding an advantage for Wisconsin charters relative to traditional schools.

---

**Our analyses suggest that charter schools attain their advantage primarily by moving poorly performing students to proficiency rather than moving proficient students to advanced levels.**

---

## Assessing Charter School Performance

Analyzing performance of charter schools presents numerous challenges. First, as with all studies of performance at the elementary level, very few quantitative measures exist other than standardized test scores. Attendance varies little in any setting. Small children go to school, and when they do not, their absence usually relates to illness. Behavioral measures also vary little and unpredictably, based on school-level philosophies. Increasingly, students are not graded until the higher elementary grades. Thus, we have to rely on standardized tests as indicators of student performance. Other measures, such as parental involvement and satisfaction, were not available for this study and have rarely been available in other studies.

At the middle school level, measures other than test scores begin to be useful, although they are also very limited. Students increasingly are given "at-risk" placements in specialty schools. We control for those schools in our estimates of achievement. However, we judge that behavioral data (suspension rates), attendance, and other measures of dysfunctional school action are still very sporadic and come under the purview of the principal. Thus, at the middle school level, we believe a control on the type of school (as at-risk or not) will measure some level of disadvantage. We question the reliability of other measures of performance beyond test results.

We are not as confident about using test data to measure the success of students in charter high schools, most of which provide specialized education for at-risk students, many of whom are severely at risk. For example, several charter schools, in Milwaukee and outside, were "last chance" schools for students who were in legal custody, rehab programs, or had been expelled from other schools. Often these schools were, in the words of one administrator, "schools to teach kids how to go to school." The preparation of students to return to more traditional schools usually had minor academic components and much more emphasis on "life skills," self-discipline, and avoidance of adverse behaviors. Outside of Milwaukee, all charter high schools had some at-risk component, and, therefore, less emphasis on academics. That was not true of Milwaukee, so we included ninth- and 10th-graders in our individual student-level analyses. Because of the high percentage of at-risk charter high schools across the state, we limit the statewide school-level analysis to fourth and eighth grade.

## Student-Level Performance of Charter and Non-Charter Schools in Milwaukee

We obtained individual student test data for the Milwaukee school district, including students in its charter schools. With these data, we performed conventional statistical analyses, using administratively available data to control for student characteristics, and various value-added specifications that take advantage of repeated test data for each student.

### Results

Overall, the results confirm that charter school students in most grades appear to be performing better than students in traditional schools. These effects are quite robust across all races, with very positive effects for whites and Hispanics. With the exception of some black students, being in a charter school produces positive effects relative to students in traditional schools in Milwaukee, with Hispanics and whites showing the largest gains.

The test data and our analysis suggest that the largest advantages of charter schools lie in gains for math. We are not certain why this occurs, but case studies in Milwaukee indicate that a number of the charter schools emphasized science, math, or technology. In breaking down test results by grade, we find that charter school students do modestly less well in grades 3, 4, and 10, compared to students in traditional, non-charter schools. The explanation for grades 3 and 4 may be that students have spent less time in charters in those grades and so do not begin to realize the benefits of being in charter schools until they reach grade 5. For 10th-graders, the explanation may be that charter high schools are more likely to be for at-risk students, and so their curricula do not focus as much on academic subjects.

## School-Level Performance of Charter and Non-Charter Schools

Analyzing school performance in terms of levels of proficiency offers several advantages. First, policymakers seem to be enamored with judging schools, not necessarily students. The No Child Left Behind law, the standards movement, and most charter laws are clear examples. In view of this, we must get better at school-level analyses. Second, privacy laws increasingly impede access to student-level data for evaluations, even if sanitized of student identity, unless political authorities (states, school boards) agree to release such data. Third, the standards movement has affected data and testing; students and schools must meet certifiable levels of performance against clearly stated standards for grades and subjects. These performance standards do not necessarily have to adhere to population

“norms” based simply on the distribution of test scores across comparable populations, which puts students up against other students. Rather, performance standards serve as the goal and the club to assure that students achieve appropriate levels of proficiency.

Wisconsin has changed the testing protocol to adhere to federal law that stipulates that schools must be judged against state standards. Therefore, we apply a technique to estimate a school-level model based on performance criteria. Because these types of performance criteria have national scope, we think the method we demonstrate has utility beyond the assessment of charter schools. As the method considers differences along the performance spectrum rather than just central tendencies, it offers more nuanced assessments of school performance.

For each school, the Wisconsin Department of Instruction reports for five subject areas the proportions of fourth- and eighth-graders who achieve four levels of performance: minimal, basic, proficient, and advanced. Our analysis of these data takes into account variation in school characteristics such as a specialized pedagogical approach, pupil-teacher ratios, or differences in the student body.

### Results

The fourth-grade results show that charter schools had lower proportions of students performing at the minimal and basic levels for all subjects in 2000-01 and 2001-02. The results differed, however, for the advanced category. In four subjects in 2000-01, non-charter schools had higher proportions of students in the advanced category. There appeared to be no clear differences with respect to the advanced category between types of schools in 2001-02.

School control variables had the expected effects. The higher the percentage of black, free-lunch, and disabled students in a school, the greater the number of students who tested at the minimal or basic categories. The percentage of disabled students had a greater effect than the percentage of poor or black students.

Results for eighth graders were very different in 2000-01, with non-charter schools doing better than charters. For language arts, this included every performance category. Non-charter schools had fewer students in minimal and basic, and more in advanced. The situation dramatically reversed in 2001-02. The results favored charter schools, except for social studies. As with the fourth-grade results, charter schools seemed to do better at getting students out of the minimal and basic categories, rather than pushing them into advanced (although that occurred for language arts and social studies).

What happened in the two very different eighth

grade years? The answer comes from looking carefully at the schools in each year. First, in the first year (2000-01), when traditional schools outperformed charter schools, only 12 charter schools reported test data. Five other charter schools did not. Two of these schools were charters in 2000-01 but did not begin eighth grade until the next year. Two others had too few students tested overall or in subcategories of students. The other, for unknown reasons, reported only national percentile rankings in 2000-01. When we look at these five “missing schools” in the next year, they had better scores than the reporting schools in 2000-01 by well over 3 national percentile rankings on all the tests but one. Second, and more important, the schools tested in both years simply improved on their prior years’ scores. This does not indicate that eighth graders are doing uniformly better in charter schools, but it explains the deviations and suggests further tracking is required.

We find that traditional schools had a greater proportion of students in the advanced level than did charter schools. This means that charter schools seem to be making their inroads by bringing students out of the minimal and basic levels in proportions higher than we would expect based on school characteristics; traditional schools seem to hold an advantage in bringing students up to the advance level in proportions higher than we would expect based on school characteristics. In view of the aggregate student populations served by charter versus traditional students, this pattern should be expected and applauded.

One could reasonably argue that controlling for school-level demographics does not adequately control for unmeasured selection bias. One possible way to get at this using our method would be to analyze aggregate results for different races or for poor or non-poor students as determined by free-lunch status. In Wisconsin, with its small school sizes and small populations of minority students in many schools, attempts to do this dropped out too many schools. However, because No Child Left Behind requires publishing these breakdown aggregates, we recommend this kind of analysis when possible.

## Conclusions

Charter schools clearly provide additional options for students and families not only in Wisconsin’s one large city, Milwaukee, but also in a number of other medium-sized cities and towns throughout the state. In many districts, charters offer the major

alternative to the traditional systems that are in place and operating quite satisfactorily for many families. It is also clear that charter schools offer options to students who do not match the overall demographic makeup of the districts in which they reside. This creates more diverse student populations in these schools.

With the exception of one eighth-grade cohort, we believe that, subject to the cautions already raised, the achievement test results for schools in Wisconsin should be interpreted as favoring charter schools. In Milwaukee, charter school students consistently outperformed traditional students. The effects were largest for Hispanic and white students, larger in math, and most pronounced in grades 5 through 9. Analysis of statewide data that control for school characteristics indicates that charter schools did better than traditional public schools at ensuring that students achieve at the proficient level of performance. Finally, our findings are generally consistent with other studies using National Assessment of Educational Progress aggregated data, in which Wisconsin charter-school students did very well, and better than charter schools in all but one other state.

Why might this be the case? We offer two reasons. First, local school boards authorize most charter schools in Wisconsin—and all of them in our study. According to a 2005 National Center for Education Statistics study, district-authorized charters perform better than schools authorized by state boards, colleges, or other entities. Further, charter schools authorized by school boards, with no controls for differing school populations, were slightly better than all other public schools.

Second, we offer a qualitative reason. In most of the apparently successful charter schools we visited, strong leadership was evident. Not only did local superintendents enthusiastically support the schools, but so did school boards and other district officials. Within these successful schools, two forms of leadership were apparent—often not by the same person. One person, or a small group of people, was inspirational and instrumental in starting the school and shaping its initial vision. Equally important was a competent, day-to-day administrator. Certainly other reasons exist, but further research on charter schools is necessary for us to understand what is in the black box and whether these explanations also fit the experiences of schools in other states. ♦

---

**Results confirm that charter school students in most grades appear to be performing better than students in traditional schools.**

---

dependent undergraduates with Pell Grants came from families with incomes less than \$40,000. Because the aid program is federal, students across states receive Pell Grants, regardless of any individual state's higher education funding policies.

Pell Grants are directed to students with financial need who have not received their first bachelor's degree or who are enrolled in certain post baccalaureate programs that lead to teacher certification or licensure. The amounts depend on the student's expected family contribution, the cost of attending the institution, whether the student attends full-time or part-time, and whether the student attends for a full academic year or less. An applicant may receive only one Pell Grant in an award year from one school at a time. For the 2003-04 academic year, Pell Grant awards ranged from \$400 to \$4,050. During the 2003-04 academic year, more than a quarter of all undergraduate students received Pell Grants, totalling \$12.7 billion awarded to approximately 5.1 million students, with average grant amounts of \$2,466.

### Research Question

The primary objective of this study is to uncover factors related to the prevalence of students from low-income families in the undergraduate student bodies of research-oriented universities. We study the extent to which these factors relate to the prevalence of low-income students attending U.S. public and private research institutions. We measure this prevalence as the percentage of the undergraduate student body in these schools receiving Pell Grants; we refer to this variable as the "Pell Prevalence Ratio."

A number of factors might contribute to differences among universities in their Pell Prevalence Ratios, including:

- ◆ differences among schools in market conditions (the cost of attending a public versus a private university);
- ◆ program offerings (e.g. adult education programs for non-degree seeking students);
- ◆ the pattern of term enrollment (the turnover rate, measured by the number of incoming mid-year transfer students);
- ◆ the prevalence of international (non-resident alien) students;
- ◆ institutional capacity to provide grant aid;

- ◆ the demographic characteristics of Pell-eligible students among potential applicants (such as the relative number of academically qualified low-income students in a state);
- ◆ the universe of enrollment options within a state.

The second objective of our analysis is to explore the extent to which an institution's actual Pell Prevalence Ratio deviates from our model's prediction. For any given institution, this deviation is attributable to factors not included in the model and indicates the extent to which an institution enrolls low-income students, relative to what we would expect given the institution's characteristics and the environment in which it operates. Given our extensive set of control variables, these deviations should prompt discussions at the various schools as to why the performance of each exceeds or falls short of expectations. The results should also prompt a search for institutional and state public policy initiatives that might improve recruitment and retention of low-income students.

### Research Sample and Strategy

Across our sample of 148 major U.S. research institutions, the pattern of low-income participation as indicated by the Pell Prevalence Ratio varies substantially. The first two columns of Table 1 show this variation for a set of institutions for the 2003-04 school year.

We distinguish between four-year public and private universities, as differences in their missions may yield substantially different student selection processes and, hence, variation in Pell Grant participation. Most importantly, public and private universities recruit from different applicant pools. Since public universities are often required to enroll a minimum percentage of students from their home states, they face geographically constrained pools of applicants, while private universities can recruit students without these geographic considerations. Moreover, as a result of state requirements to enroll a minimum percentage of in-state students at public universities, differences in the demographic characteristics among states might affect the percentage of students at public universities receiving Pell Grants.

To address our two underlying research questions, we designed a model to reveal the relationships between a set of independent, explanatory variables and the number of Pell Grant recipients for the institutions in our research sample. We divided the variables into two groups, institutional-level variables

that describe the university's characteristics and state-level variables that describe the environment in which the university operates.

### Institutional-Level Variables

**Total Cost of Attendance:** We calculated the total cost of attendance for each institution for the 2003-04 school year as the sum of tuition and fees, the price of room and board for an on-campus student, the cost of books and supplies, and other expenses. For private universities, tuition and fees are the same for resident and out-of-state students. For public universities, tuition and fees differ between resident and out-of-state students.

**Median SAT Score:** We calculated the median SAT score for the fall 2003 incoming freshman class at each institution. For institutions where greater than 50 percent of students submitted the SAT on their applications, we included the median SAT score. For institutions where greater than 50 percent of students submitted the ACT, we converted the median ACT score into an SAT composite score. For institutions that did not fall into either of these two categories, we calculated the median for the standardized exam with the greatest percentage submitted and converted to SAT where appropriate.

**Total Institutional Grant Aid:** We calculated the total grant aid an institution provided during the 2003-04 academic year. The sources of these scholarships and fellowships include university endowments, the institutional matching portion of federal, state, or local grants, as well as businesses, foundations, private individuals, and foreign governments.

**Total Undergraduate Enrollment:** We calculated total undergraduate enrollment at each institution using the 12-month unduplicated count for the 2003-04 academic year, from which we subtracted non-degree seeking and international students. While not all remaining undergraduate students were eligible for Pell Grants, our enrollment totals allow us to most accurately control for the size of each institution.

**Opportunity Cost of Attendance:** We considered the extent to which the "opportunity cost" of attending a particular institution affects the prevalence of Pell Grant recipients at that school. For each campus in fall 2003, we constructed an institutional opportunity index that equals the number of resident freshmen attending a state's two- and four-year public and private institutions minus the number of resident freshmen at the institution in question.

### State-Level Variables

To control for differences among states, we calculated state-based demographic control variables.

**Low-Income Recruitment Pool:** To control for the economic environment from which universities recruit within their respective states, we calculated the low-income K-12 student population as the percentage of students ages 6-18 in each state who were living at or below 200 percent of the federal poverty level (\$18,600 for a family of four with two children in 2003).

**Percentage of Minorities:** We calculated the percentage of the state population represented by blacks, Hispanics, Asians, and Native Americans.

**Total State Grant Aid:** We calculated the state-level capacity to provide grant aid to undergraduate students as the sum of need-based and nonneed-based grant aid that each state awards. Need-based aid is the total grant aid available to students who meet some standard of need, as determined by the state of residence. Such measures include the expected family contribution, the remaining costs of college attendance, or some maximum income level required to be eligible for an award. Nonneed-based grant aid is the total grant aid available to students who are not required to demonstrate financial need to be eligible; in most cases, this aid is based largely on measures of academic merit.

## Results

Our analysis first identifies how these factors correlate with the prevalence of low-income undergraduates from low-income families enrolled at research universities as indicated by the proportion of Pell Grant recipients, the Pell Prevalence Ratio. We first consider public institutions, then private campuses. We then give preliminary consideration to how individual Pell Prevalence Ratios deviate from our model's predictions for each campus.

### Public Sector Institutions

We find that the median SAT variable was a significant and substantive predictor of the number of Pell Grant recipients at public institutions: A 1 percent increase in the median SAT score of an institution's incoming freshman class corresponds to a 2.28 percent decrease in the number of Pell Grant recipients. As school selectivity increases, indicated by higher median SAT scores, the lower the prevalence of Pell Grant recipients on a campus.

The size of the undergraduate population at public institutions strongly correlates with the prevalence of Pell Grant recipients. Our analysis finds that

a 1 percent increase in the total undergraduate enrollment yields a 0.63 percent increase in the number of Pell Grant recipients. However, analysis suggests that enrollment size is not quantitatively important in understanding the prevalence of lower income students among institutions.

As enrollment options increase within a state, Pell Grant recipients become more common at public institutions, contrary to our expectations. A 1 percent increase in the opportunity index leads to a 0.17 percent increase in its Pell Grant recipients. This result contrasts with our initial belief that more enrollment options outside of an institution would lead to fewer Pell recipients. However, two issues come into play. First, while the relationship is statistically significant, the effect, 0.17 percent, is rather small. Second, the case could be that in a given state, the four-year public institutions (such as each state's flagship and research university) represent engines of opportunity relative to the universe of in-state enrollment opportunities. As a result, this sample of institutions bears a smaller opportunity cost of attendance relative to the other two- and four-year public and private schools in the state.

The percentage of poor students ages 6-18 in each state, the low-income K-12 student population variable, was a significant predictor of the prevalence of Pell Grant recipients. A 1 percent increase led to a 1.48 percent increase in the number of Pell Grant recipients, indicating that public institutions respond to state demographics among the college eligible (and Pell eligible) population.

The only minority group for which our model predicts a significant relationship is for each state's black population. We find a negative relationship between the percentage of the state's population that is black and the number of Pell recipients at the state's public research institutions.

The three remaining variables—total cost of attendance, total institutional grant aid, and total state grant aid—do not show a statistically significant relationship with the prevalence of Pell Grant recipients. The cost of attendance for public institutions does not seem to be a fundamental factor in determining low-income participation at public institutions. On the other hand, we believe that the ambiguous definition of "aid" at the institutional and state levels can explain the insignificant effect of the total institutional and total state grant aid variables.

## Private Sector Institutions

Unlike the model results for the public institutions, the cost of attendance is a significant predictor of Pell Grant prevalence at private schools. A 1 percent increase in the cost of attendance yields a 0.62 percent decrease in the number of Pell Grant recipients. This suggests that increases in the total cost of attendance discourage low-income students from applying to four-year private institutions. This "sticker-shock" compels low-income students to self-select out of the application process. Furthermore, in the absence of supplemental funding for Pell-eligible students, increases in tuition and other related charges crowd out low-income students (who formerly had been able to meet the total cost of attendance) from the private higher education market.

Like the public schools, a higher median SAT score predicts fewer Pell Grant recipients, though the effect is smaller, with a 1 percent increase in the median SAT score expected to lead to a 1.65 increase in Pell Grant recipients. The enrollment effects on Pell Grant prevalence are also significant for the private institutions. Our analysis finds that a 1 percent increase in total undergraduate enrollment leads to a 1.03 percent increase in the number of Pell Grant recipients.

None of the state level variables are statistically significant in the private-only specification. This is consistent with the differences between public and private institutions in the geographic market of their applicants. Two institutional-level variables, the opportunity cost of attendance and total institutional grant aid, also were not significant predictors of Pell Grant recipients on a given private campus.

## Explaining the Deviation from the Model's Prediction

To address our second objective, we analyzed the patterns by which an institution's actual Pell Prevalence Ratio (PPR) deviates from the values our model predicts. We predicted the total number of Pell Grant recipients at each institution. We then calculated the predicted PPR by dividing the estimated number of Pell Grant recipients at each institution by the institution's enrollment. Finally, we subtracted the predicted from the actual PPR to arrive at a residual value, which is the deviation from our model's predicted, or expected, PPR. A negative residual value indicates that the university is performing below

---

**The median SAT score and the percentage of poor students ages 6-18 in each state are significant predictors of the numbers of Pell Grant recipients at public institutions.**

---

**Table 1: Comparisons of Actual and Predicted Pell Prevalence Ratios for Selected Universities**

The data are for 47 private universities and 87 public universities. The residual value is the difference between the actual and the predicted prevalence of Pell Grant recipients on each campus. The residual value indicates how well a school is doing compared to the prediction. The larger the percentage, the more the performance is beyond expectations. A negative percentage means a university is performing below expectations. The within-sector rankings indicate how an institution is doing compared to the others in its sector (public or private). The overall ranking illustrates how a campus rates compared to all 134 schools in the study's sample. For example, 19 percent means a campus is doing better than 19 percent of the schools in the comparison group.

University	Actual Pell Prevalence Ratio	Predicted Pell Prevalence Ratio	Residual Value	Within-Sector Residual Ranking	Overall Residual Ranking (out of 134)
University of California–Los Angeles	35.9%	21.2%	14.7%	1/87 (99%)	1 (99%)
University of California–Berkeley	30.9%	20.6%	10.3%	4/87 (95%)	4 (97%)
University of California–San Diego	29.3%	24.1%	5.2%	13/87 (85%)	16 (88%)
Georgia State University	26.5%	22.5%	4.0%	21/87 (76%)	26 (81%)
University of California–Santa Cruz	25.2%	34.0%	-8.8%	86/87 (1%)	133 (1%)
Florida State University	24.2%	20.1%	4.1%	19/87 (78%)	24 (82%)
University of California–Santa Barbara	24.1%	29.6%	-5.5%	80/87 (8%)	126 (6%)
University of Florida	22.1%	16.0%	6.1%	9/87 (90%)	14 (92%)
University of Wisconsin–Milwaukee	20.4%	24.3%	-3.9%	72/87 (17%)	116 (13%)
University of Texas–Austin	20.3%	19.3%	1.0%	41/87 (53%)	60 (55%)
Michigan State University	19.1%	18.7%	0.4%	44/87 (49%)	67 (50%)
Purdue University, Indiana, Main Campus	17.7%	18.1%	-0.4%	50/87 (43%)	77 (43%)
University of Illinois–Urbana–Champaign	17.6%	16.0%	1.6%	31/87 (64%)	47 (65%)
University of Minnesota–Twin Cities	16.6%	16.1%	0.5%	43/87 (51%)	66 (51%)
University of Iowa	16.4%	19.4%	-3.0%	65/87 (25%)	108 (19%)
University of Maryland–College Park	16.0%	10.6%	5.4%	12/87 (86%)	15 (89%)
Marquette University, Milwaukee, Wisconsin	15.6%	18.1%	-2.5%	39/47 (17%)	99 (26%)
Indiana University–Bloomington	14.9%	19.4%	-4.5%	76/87 (13%)	120 (10%)
Stanford University, California	14.7%	15.9%	-1.2%	31/47 (34%)	84 (37%)
University of Michigan–Ann Arbor	13.9%	16.0%	-2.1%	59/87 (32%)	94 (30%)
Georgia Institute of Technology	13.8%	17.3%	-3.5%	68/87 (22%)	112 (16%)
University of Georgia	12.7%	16.4%	-3.7%	70/87 (20%)	114 (15%)
University of Wisconsin–Madison	12.1%	14.7%	-2.6%	61/87 (30%)	100 (25%)
University of Pennsylvania	10.6%	11.0%	-0.4%	28/47 (40%)	79 (41%)
Duke University, North Carolina	10.1%	11.0%	-0.9%	29/47 (38%)	82 (39%)
Northwestern University, Evanston, Illinois	10.1%	11.6%	-1.5%	33/47 (30%)	88 (34%)

Notes: The actual Pell Prevalence Ratio is the percentage of students with Pell Grants in 2003-04.

The authors calculated the percentage of students with Pell Grants using data from Integrated Postsecondary Education Data System and Economic Diversity of Colleges ([www.economicdiversity.org](http://www.economicdiversity.org)).

Private universities are shaded.

expectations relative to our model, while a positive residual value indicates above-expected performance with respect to enrolling Pell Grant recipients.

Table 1 summarizes our selected institutions' actual and predicted PPRs, their residual values, their rankings within the public or private sectors, and their overall rankings. The within-sector ranking indicates an institution's relative position among the public or private universities, while the overall ranking positions an institution's residual value relative to all public and private universities in the entire sample. The rankings are in percentage and numerical terms. For example, a within-sector percentile ranking of 5 percent indicates that institution is performing better than 5 percent of its sector peers (i.e., if the institution is public, then it is performing better than 5 percent of the public universities in this sample). The higher the percentage, the better the performance beyond what our model predicted. In numerical terms, an institution that is ranked 15 out of 47 private universities indicates that it is performing better than 32 of the private institutions in this sample. The lower the numerical ranking, the better the performance.

Our detailed analysis of the data, we believe, reveals a form of "institutional stratification" among large public universities within the same state. For example, in California, UC-Berkeley, UCLA, and UC-San Diego are each in the top 15 percent of public schools (with percentages of 95, 99, and 85 respectively) based on residual performance, while UC-Santa Barbara and UC-Santa Cruz are in the bottom 10 percent (with 8 and 1 percent respectively). These differences in enrollment patterns call for investigation of admission policies. When looking at the results in Georgia, we notice that the University of Georgia and Georgia Tech are both in the bottom 25 percent, while Georgia State is in the top quartile. Its performance is better than 76 percent of the schools in the sample of public institutions. We speculate that the historically black character of Georgia State may explain this result because blacks are more likely to be disproportionately represented among the low-income population and thus more likely to qualify for Pell Grants. Other states with significant intra-state variations are Iowa, Kansas, Kentucky, New York, South Carolina, Tennessee, and Virginia. We believe that the significant intra-state stratification patterns that our analysis has revealed are a potential stimulus for future research.

## Conclusions

Our analysis has yielded insight into those factors that appear to influence the variation in Pell Grant recipients in our sample of public and private research institutions. We can explain a substantial proportion of the variation among the public universities and the private universities in the prevalence of low-income students. Furthermore, we have identified those factors that are statistically significantly related to the prevalence of Pell Grant recipients.

A key finding is the very large and negative effect of the median SAT score of incoming freshmen students on Pell recipients for public and private institutions. The greater the median SAT score for a given campus, the more selective that campus is in accepting students, which, in turn, leads to the smaller proportion of Pell Grant recipients on that campus. This important measure of institutional selectivity reflects the drive by universities to attract students with high test scores to maintain high rankings of quality calculated by various publications. This conclusion raises clear concerns about seeking high quality rankings at the expense of economic diversity of the undergraduate student body. However,

more work is necessary to fully understand the nature of recruitment practices that might crowd out low-income students so that wealthier, better prepared students with higher average test scores will boost the overall reputation of an institution of higher learning.

Our detailed assessment of each university's relative success in enrolling Pell Grant recipients should serve as the basis for additional study into the reasons why some institutions exceed expectations based on our model while others fall short of their predicted level of low-income students. We believe that this analysis can inform discussion about low-income access to higher education among policy-makers, university officials, researchers, and other interested parties.

Our analysis should therefore provide the catalyst for institutions to explore a range of alternative policies—such as those used by institutions whose performance exceeds expectations—in attaining the goal of an economically diverse student body. Institutions should now be better able to identify schools that succeed at enrolling qualified low-income students. They also can leverage this knowledge to increase economic diversity on their own campuses. ♦

---

**This study raises clear concerns  
about seeking high quality rankings  
at the expense of economic diversity  
of the undergraduate student body.**

---

## Director's Perspective *continued from page 1*

schooling show that on average, the public sector spends \$8,701 per pupil with about 9 percent from the federal government, 47 from state governments, and nearly 44 percent from local government with "only" 2.6 percent paid directly via charges to pupils. Averages clearly mask great disparities in expenditures and more importantly, in resources. Even at a state level, these differences in resources are enormous, with an average expenditure in New Jersey of more than \$14,000 and just slightly more than \$5,000 in Utah.

Schooling is the primary engine that underlies economic growth and economic mobility. If schooling is to maintain or increase economic mobility, then the public sector needs to pay attention to increasing opportunities for children born to less advantaged parents, especially parents with limited schooling or families who are poor or near poor. This means analyzing which resources at the elementary and secondary level improve the performance of children from disadvantaged backgrounds and it means finding ways that these students and their families can finance higher education. In addition, these students and families need assurance that their success in elementary and secondary school will gain them access to higher education.

The articles in this issue focus on these questions. Matthew P. Steinberg, Patrizio Piraino, and Robert Have-

man's piece on the prevalence of Pell Grant recipients at public and private universities is the result of an externally funded research project launched in fall 2006. Their analysis begins to identify factors that influence the enrollment of low-income students in higher education institutions in the United States.

In Wisconsin, charter schools increase access by offering more options to public school students, many of them high schoolers at risk of dropping out. John Witte, David Weimer, Arnold Shober, and Paul Schlomer find that charter schools generally perform well compared to traditional schools, especially by helping students with poor academic performance reach proficiency.

Policymakers in South Africa also grapple with public school access, choice, and funding as they seek to reduce inequities rooted in apartheid. While differences in per-pupil expenditures have been declining, provinces with the smallest black populations spend the most on each pupil. Andrew Reschovsky outlines several steps the government could take to further reduce inequities, including directing more funding to schools in provinces with the highest concentration of poor students and providing scholarships to cover school fees. ♦

*Barbara Wolfe*



### La Follette **Policy Report**

The Robert M. La Follette  
School of Public Affairs  
University of Wisconsin–Madison  
1225 Observatory Drive  
Madison, WI 53706

Nonprofit Org.  
U.S. Postage  
**Paid**  
Madison, WI  
Permit No. 658