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RACIAL DISPARITIES IN SCHOOL FINANCE ADEQUACY : EVIDENCE FROM GEORGIA AND THE NATION

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Introduction

The past decade has seen a subtle yet fundamental expansion in the focus of school finance policy and research. State school finance structures, often arising in response to legal challenges, have traditionally focused on the provision of **equitable** educational opportunities for all students (see Rubenstein, 2000 and Rubenstein, Doering and Gess, 2000 for more on equity in Georgia). Since Kentucky's 1989 *Rose v. Council for Better Education*[1] suit, though, interest has increasingly focused on the **adequacy** of state school finance systems, with courts ruling in favor of plaintiffs challenging state education finance systems in Alabama, Tennessee, North Carolina, South Carolina, Wyoming and New Hampshire. While equity concerns generally focus on disparities in resources across school districts (or individual schools), adequacy-based legal challenges are more likely to focus on whether educational resources are sufficient to provide students the opportunity to meet state standards or more general educational goals.

Along with the more common wealth-related resource disparities, racial disparities in resources have also figured prominently in a number school finance-related lawsuits. For example, in the recent *Campaign for Fiscal Equity v. New York State* case, the New York State Supreme Court found funding in New York City "so deficient that it falls below the constitutional floor set by the education article of the New York State Constitution" (Goodnough, 2001). Moreover, the court went on to find that the system disproportionately harmed minority students, who make up the majority of New York City's public school students.

As adequacy claims have increased in state courts, school finance research on adequacy issues has grown over the past decade. This report contributes to that body of research by examining school finance adequacy in Georgia and across the United States. Specifically, it quantifies differences in adequacy across states and across racial groups within states, estimates the cost to bring all students to selected adequacy levels, and analyzes adequacy in relation to district racial composition and location. The next section provides conceptual and historical background on school finance adequacy and its relationship to equity

concerns, followed by a discussion of the empirical results. A final section draws conclusions for policy and future research. An appendix describes the data and methods used in the study.

[1]790 S.W. 2d 186, Ky. 1989.

Conceptual Basis of School Finance Adequacy

A large body of research has explored school finance equity within states (see for example, Johnston and Duncombe 1998; Odden, Busch and Hertert 1996) and across states (see Berne and Stiefel, 1984; Wyckoff, 1992; Parrish Matsumoto and Fowler 1995; Evans, Murray and Schwab, 1997; Parrish, Hikido and Fowler, 1998; Moser and Rubenstein, forthcoming). For example, Rubenstein, Doering and Gess (2000) analyze equity in Georgia between 1988 and 1996, and find that equity generally improved in years in which state aid was higher, and declined in years of tight state budgets.

While equity concerns have been well-documented, much less research has examined adequacy, particularly from a cross-state perspective. The concepts of equity and adequacy are closely related yet distinct. Equity compares school districts to each other, while adequacy measures education funding relative to an absolute standard. At its most basic, an adequate funding level is one that provides all students the opportunity to achieve specified benchmarks and goals. Determining these goals, and understanding the ways in which the inputs to education help students reach these goals, are among the difficult challenges facing policymakers and analysts working to determine adequate funding levels.

Courts are increasingly responding to litigation by defining the broad goals of the state's education system. For example, the Kentucky Supreme Court specified seven "capacities" that an adequate education should provide for children, including "oral and written communication skills to enable students to function in a complex and rapidly changing civilization" and "sufficient understanding of governmental processes to enable the student to understand the issues that affect his or her community, state and nation." (*Rose v. Council*, 1989). Odden and Clune (1998) take a broader and more ambitious approach to adequacy, defining the goal as "high achievement for all students." As they note, because certain students and school systems may require higher levels of resources to achieve desired performance goals, an important component of an adequate system would include additional resources for students with special needs. Therefore, the adequate funding level will likely vary according to student and district characteristics.

The measurement of adequacy is more difficult and less well-developed than the measurement of equity. While analysts have used numerous dispersion and relationship measures to examine equity (Berne and Stiefel, 1984), no generally accepted methods are available to determine adequate funding levels for different types of students. Since the nature of the relationship between educational inputs and outputs is not fully understood, identifying the level of resources that is necessary and sufficient to produce a given level of achievement is particularly challenging. Despite these difficulties, a number of researchers have addressed the issue head-on and attempted to determine adequate funding levels for districts within individual states. Three methods have primarily been used:[2]

1. A "professional expert" approach. In this approach, experienced educators and researchers convene to identify preferred instructional strategies for achieving educational goals (Guthrie and Rothstein, 1999). The expert groups then estimate the price of the necessary components. Variations on this approach have been used by Chambers and Parrish (1994) to develop their Resource Cost Model, and by Guthrie and Rothstein (1999) to develop estimates of adequate funding in Wyoming.

2. An empirical "exemplary district" approach. In this approach, researchers identify districts and/or schools that are representative of the state as a whole and of sub-groups within the state, such as high poverty and rural districts (Augenblick, 1997). Districts with higher performance and lower spending levels are then identified within each group. The researchers investigate the instructional strategies and expenditure patterns used in the exemplary districts (or schools) to identify the adequate per-pupil funding level for each type of district. This approach has been used to develop estimates of adequate funding levels in Ohio, Illinois and Mississippi.

3. An econometric approach. This approach is built on the development of cost functions (Duncombe and Yinger, 1997; Reschovsky and Imazeki, 1998). In this method, cost functions are used to construct a "cost index" that measures differences across districts in the resource levels needed to achieve a given level of student performance. The estimates control for factors that are assumed to be outside the control of the district, such as the mix of students, the cost of hiring teachers, and inefficiencies found in some districts.

[2]See Rubenstein and Picus, 2000, for further discussion of methods to assess adequacy.

Georgia's Quality Basic Education Act (QBE), which sets out the formula for distributing state funding to school districts, is premised on the implicit guarantee of an adequate base level of funding for all districts (Rubenstein, Doering and Gess, 2000). The formula establishes a base funding level per pupil for each of eighteen different programs, driven by pupil-teacher ratios and per-pupil costs for instruction, operations, and overhead. The state provides each district with this base amount of funding, less a locally-raised contribution.[3] This per-pupil foundation recognizes the different costs associated with educating different types of students (for example, general education versus special education, early grades versus secondary). However, the cost estimates for each program are not derived through any of the three methods described above. It is not readily apparent why, for example, the state funds a 15 to 1 pupil-teacher ratio in kindergarten, a 17 to 1 ratio in the primary grades and a 23 to 1 ratio in the upper elementary grades. Placed within the larger conceptual framework for adequacy, the formula appears to be largely input-based, with little empirical connection to school outcomes.

National research quantifying school finance adequacy (or inadequacy) has been relatively limited to date. Odden and Busch (1998), using the 1991-92 Common Core of Data (CCD) from the National Center for Education Statistics (NCES), estimate the cost of raising all districts in the United States to the median level of per-pupil state and local revenues in each state, as well as to the national median. They find that approximately one-third of all districts would require additional revenues to raise spending to the national median, at a total cost of $16.56 billion. Inflating that figure to 1996-97 dollars, they estimate a total cost of $22.3 billion. For Georgia, they estimate the total cost in 1991-92 of bringing all districts to the state median of state and local revenues at $202 million, while bringing all districts to national median of per pupil revenues would require $244 million. *Education Week* newspaper, in its yearly *Quality Counts* report, has also attempted to measure adequacy and to grade states on their efforts (Orlofsky and Olson,

[3]Each district must contribute revenue equivalent to a five mill tax on property. For poor districts, the state provides the majority of funding, while for wealthy districts the majority of revenue may be locally-raised.

2001). Using cost-adjusted NCES data, they divide each state's average expenditures by a national benchmark of $7,6524 to derive a score out of 100. Using this methodology, only West Virginia achieves a score of 100, while Arizona has the lowest score (44) of all states. Georgia receives a score of 80, and an overall adequacy grade B-.

[4]This figure was derived by inflating their 1997 benchmark of $7,000 per pupil. Each state's rating was calculated as its cost-adjusted per-pupil expenditures divided by the benchmark.

Analysis of Adequacy Across States

Table 1 displays mean spending per pupil by state for four current expenditure variables: nominal expenditures (not weighted for student needs or adjusted for cost-of-education differences), expenditures adjusted for inter-district cost differentials, expenditures calculated using weighted pupil counts, in which students with special needs are weighted more heavily than students without such needs, and expenditures adjusted for both student needs (weighted student counts) and cost differentials.[5] The appendix further describes the data used in the analyses, including the weights for student needs and the cost adjustments. Note that in states with above average costs, such as Alaska, cost-adjusted expenditures are well below nominal expenditures, while the opposite is true in lower-cost states, including Georgia. Because the weighted student counts inflate the denominator in the per-pupil expenditure calculation, weighted per pupil expenditures are, in all cases, lower than nominal expenditures.

One of the most difficult assumptions inherent in analyses of adequacy is the choice of an adequate funding level. As described above, researchers have used a variety of methods to assess adequacy. Odden and Clune (1998) review a number of strategies and suggest that estimates are often very close to the national spending median. Odden and Busch (1998) examine the per-pupil costs of several popular school reform models and conclude that raising spending in all districts to the national median would provide adequate funding to finance these reforms. Therefore, the analyses presented below use the national per-pupil current expenditure median for 1996-97 in nominal dollars, as well as national median calculated with weighted and adjusted per-pupil expenditures, as the adequacy benchmarks for the calculations.

[5]All means and medians used in this paper use a pupil level of analysis, so larger districts have a greater impact on the results than do small districts.

TABLE 1. CURRENT PER-PUPIL EXPENDITURE MEANS BY STATE, 1996-97

State	Number of Students	Number of Districts	Nominal	Cost-adjusted	Weighted	Cost-adjusted and Weighted
AK	128,143	53	$ 8,276	$ 6,512	$ 6,868	$ 5,401
AL	737,386	127	$ 4,642	$ 5,202	$ 3,848	$ 4,311
AR	457,349	311	$ 4,533	$ 5,201	$ 3,886	$ 4,459
AZ	783,543	213	$ 4,410	$ 4,458	$ 3,772	$ 3,810
CA	5,540,189	985	$ 4,964	$ 4,462	$ 4,265	$ 3,833
CO	672,634	176	$ 5,194	$ 5,285	$ 4,515	$ 4,596
CT	507,838	166	$ 8,302	$ 7,213	$ 6,846	$ 5,948
DC	78,648	1	$ 8,048	$ 7,494	$ 6,900	$ 6,425
DE	104,673	16	$ 6,913	$ 6,747	$ 5,871	$ 5,727
FL	2,241,298	67	$ 5,220	$ 5,453	$ 4,301	$ 4,490
GA	**1,346,761**	**180**	**$ 5,317**	**$ 5,707**	**$ 4,609**	**$ 4,946**
HI	187,653	1	$ 5,774	$ 5,790	$ 4,976	$ 4,990
IA	502,941	378	$ 5,312	$ 6,035	$ 4,457	$ 5,063
ID	245,252	112	$ 4,415	$ 4,806	$ 3,798	$ 4,133
IL	1,948,372	899	$ 5,707	$ 5,506	$ 4,756	$ 4,583
IN	981,546	292	$ 5,946	$ 6,361	$ 4,921	$ 5,263
KS	466,368	304	$ 5,556	$ 6,259	$ 4,716	$ 5,311
KY	631,592	176	$ 5,480	$ 6,135	$ 5,310	$ 5,946
LA	808,798	66	$ 4,526	$ 5,071	$ 3,793	$ 4,245
MA	896,555	295	$ 7,126	$ 6,078	$ 5,725	$ 4,882
MD	818,583	24	$ 6,747	$ 6,605	$ 5,699	$ 5,579
ME	212,818	223	$ 6,284	$ 6,420	$ 5,210	$ 5,318
MI	1,671,574	554	$ 6,453	$ 6,338	$ 5,945	$ 5,841
MN	843,812	341	$ 6,134	$ 6,268	$ 5,238	$ 5,352
MO	892,358	522	$ 5,087	$ 5,364	$ 4,350	$ 4,566
MS	502,326	149	$ 4,033	$ 4,630	$ 3,337	$ 3,831
MT	164,337	450	$ 5,398	$ 5,997	$ 4,566	$ 5,073
NC	1,208,695	117	$ 4,935	$ 5,380	$ 4,136	$ 4,506
ND	118,170	232	$ 4,667	$ 5,506	$ 4,001	$ 4,718
NE	290,497	609	$ 5,519	$ 6,286	$ 4,587	$ 5,224

State	Number of Students	Number of Districts	Nominal	Cost-adjusted	Weighted	Cost-adjusted and Weighted
NH	193,524	162	$ 5,999	$ 5,751	$ 5,051	$ 4,842
NJ	1,192,039	551	$ 9,265	$ 8,042	$ 8,637	$ 7,498
NM	326,326	88	$ 4,643	$ 5,014	$ 3,805	$ 4,110
NV	282,131	17	$ 5,076	$ 5,333	$ 4,344	$ 4,563
NY	2,805,678	691	$ 8,531	$ 7,597	$ 7,159	$ 6,377
OH	1,844,245	611	$ 5,528	$ 5,572	$ 5,116	$ 5,158
OK	620,179	548	$ 4,618	$ 5,160	$ 3,936	$ 4,400
OR	518,164	214	$ 5,858	$ 6,077	$ 4,997	$ 5,183
PA	1,781,383	500	$ 6,490	$ 6,311	$ 5,571	$ 5,415
RI	150,433	36	$ 7,425	$ 6,746	$ 5,936	$ 5,396
SC	641,925	91	$ 5,066	$ 5,596	$ 4,256	$ 4,699
SD	135,601	173	$ 4,641	$ 5,468	$ 3,978	$ 4,687
TN	886,517	138	$ 4,612	$ 5,048	$ 3,780	$ 4,134
TX	3,826,366	1043	$ 5,073	$ 5,418	$ 4,215	$ 4,496
UT	479,812	40	$ 3,826	$ 4,018	$ 3,271	$ 3,435
VA	1,096,279	132	$ 5,663	$ 5,821	$ 4,731	$ 4,862
VT	100,277	246	$ 6,385	$ 6,463	$ 5,548	$ 5,614
WA	974,504	296	$ 5,651	$ 5,468	$ 4,828	$ 4,668
WI	878,283	425	$ 6,721	$ 7,029	$ 5,651	$ 5,910
WV	303,441	55	$ 6,031	$ 6,736	$ 4,865	$ 5,431
WY	98,777	49	$ 5,982	$ 6,553	$ 5,068	$ 5,550

Table 2 contains adequacy statistics for each state using nominal (unweighted and unadjusted) current expenditures per pupil as the object of analysis. The table uses the Odden-Picus Adequacy Index (OPAI) as the primary measure of adequacy in a state (see appendix for further description of the measure). An OPAI of 1.0 indicates that all districts in a state have average current per-pupil expenditures above a chosen adequacy level. An OPAI of .80 indicates per-pupil spending would need to be increased by 20 percent of the adequacy level and spent only on students in districts below the benchmark in order for full adequacy to be achieved (Odden and Picus, 2000, 71). Using the nominal data, the national median of current per-pupil expenditures of $5,333 is used as the benchmark.[6] Eight states have an OPAI of 1.0, while Utah has the lowest value at .714. The majority of states have an OPAI of .90 or above. Georgia achieves a score of .955, which places it 29th among the 51 states. Not surprisingly, Southeastern states (Mississippi, Arkansas, Louisiana and Tennessee) are disproportionately represented in the bottom quintile. The remaining low-adequacy states (Utah, Arizona, Idaho, North Dakota, Oklahoma, and New Mexico) are in the western part of the U.S. All of the states with an OPAI of 1.0, with the exception of Alaska and Hawaii, are in the Northeast. Thus, the rankings appear to reflect, in large part, traditional regional differences in spending levels.

The table also lists the proportion of students and of districts below the adequacy benchmark. If districts with low average spending are generally large (often urban) districts, then the proportion of students below the benchmark may be much larger than the proportion of districts below the benchmark. Most states have similar proportions of students and districts below the benchmark, but there are several notable exceptions. For example, in Nevada only 23.5 percent of districts spend below the adequacy benchmark, but these districts serve almost 85 percent of the state's students.[7] Conversely, in Ohio

[6]This median is calculated using the data set created for these analyses. Other sources, such as the NCES Education Finance Statistical Center (http://nces.ed.gov/edfin/) list a slightly higher national median. The reason for the difference is not entirely clear, though it may be related to the deletion in this data set of districts with high proportions of special education students, which typically have much higher spending per pupil.

[7]Over half of the state's students are in Clark County.

TABLE 2. ADEQUACY ESTIMATES BY STATE, NOMINAL 1997 EXPENDITURES (MEDIAN = $5,333)

Rank	State	OPAI	Percent Districts Below	Percent Students Below	Additional Funds For Adequacy	Additional Funds Per Pupil For Adequacy
1	AK	1.000	0.0%	0.0%	$ -	$ -
1	CT	1.000	0.0%	0.0%	$ -	$ -
1	DC	1.000	0.0%	0.0%	$ -	$ -
1	DE	1.000	0.0%	0.0%	$ -	$ -
1	HI	1.000	0.0%	0.0%	$ -	$ -
1	MD	1.000	0.0%	0.0%	$ -	$ -
1	NY	1.000	0.0%	0.0%	$ -	$ -
1	RI	1.000	0.0%	0.0%	$ -	$ -
9	NJ	1.000	0.4%	0.1%	$ 138,534	$ 99
10	WV	1.000	1.8%	1.2%	$ 619,159	$ 176
11	MA	0.999	5.1%	1.8%	$ 4,593,273	$ 284
12	WI	0.999	4.5%	2.2%	$ 5,490,954	$ 287
13	PA	0.998	7.4%	5.2%	$ 22,720,045	$ 247
14	ME	0.996	7.6%	9.9%	$ 4,433,314	$ 211
15	MI	0.994	23.1%	12.0%	$ 49,285,729	$ 245
16	WA	0.993	22.0%	20.4%	$ 36,780,670	$ 185
17	MN	0.992	24.3%	21.1%	$ 35,616,025	$ 200
18	WY	0.992	12.2%	26.5%	$ 4,182,601	$ 160
19	OR	0.990	12.1%	17.7%	$ 26,308,790	$ 287
20	VT	0.988	21.1%	20.5%	$ 6,393,490	$ 311
21	IN	0.987	38.0%	26.6%	$ 70,076,221	$ 268
22	NH	0.980	16.7%	20.8%	$ 20,468,578	$ 508
23	KY	0.966	51.7%	47.7%	$ 115,908,140	$ 384
24	IA	0.965	59.3%	55.4%	$ 92,824,804	$ 333
25	VA	0.965	51.5%	49.0%	$ 203,739,657	$ 379
26	KS	0.964	23.7%	32.8%	$ 88,975,417	$ 582
27	NE	0.963	37.8%	41.0%	$ 57,110,297	$ 479
28	FL	0.957	65.7%	61.9%	$ 515,900,579	$ 372

Rank	State	OPAI	Percent Districts Below	Percent Students Below		Additional Funds For Adequacy		Additional Funds Per Pupil For Adequacy
29	**GA**	**0.955**	**70.0%**	**63.3%**	**$**	**321,392,637**	**$**	**377**
30	CO	0.949	46.0%	74.6%	$	184,628,800	$	368
31	OH	0.942	73.5%	53.7%	$	566,708,597	$	572
32	IL	0.940	65.9%	44.3%	$	624,254,518	$	723
33	NV	0.936	23.5%	84.6%	$	96,509,122	$	404
34	TX	0.930	42.9%	81.2%	$	1,427,761,391	$	460
35	SC	0.927	69.2%	70.0%	$	250,269,465	$	557
36	CA	0.917	73.6%	76.3%	$	2,447,360,067	$	579
37	NC	0.917	70.9%	82.5%	$	537,318,910	$	539
38	MT	0.913	42.7%	65.3%	$	76,114,587	$	710
39	MO	0.895	77.0%	74.0%	$	498,186,441	$	754
40	AL	0.866	89.8%	89.6%	$	527,544,348	$	798
41	SD	0.856	74.6%	91.7%	$	104,228,229	$	838
42	TN	0.855	91.3%	85.0%	$	683,384,043	$	906
43	NM	0.855	46.6%	91.2%	$	251,609,125	$	845
44	OK	0.854	67.9%	92.5%	$	481,450,831	$	839
45	LA	0.846	92.4%	96.9%	$	665,440,720	$	849
46	ND	0.845	53.4%	86.0%	$	97,529,110	$	959
47	AR	0.840	91.6%	86.2%	$	389,154,550	$	987
48	ID	0.819	66.1%	91.6%	$	236,881,447	$	1,054
49	AZ	0.815	71.4%	92.2%	$	771,831,622	$	1,069
50	MS	0.756	99.3%	99.9%	$	652,861,661	$	1,300
51	UT	0.714	82.5%	98.6%	$	730,566,666	$	1,545
	TOTAL				$	13,984,553,164		

73.5 percent of the state's districts spend below the benchmark but these districts serve only 53.7 percent of the state's students, suggesting that the larger districts tend to have higher spending. Georgia has a relatively even distribution, with 70 percent of districts serving 63 percent of students spending below the national median.

Table 2 also includes estimates of the total and per-pupil cost required to bring all students up to the adequate level. The total estimated cost is just below $14 billion. The needed expenditures are concentrated in the largest states, with California and Texas together accounting for over a quarter of the additional spending. On a per-pupil basis, though, the additional expenditures required in these states amount to between $400-$600 for every pupil below the adequacy benchmark, as compared to over $1,000 per pupil in the states with the lowest OPAI. In Georgia, additional spending of $321 million in 1997, given only to students in districts below the benchmark, would have brought all districts to this level. This amounts to an additional $377, on average, for each student in low-spending districts, or an increase of approximately 4.5 percent in current expenditures.

The $14 billion estimate is somewhat lower than Odden and Bush's (1998) estimate of $16.56 billion in additional required state and local revenues, using 1991-92 data. The amount of additional expenditures required is very sensitive to the choice of adequacy level, however. For example, modestly increasing the adequate expenditure level to $6,000 per pupil more than doubles the amount of additional expenditures required for the nation to over $32 billion.

Table 3 presents the same information using weighted, cost-adjusted expenditures as the object of expenditure. The median national expenditure level is $4,657. This lower expenditure level is the result of using a student count inflated by the student weightings. This figure implies that while $4,657 is adequate for a student without special needs, a student from a low-income family or with limited English Proficiency would require $5,588, and a student in special education would require $10,711. The bottom row shows

TABLE 3: ADEQUACY ESTIMATES BY STATE, COST- AND NEED-ADJUSTED 1997 EXPENDITURES (MEDIAN = $4,657)

Rank	State	Percent Districts Below	Percent Students Below	OPAI	Additional Funds For Adequacy	Additional Funds Per Pupil	Percent Low-Income	Percent LEP	Percent Special Ed
1	DC	0.0%	0.0%	1.000			25.4	2.5	8.5%
1	DE	0.0%	0.0%	1.000			11.4	0.9	11.9%
1	HI	0.0%	0.0%	1.000			19.1	5.7	8.5%
1	MD	0.0%	0.0%	1.000			9.8	1.1	12.7%
1	NY	0.0%	0.0%	1.000			18.0	0.9	12.2%
1	WY	0.0%	0.0%	1.000			12.5	0.4	11.8%
7	CT	0.6%	0.3%	1.000	$ 102,284	$ 55	9.7	1.6	14.6%
8	NJ	0.4%	0.1%	1.000	206,827	162	6.4	1.4	4.5%
9	KY*	0.6%	0.2%	1.000	87,149	70	15.7	0.3	0.0%
10	WV	1.8%	1.2%	1.000	52,975	12	19.4	0.4	15.5%
11	MI	2.7%	0.9%	1.000	2,442,020	153	16.3	0.6	4.0%
12	WI	1.4%	0.7%	1.000	1,418,226	187	12.9	0.8	12.5%
13	RI	8.3%	8.6%	0.997	2,940,390	182	11.7	2.1	17.2%
14	PA	9.4%	19.5%	0.997	33,239,796	82	13.7	0.8	10.6%
15	IN	14.7%	13.1%	0.994	29,033,977	187	12.3	0.6	14.0%
16	IA	6.3%	11.6%	0.992	20,068,648	287	12.1	0.6	12.9%
17	ME	10.3%	17.0%	0.991	10,622,805	244	11.5	0.4	14.0%
18	MN	8.8%	14.3%	0.990	45,938,243	326	7.4	0.8	12.3%
19	OR	9.8%	22.9%	0.990	28,587,527	206	13.7	1.2	11.0%
20	KS	9.5%	16.7%	0.988	28,408,603	310	11.9	0.7	11.7%
21	VT	14.2%	18.1%	0.986	7,378,302	352	10.2	0.2	10.2%
22	**GA**	**16.7%**	**29.0%**	**0.986**	**96,823,811**	**215**	**10.4**	**0.5**	**10.3%**
23	OH	34.4%	27.9%	0.985	138,980,411	250	15.4	0.5	3.7%
24	NE	13.6%	42.8%	0.979	32,335,524	216	11.5	0.5	13.9%
25	VA	34.1%	42.0%	0.971	172,830,681	314	12.3	0.9	13.1%
26	SC	44.0%	55.0%	0.967	107,988,867	257	18.2	0.4	11.7%
27	WA	32.1%	56.9%	0.964	209,239,518	323	13.2	1.4	10.9%
28	NV	17.6%	83.8%	0.961	57,044,860	207	13.3	1.7	10.6%

Rank	State	Percent Districts Below	Percent Students Below	OPAI	Additional Funds For Adequacy	Additional Funds Per Pupil	Percent Low-Income	Percent LEP	Percent Special Ed
29	MA	47.8%	45.1%	0.960	241,480,916	480	10.9	1.8	16.7%
30	AK	1.9%	37.7%	0.958	38,748,558	666	10.5	1.1	13.8%
31	CO	27.3%	68.4%	0.951	176,488,929	333	10.8	0.8	9.9%
32	NC	49.6%	70.2%	0.951	306,389,105	303	14.8	0.8	12.5%
33	FL	52.2%	74.0%	0.950	605,525,236	301	18.4	1.9	13.4%
34	SD	30.6%	68.4%	0.949	33,452,166	310	12.0	0.3	10.9%
35	NH	32.7%	50.0%	0.945	64,062,938	557	6.7	0.5	13.4%
36	MT	29.6%	55.0%	0.935	54,241,456	507	17.5	0.3	11.4%
37	TX	28.3%	75.2%	0.932	1,418,289,236	410	21.2	3.6	11.8%
38	AR	57.2%	70.7%	0.931	149,103,855	395	14.8	0.3	10.5%
39	ND	25.0%	60.9%	0.926	41,388,528	494	14.3	0.2	10.5%
40	MO	55.9%	68.3%	0.924	345,823,182	482	15.8	0.5	11.1%
41	AL	73.2%	81.4%	0.915	314,831,049	435	18.0	0.4	13.1%
42	IL	62.1%	72.0%	0.909	1,029,321,166	610	14.7	1.9	11.5%
43	OK	35.4%	74.9%	0.904	305,847,267	562	9.1	0.4	11.9%
44	LA	84.8%	93.8%	0.903	387,394,892	427	25.4	0.6	11.1%
45	TN	87.0%	85.1%	0.878	555,860,598	604	19.0	0.5	14.0%
46	ID	51.8%	86.2%	0.867	164,365,222	669	14.2	1.0	10.2%
47	NM	38.6%	89.5%	0.860	242,857,000	682	17.9	3.0	13.8%
48	MS	94.6%	98.2%	0.821	442,496,574	742	18.7	0.2	13.2%
49	CA	73.8%	97.3%	0.819	6,181,773,959	985	13.9	6.0	9.7%
50	AZ	68.1%	93.2%	0.808	821,758,833	962	18.7	3.1	9.7%
51	UT	82.5%	98.5%	0.735	661,243,912	1,199	11.2	0.7	11.1%
	TOTAL				15,608,516,021				

*Special education data are not available for Kentucky.

that when student needs and differential costs are taken into account, the total additional expenditures needed to raise all students to the adequacy benchmark rises to $15.6 billion.[8]

The number of states with all students above the national benchmark falls from eight to six, with Alaska, Connecticut, and Rhode Island falling below 1.0, and Wyoming joining the list. The OPAI for traditionally high-spending states such as Connecticut and New Jersey falls just below 1.0 once student needs and the higher costs in these states are taken into account, with one or two districts falling below the benchmark. While nominal spending shows all students in Alaska above the benchmark, the cost-adjusted dollars suggest that, with substantially above-average costs, over one-third of students in Alaska receive average real resources below the national median. Similarly, some states with relatively lower nominal spending but below average costs, such as Kentucky and South Carolina, have substantially higher OPAI values after factoring in these cost and need differences. Georgia's OPAI increases to 0.986 and its ranking to 22, suggesting that the lower average costs in many Georgia districts somewhat offset the lower nominal spending.

Table 3 also presents each state's proportion of students from low-income families, with limited English proficiency and in special education. California, which has higher than average costs and serves large numbers of students with limited English proficiency, falls to near the bottom of the pack once need and cost differences are taken into account. Of the over $15 billion in additional required expenditures nationally, almost 40 percent ($6.18 billion) would be in California, with Texas accounting for the next largest share at $1.42 billion. Only Utah, though, would require additional expenditures over $1,000 for each pupil below the national benchmark.

Using the weighted, adjusted data, most states have a higher proportion of students below the adequacy benchmark than districts below the benchmark. In Alaska, for example, only one district has average expenditures below the benchmark, but that district (Anchorage) serves over one-third of the state's students. In California, 74 percent of the districts have average expenditures below the benchmark, but these districts serve the almost all students in

[8]For comparability, the required additional expenditures are listed in nominal rather than cost-adjusted dollars.

the state (97.3 percent). This pattern (using the cost-adjusted and need-weighted data) is not surprising since large urban districts may have higher costs and serve disproportionately high proportions of students with special needs. The proportion of students and districts below the median in Georgia change dramatically when student costs and needs are taken into account. Only one-sixth of the districts (16.7 percent), serving 29 percent of students, are below the national benchmark. Therefore, the additional required expenditures amount to only $96.8 million, well below the required nominal spending increase of $321 million.

Racial Disparities in School Finance Adequacy

Table 4 displays the percentage of African-American and minority students by state, along with each state's OPAI value and rank. While African American students constitute the largest minority group in most states, several states have large proportions of Latino, Asian and Pacific Islander students. For example, Texas, New Mexico, and California have large Latino populations, while Hawaii has a large Asian and Pacific Islander population.[9] In Georgia, over 43 percent of students are African American, Latino or Asian, and the majority of those students (38 percent of total enrollment) are African American. The proportion of African American students varies widely across districts, ranging from zero in three counties to almost 99 percent in Hancock County.

Looking at the table, no clear relationship between adequacy and the proportion of African-American students is apparent. For example, two states with OPAI values of 1.0 (Hawaii and Wyoming) have relatively low proportions of African-American students, while two others (District of Columbia and Maryland) serve student populations that are over one-third African American. At the other end of the scale, most of the states with the lowest OPAI values (Utah, Arizona, California, and New Mexico) serve a small percentage of African-American pupils, though low-ranked Mississippi is over 50 percent African American. With the exception of Utah, though, each of these low-adequacy states has a high proportion of minority group students.

A more systematic analysis also reveals a mixed picture. The Pearson correlation coefficient (pupil-weighted) between the percentage of African-American students in a state and its OPAI is 0.164, reflecting a weak positive relationship between adequacy and a state's racial composition. Thus, as the percentage of African-American students increases, the state's OPAI also tends to increase. Examining the relationship between the percentage of minority students and adequacy, however, yields a very different result. The

[9]The data on student race are aggregated from the school to the district level for the 1996-97 school year. I thank William Fowler of NCES for providing these data.

TABLE 4: STATE ADEQUACY RANKINGS AND RACIAL COMPOSITIO

Rank	State	OPAI	Percent African American	Percent African American Below Median	Percent African American Above Median	Percent Minority	Percent Minority Below Median	Percent Minority Above Median
1	DC	1.000	87.0%		87.0%	96.0%		96.0%
1	DE	1.000	30.2%		30.2%	37.0%		37.0%
1	HI	1.000	2.6%		2.6%	78.4%		78.4%
1	MD	1.000	36.2%		36.2%	44.2%		44.2%
1	NY	1.000	20.5%		20.5%	44.4%		44.4%
1	WY	1.000	1.1%		1.1%	11.2%		11.2%
7	CT	1.000	13.3%	9.7%	13.3%	28.0%	20.3%	28.1%
8	NJ	1.000	18.4%	12.7%	18.5%	38.1%	38.1%	38.1%
9	KY	1.000	10.1%	7.5%	10.1%	11.3%	8.6%	11.3%
10	WV	1.000	4.1%	1.2%	4.1%	4.9%	2.1%	5.0%
11	MI	1.000	18.7%	0.6%	18.9%	24.2%	5.0%	24.4%
12	WI	1.000	9.8%	0.3%	9.8%	17.8%	2.4%	17.9%
13	RI	0.997	7.3%	6.9%	7.4%	22.4%	32.7%	21.5%
14	PA	0.997	14.4%	42.6%	7.8%	20.3%	53.7%	12.4%
15	IN	0.994	11.4%	1.8%	12.9%	15.1%	4.0%	16.8%
16	IA	0.992	3.5%	6.6%	3.1%	8.2%	9.8%	8.0%
17	ME	0.991	0.9%	0.6%	1.0%	2.7%	1.6%	3.0%
18	MN	0.99	5.4%	1.5%	6.1%	14.1%	5.7%	15.5%
19	OR	0.99	2.8%	1.3%	3.2%	16.2%	13.2%	17.1%
20	KS	0.988	8.6%	3.5%	9.7%	18.7%	16.6%	19.2%
21	VT	0.986	0.9%	0.6%	1.0%	2.1%	0.0%	2.6%
22	**GA**	**0.986**	**38.4%**	**22.0%**	**44.5%**	**43.3%**	**28.1%**	**49.3%**
23	OH	0.985	15.6%	4.4%	20.0%	18.2%	6.0%	23.0%
24	NE	0.979	6.2%	11.8%	2.0%	13.7%	23.1%	6.7%
25	VA	0.971	27.1%	32.7%	23.1%	34.5%	36.7%	32.9%
26	SC	0.967	41.9%	37.5%	47.4%	43.9%	39.7%	49.2%
27	WA	0.964	5.0%	3.9%	6.4%	23.3%	20.6%	26.8%

Rank	State	OPAI	Percent African American	Percent African American Below Median	Percent African American Above Median	Percent Minority	Percent Minority Below Median	Percent Minority Above Median
28	NV	0.961	9.6%	11.2%	1.0%	36.7%	39.8%	20.3%
29	MA	0.96	8.6%	4.2%	12.2%	22.6%	10.9%	32.4%
30	AK	0.958	4.7%	8.7%	2.4%	37.4%	33.0%	40.0%
31	CO	0.951	5.6%	7.4%	2.0%	28.8%	33.4%	19.1%
32	NC	0.951	31.0%	29.6%	34.6%	36.8%	36.0%	38.9%
33	FL	0.95	25.4%	24.7%	27.6%	43.9%	36.9%	63.8%
34	SD	0.949	1.0%	1.3%	0.3%	11.9%	9.5%	17.1%
35	NH	0.945	1.0%	1.2%	0.7%	3.7%	5.1%	2.3%
36	MT	0.935	0.6%	0.7%	0.4%	12.8%	9.1%	17.4%
37	TX	0.932	14.4%	14.9%	12.8%	55.2%	56.6%	50.9%
38	AR	0.931	23.8%	17.3%	39.5%	27.1%	21.2%	41.4%
39	ND	0.926	0.9%	1.1%	0.5%	9.8%	8.1%	12.4%
40	MO	0.924	16.6%	7.9%	34.8%	19.2%	10.1%	38.3%
41	AL	0.915	36.4%	36.2%	37.1%	38.6%	38.3%	40.2%
42	IL	0.909	21.1%	24.2%	13.2%	37.6%	42.6%	25.0%
43	OK	0.904	10.7%	12.3%	5.7%	31.9%	30.5%	36.4%
44	LA	0.903	46.7%	46.9%	42.5%	49.7%	50.1%	44.7%
45	TN	0.878	23.2%	22.0%	29.9%	22.4%	20.4%	33.5%
46	ID*	0.867						
47	NM	0.86	2.4%	2.6%	0.5%	62.7%	62.5%	64.3%
48	MS	0.821	51.3%	50.8%	79.2%	52.5%	52.0%	79.5%
49	CA	0.819	8.7%	8.8%	5.7%	60.8%	61.5%	37.0%
50	AZ	0.808	4.3%	4.2%	5.8%	44.4%	42.2%	75.5%
51	UT	0.735	0.8%	0.8%	0.1%	11.4%	11.2%	31.1%

*Student enrollments by race are not available for Idaho.

correlation between percent minority and OPAI is -0.522, reflecting a strong negative relationship between adequacy and the percentage of a state's students from minority groups. The difference may be explained in large part by several large states (California, Illinois, Texas, and Arizona) with relatively low OPAI values and large numbers of Latino students.

Statewide averages may mask important intra-state disparities however. For example, if a state has a high proportion of minority students and a high OPAI, but the districts above the adequate level serve primarily white students, then the relationship between adequacy and student race may be stronger than appears by examining the statewide average. To assess this relationship, Table 4 also includes the percentage of African-American and minority students in the state as a whole, and in districts above and below the adequacy benchmark. Six states have no districts below the benchmark. Of the remaining 45 states, eight have well below average proportions of African-American students in districts above the adequacy benchmark (Pennsylvania, Nebraska, Virginia, Nevada, Colorado, Illinois, Oklahoma, and Louisiana). All but Louisiana also have above-average percentages of African-American students in lower spending districts. In other words, African-American students in these states are likely to be in districts spending below the adequacy benchmark.

Most states, though, have proportions of African-American students in districts above and below the benchmark that reflect the statewide demographic composition of students. Several states, such as Georgia, South Carolina, Arkansas, and Missouri, have well above average proportions of African-American students in higher spending districts, and below average proportions of African-American students in lower spending districts. In Michigan and Wisconsin, where the state proportions of African-American students are 19 and 10 percent respectively, districts above the benchmark have average percentages of African-American students, but the districts below the benchmark serve almost exclusively white student populations.

In Georgia, the higher spending districts are primarily very small rural districts (for example, Baker, Taliafero, and Clay), though the Atlanta City schools and Clarke County

schools (Athens) are also among the highest spending districts. Many of these higher spending districts are in rural south Georgia and serve predominantly African-American student populations. Of the 45 highest spending districts (25 percent of total), 32 serve above the state average proportion of African-American students. At the other end of the spectrum, four of the ten lowest spending districts are in or just outside metro Atlanta (Cobb, Paulding, Fayette, and Walton) and each has a student population that is less than 20 percent African American. It is important to note, though, that for many of the high-spending districts, the higher per-pupil spending may be primarily the result of diseconomies of scale. For example, seven of the ten highest spending districts have enrollments of less than 1000 students, and six of these districts are in southwest Georgia.

Examining the spending patterns in relation to the proportion of all minority students (African American, Latino, Asian, and Pacific Islander) produces similar results. Most states with higher proportions of African-American students in districts below the national benchmark also have higher proportions of all minority students in these districts, though disparities become more pronounced in a limited number of states, such as Texas and Rhode Island. Likewise, most states with a higher proportion of African-American students in districts above the benchmark exhibit the same pattern for all minority students. The differences become even larger in some states, such as Florida, which has a slightly above average proportion of African-American students in districts above the benchmark, but a well above average proportion of minority students (64 percent in districts spending above the adequacy benchmark as compared to the state average of 44 percent).

In Georgia, the minority group students in most districts are primarily African American. There are some notable exceptions, though. Dalton City schools, the fifth highest spending district in the state, serves a student population that is approximately 12 percent African American and nearly 40 percent Latino. Similarly, the student population in the Gainesville City school district is almost 30 percent Latino. Of districts below the adequacy benchmark, only Hall County has a Latino student population of over 10 percent.

Interestingly, the within-state differences are most pronounced in some of the states with the lowest overall adequacy rankings. In Arizona, for example, districts spending above

the national benchmark serve over 75 percent minority children on average, while districts below the benchmark have 42 percent minority children. Similarly, in Utah the districts spending below the benchmark have primarily white student populations (89 percent) while those above the benchmark are 69 percent white. Because the vast majority of students in these states are in districts spending below the national benchmark, though, the above-benchmark averages include relatively few students.

A small number of states exhibit the opposite pattern. For example, lower spending districts in California tend to have much higher proportions of minority students than do higher spending districts (62 percent in lower spending districts versus 37 percent in higher spending districts). In Nebraska, almost 14 percent of the state's students are racial minorities, yet districts below the adequacy benchmark average 23 percent and districts above the benchmark average less than seven percent. Pennsylvania has the most dramatic contrast, with districts spending below the national benchmark averaging 54 percent minority students as compared to 12 percent in districts above the benchmark and just over 20 percent in the state as a whole. Unlike California, most minority students in Pennsylvania are African American. Despite these exceptions, though, most states have similar or lower proportions of African-American and minority students in districts below the adequacy benchmark as compared to the state average, suggesting that African-American, Latino and Asian children are not systematically over-represented in the lowest spending districts in most states.

Given that racial demographics may be closely related to location, examining the relationship between adequacy and district location may also shed some light on these patterns. The CCD contains location descriptors from the Census Bureau categorizing each district in one of seven categories: Large Central City, Urban Fringe of Large City, Mid-Size Central City, Urban Fringe of Mid-Size City, Large Town, Small Town and Rural. I combine Large Central City and Mid-Size Central City into a category called "Urban," Urban Fringe of Large City and Urban Fringe of Mid-Size City into a category called "Urban Fringe" and Large Town, Small Town and Rural into a Category called "Rural." Table 5 displays the percentage of districts above and below the adequacy level falling into each of these three

categories. In most states, urban and urban fringe districts are more likely to spend below the benchmark, while rural districts are more likely to

TABLE 5: DISTRIBUTION OF DISTRICTS BY LOCATION AND SPENDING RELATIVE TO NATIONAL MEDIAN OF WEIGHTED ADJUSTED CURRENT EXPENDITURES, 1997

	Percent						Percent			
	Urban	**Urban Fringe**	**Rural**	**TOTAL**			**Urban**	**Urban Fringe**	**Rural**	**TOTAL**
AK	0%	100%	0%	1	MS	Below	1%	11%	88%	141
	0%	0%	100%	52		Above	0%	0%	100%	8
AL	11%	22%	68%	93	MT	Below	0%	10%	90%	133
	9%	32%	59%	34		Above	0%	4%	96%	315
AR	1%	14%	85%	178	NC	Below	9%	41%	50%	58
	0%	5%	95%	133		Above	0%	12%	88%	59
AZ	50%	6%	44%	145	ND	Below	0%	19%	81%	58
	23%	5%	73%	66		Above	0%	2%	98%	172
CA	48%	33%	19%	727	NE	Below	5%	2%	93%	83
	22%	26%	52%	258		Above	1%	1%	98%	524
CO	44%	15%	42%	48	NH	Below	26%	6%	68%	53
	8%	1%	91%	128		Above	17%	1%	82%	109
CT	100%	0%	0%	1	NJ	Below	100%	0%	0%	2
	24%	36%	39%	165		Above	88%	2%	10%	549
DC	0%	0%	0%	0	NM	Below	12%	9%	79%	34
	100%	0%	0%	1		Above	0%	4%	96%	54
DE	0%	0%	0%	0	NV	Below	33%	33%	33%	3
	13%	44%	44%	16		Above	7%	0%	93%	14
FL	23%	57%	20%	35	NY	Below	0%	0%	0%	0
	3%	13%	84%	32		Above	31%	22%	47%	680
GA	**40%**	**17%**	**43%**	**30**	OH	Below	21%	25%	54%	210
	9%	**6%**	**85%**	**150**		Above	30%	24%	46%	401
HI	0%	0%	0%	0	OK	Below	27%	7%	66%	194
	100%	0%	0%	1		Above	2%	2%	96%	350
IA	0%	38%	63%	24	OR	Below	57%	24%	19%	21
	0%	6%	94%	352		Above	14%	14%	73%	191
ID	0%	9%	91%	58	PA	Below	28%	30%	43%	47

	Percent						Percent			
	Urban	**Urban Fringe**	**Rural**	**TOTAL**			**Urban**	**Urban Fringe**	**Rural**	**TOTAL**
	0%	0%	100%	54		Above	29%	30%	41%	453
IL	35%	12%	53%	558	RI	Below	0%	100%	0%	3
	37%	8%	55%	341		Above	0%	73%	27%	33
IN	49%	5%	47%	43	SC	Below	5%	43%	53%	40
	17%	18%	65%	249		Above	2%	22%	76%	51
KS	28%	17%	55%	29	SD	Below	0%	9%	91%	53
	3%	3%	94%	275		Above	0%	0%	100%	119
KY	0%	0%	100%	1	TN	Below	8%	17%	76%	120
	10%	10%	79%	175		Above	11%	39%	50%	18
LA	11%	27%	63%	56	TX	Below	39%	25%	36%	295
	10%	0%	90%	10		Above	6%	7%	87%	748
MA	65%	15%	21%	141	UT	Below	0%	30%	70%	33
	39%	16%	45%	150		Above	0%	0%	100%	7
MD	0%	0%	0%	0	VA	Below	22%	29%	49%	45
	38%	13%	50%	24		Above	10%	17%	72%	87
ME	4%	9%	87%	23	VT	Below	0%	6%	94%	35
	1%	11%	88%	200		Above	0%	4%	96%	211
MI	7%	29%	64%	14	WA	Below	35%	22%	43%	95
	22%	19%	59%	539		Above	4%	12%	84%	201
MN	47%	0%	53%	30	WI	Below	33%	0%	67%	6
	13%	8%	79%	304		Above	16%	14%	71%	418
MO	16%	5%	78%	292	WV	Below	0%	0%	100%	1
	10%	1%	89%	230		Above	2%	19%	80%	54
					WY	Below	0%	0%	0%	0
						Above	0%	4%	96%	49

spend above the benchmark.[10] For example, California has 727 districts below the benchmark and 285 districts above. Of the districts below the national benchmark, 60 percent are urban fringe and 21 percent are urban. Of those above the benchmark, only 48 percent are urban or urban fringe. Similar patterns are apparent in a number of states (for example, Arizona, Colorado, Florida, Georgia, Nevada, Texas, and Washington). Only in six states is the proportion of rural districts below the benchmark higher than the proportion above the benchmark. The higher spending in rural districts is somewhat surprising, but may be the result of several factors. Urban and urban fringe districts are likely to have higher costs and may have higher proportions of students with special needs. Therefore, even though nominal spending may be higher in urban districts, cost and need-adjusted spending may often be lower in urban areas than in rural areas. In addition, rural districts tend to be small and unable to take advantage of economies of scale. When fixed district costs (such as administration) are divided by low numbers of pupils, per-pupil averages are inflated. In Georgia, for example, rural districts average 3,589 students, as compared with 31,569 in urban districts and 20,222 in urban fringe districts.

[10]This pattern ignores states in which only one or two districts fall below the benchmark (e.g., Kentucky, New Jersey).

Regression Analysis

While the previous analyses shed some light on the relationship between these variables and spending for education, a multivariate analysis can help to disentangle the independent effects of each factor. Tables 6 and 7 present the results of regression analyses assessing the effects of several of the previously mentioned variables on district spending. Specifically, I regress weighted adjusted current expenditures per pupil on median housing value, percent African-American students (Table 6) or percent minority students (Table 7) and district enrollment.[11] Because a large proportion of funding for education comes from local property taxes, low property values in areas with a high percentage of minority students could lead to lower spending in these districts.[12] As described earlier, district size can cause economies or diseconomies of scale that affect per-pupil costs. Note that other factors that may be related to district spending, such as the percentage of students with limited English proficiency, with disabilities and from poor families, are not included in the equations because these factors are included in the student weights applied to the dependent variable.

The results in Table 6 show that – controlling for property wealth and district size – the percentage of African-American students in a district has a significant positive effect on spending in 18 states, and a significant negative effect in five states. In the remaining states, the signs on the coefficients are positive in 12 states and negative in 13 states, though not significantly different from zero. Taken together, the results suggest that, *ceteris paribus*, real cost and need-adjusted spending tends to be higher in districts serving higher proportions of African-American students in most states. The results displayed in Table 7 are even more consistent across states, with 25 states having a positive significant

[11]Each state is analyzed separately. As in previous analyses, the number of students in a district is used as a weighting factor so larger districts will have greater influence on the results than will smaller districts. Hawaii and the District of Columbia are not included as they have only one district. Idaho is excluded because data on racial composition are not available.

[12]Several caveats to the housing value data must be noted. Most importantly, the housing data are for residential property only. Since many districts, particularly those in urban areas, may be able to leverage substantial non-residential tax bases, these data present only a limited view of total property wealth. In addition, the data are from different time periods. The housing value data are from the 1990 Census, while the expenditure data are from 1996-97.

TABLE 6: REGRESSION RESULTS, DEPENDENT VARIABLE =WEIGHTED ADJUSTED CURRENT EXPENDITURES PER PUPIL, 1997

State	Constant	Median Housing Value (000)	Std. Error	t-stat	Pct African American	Std. Error	t-stat	Enrollment (000)	Std. Error	t-stat	Adj. R-sq.
AK	8,993	-28.67***	9.96	2.88	-66.54	82.88	0.80	-28.09	17.06	1.65	0.521
AL	4,038	6.11***	1.71	3.57	2.82**	1.17	2.42	-9.12***	1.67	5.45	0.208
AR	4,827	-18.36***	4.36	4.21	2.31	1.30	1.78	57.60***	6.91	8.33	0.532
AZ	4,388	-8.96***	1.62	5.52	-7.50	10.27	0.73	6.19***	1.81	3.41	0.135
CA	4,018	-1.45***	0.17	8.50	-2.88	1.57	1.83	1.00***	0.07	14.80	0.209
CO	4,358	0.63	2.53	0.25	-5.09	6.32	0.81	2.98	1.85	1.61	0.005
CT	5,501	2.17***	0.86	2.51	2.66	5.54	0.48	3.21	14.81	0.22	0.022
DE	5,105	4.05	4.14	0.98	-4.06	10.06	0.40	32.55**	14.77	2.20	0.346
FL	4,515	-1.80	2.65	0.68	-1.94	4.00	0.49	1.28***	0.44	2.87	0.109
GA	**4,840**	**-6.00***	**3.42**	**1.75**	**10.28*** **	**1.95**	**5.27**	**1.83**	**2.18**	**0.84**	**0.425**
IA	5,539	-10.22***	1.45	7.06	-44.69***	5.77	7.75	25.13***	4.10	6.13	0.211
IL	3,826	8.33***	0.75	11.14	5.94***	2.06	2.89	-1.09***	0.29	3.71	0.131
IN	5,378	-4.15***	1.53	2.72	4.82**	2.17	2.22	6.83*	4.01	1.70	0.124
KS	6,245	-14.25***	2.02	7.04	-13.15***	4.71	2.79	-4.16	4.38	0.95	0.204
KY	6,444	-17.31***	3.72	4.66	15.07**	7.49	2.01	4.34	2.91	1.49	0.348
LA	3,172	21.74***	5.97	3.64	2.41	2.68	0.90	-7.89**	3.43	2.30	0.147
MA	3,925	4.11***	0.73	5.62	26.54***	6.23	4.26	3.13	5.39	0.58	0.323
MD	4,207	9.11***	2.60	3.50	0.76	4.85	0.16	3.27	2.89	1.13	0.581
ME	5,489	1.00	1.78	0.56	430.04***	71.99	5.97	-280.10***	41.63	6.73	0.172
MI	4,831	13.59***	0.99	13.74	15.21***	1.67	9.13	-4.45***	0.90	4.96	0.278
MN	5,947	-10.54***	1.16	9.10	36.21***	4.11	8.80	-9.03***	3.03	2.98	0.432
MO	3,958	5.51***	1.05	5.25	13.47***	1.54	8.73	6.33*	3.30	1.92	0.309
MS	3,598	-3.10	4.62	0.67	6.10***	1.79	3.40	2.02	5.29	0.38	0.227
MT	7,691	-42.97***	5.17	8.32	-24.07	136.51	0.18	-96.17***	30.01	3.20	0.230
NC	3,916	8.58***	2.92	2.94	6.60***	1.93	3.41	-6.22***	1.70	3.66	0.126
ND	6,824	-48.05***	6.74	7.13	-164.66**	65.48	2.51	88.16***	27.49	3.21	0.274
NE	6,610	-24.81***	2.71	9.16	-15.89*	8.12	1.96	-6.47	5.62	1.15	0.252
NH	4,452	5.38**	2.09	2.58	245.95**	101.29	2.43	-132.33***	19.26	6.87	0.304
NJ	6,437	5.16***	1.57	3.30	6.86	3.74	1.84	4.31	7.99	0.54	0.056
NM	4,318	-2.49	3.54	0.70	-63.94**	28.10	2.28	-0.12	2.12	0.06	0.094
NV	6,403	-16.24	13.05	1.24	59.54	259.73	0.23	-7.09	19.75	0.36	0.097
NY	6,165	7.74***	0.44	17.45	-3.58	2.00	1.79	-2.17***	0.08	28.17	0.673
OH	3,969	14.16***	1.04	13.68	18.51***	1.73	10.68	-1.39	2.13	0.65	0.367
OK	4,843	-12.02***	3.48	3.45	12.10	6.70	1.81	-18.41***	6.36	2.89	0.353
OR	5,541	-5.57**	2.76	2.02	141.29***	21.70	6.51	-25.48***	5.88	4.33	0.255
PA	4,845	7.68***	0.71	10.88	11.05***	2.17	5.10	-5.88***	0.73	8.02	0.300

State	Constant	Median Housing Value (000)	Std. Error	t-stat	Pct African American	Std. Error	t-stat	Enrollment (000)	Std. Error	t-stat	Adj. R-sq.
RI	4,304	8.06	5.56	1.45	-33.46	21.06	1.59	29.48	24.83	1.19	0.086
SC	3,985	9.00***	3.11	2.89	8.14***	2.02	4.04	-10.15***	2.83	3.59	0.237
SD	5,857	-32.45***	4.00	8.11	-31.87	52.65	0.61	27.52**	10.49	2.62	0.475
TN	3,946	0.25	2.18	0.12	4.99	2.99	1.67	1.52	2.28	0.67	0.136
TX	5,148	-9.35***	0.84	11.13	-1.24	1.53	0.81	-2.00***	0.43	4.63	0.141
UT	4,159	-6.65	5.19	1.28	42.90	73.96	0.58	-7.21***	2.14	3.37	0.297
VA	3,964	9.30***	1.24	7.50	3.82	2.07	1.84	-4.27***	1.46	2.92	0.350
VT	4,401	13.50***	2.94	4.60	62.97	66.12	0.95	-129.57	87.33	1.48	0.075
WA	5,099	-5.09***	0.84	6.07	4.07	7.05	0.58	2.20	4.08	0.54	0.108
WI	5,739	3.10**	1.48	2.09	20.75***	6.67	3.11	-13.40***	4.19	3.20	0.033
WV	5,955	-10.97**	4.11	2.67	-6.26	14.68	0.43	2.57	7.31	0.35	0.084
WY	6,797	-11.85	9.42	1.26	-25.56	127.70	0.20	-84.34**	38.65	2.18	0.203

Regressions weighted by numbers of pupils per district

*** Significant at p< .01

** Significant at p< .05

* Significant at p<.10

TABLE 7: REGRESSION RESULTS, DEPENDENT VARIABLE =WEIGHTED ADJUSTED CURRENT EXPENDITURES PER PUPIL, 1997

State	Constant	Median Housing Value (000)	Std. Error	t-stat	Pct Minority	Std. Error	t-stat	Enrollment (000)	Std. Error	t-stat	Adj. R-sq.
AK	5541.70	-7.95	7.40	1.07	40.25***	5.40	7.46	-39.92***	7.51	5.32	0.773
AL	4023.87	6.15***	1.71	3.60	3.00**	1.19	2.52	-9.17***	1.67	5.49	0.211
AR	4860.48	-19.14***	4.37	4.38	1.97	1.39	1.42	58.61***	7.09	8.27	0.528
AZ	3890.89	-5.42**	2.26	2.40	4.27**	2.10	2.03	6.40***	1.80	3.56	0.150
CA	4261.10	-1.58***	0.16	9.58	-4.36***	0.52	8.31	1.21***	0.07	17.43	0.258
CO	4377.64	0.51	2.91	0.17	-1.14	2.79	0.41	2.78	1.86	1.50	-0.004
CT	5490.00	2.22**	0.88	2.54	2.26	4.28	0.53	-0.55	20.00	0.03	0.022
DE	4935.69	4.31	4.16	1.04	1.78	9.54	0.19	28.38	16.43	1.73	0.339
FL	4243.75	-0.78	2.50	0.31	8.09**	3.53	2.29	-0.38	0.76	0.51	0.174
GA	**4815.33**	**-6.30**	**3.34**	**1.89**	**10.74*** **	**1.97**	**5.45**	**1.10**	**2.21**	**0.50**	**0.437**
IA	5528.41	-9.29***	1.53	6.09	-15.18***	3.97	3.83	14.19***	4.45	3.19	0.115
IL	3875.96	7.89***	0.73	10.79	2.70	1.66	1.62	-0.94***	0.34	2.76	0.125
IN	5359.81	-4.12**	1.51	2.72	5.37***	1.87	2.86	5.74	3.79	1.52	0.133
KS	6393.10	-15.13***	1.98	7.64	-13.67***	3.11	4.39	-0.38	4.28	0.09	0.233
KY	6458.46	-17.74***	3.76	4.71	13.09*	6.84	1.91	4.89*	2.78	1.76	0.345
LA	3153.83	21.82***	5.89	3.71	2.73	2.75	0.99	-8.18**	3.48	2.35	0.149
MA	3649.33	5.07***	0.71	7.13	14.79***	2.26	6.55	4.10	3.76	1.09	0.374
MD	4130.78	9.70***	2.10	4.62	3.59	4.68	0.77	1.69	3.07	0.55	0.592
ME	5366.80	2.13	1.85	1.15	107.57***	23.32	4.61	-229.02***	40.57	5.64	0.122
MI	4768.72	13.40***	0.97	13.77	14.29***	1.50	9.54	-3.98***	0.83	4.78	0.287
MN	5828.20	-10.15***	1.19	8.56	18.50***	2.15	8.62	-6.97**	2.89	2.41	0.424
MO	3940.41	5.39***	1.04	5.20	14.26***	1.52	9.37	3.84	3.36	1.14	0.322
MS	3544.17	-2.68	4.51	0.59	6.67***	1.79	3.73	1.60	5.20	0.31	0.250
MT	7421.47	-39.80***	5.31	7.50	7.70**	3.37	2.28	-101.95***	22.77	4.48	0.239
NC	3896.17	8.96***	3.01	2.98	5.56***	1.86	3.00	-6.41***	1.76	3.65	0.106
ND	6628.18	-48.06***	6.61	7.27	14.25***	3.59	3.97	68.88***	24.80	2.78	0.304
NE	6864.58	-27.47***	2.49	11.05	-20.84***	2.76	7.55	-0.98	3.17	0.31	0.310
NH	4634.11	4.06*	2.14	1.90	82.55**	34.45	2.40	-150.56***	25.67	5.86	0.303
NJ	6924.74	3.65**	1.61	2.26	-3.74	2.96	1.27	14.32	8.91	1.61	0.044
NM	3882.02	-0.47	3.96	0.12	3.14	4.20	0.75	-1.82	2.12	0.86	-0.017
NV	8284.21	-17.80*	9.85	1.81	-82.91*	45.90	1.81	8.07	6.10	1.32	0.276
NY	6158.66	7.87***	0.45	17.53	-2.53	1.49	1.70	-2.11***	0.11	19.88	0.673
OH	3955.09	13.84***	1.02	13.54	18.75***	1.69	11.11	-2.89	2.18	1.33	0.375
OK	4814.25	-12.68***	4.06	3.12	4.77	4.77	1.00	-12.41**	5.13	2.42	0.328
OR	5454.70	-8.48***	3.01	2.82	14.95**	6.14	2.44	3.29	3.65	0.90	0.113
PA	4896.28	7.24***	0.71	10.19	5.04***	1.80	2.79	-4.57***	0.75	6.07	0.275

State	Constant	Median Housing Value (000)	Std. Error	t-stat	Pct Minority	Std. Error	t-stat	Enrollment (000)	Std. Error	t-stat	Adj. R-sq.
RI	4357.54	7.30	5.26	1.39	-17.97**	7.01	2.56	53.03**	25.99	2.04	0.184
SC	3995.80	8.64***	3.10	2.79	8.06***	2.02	3.99	-10.24***	2.84	3.61	0.234
SD	5582.23	-27.70***	4.35	6.37	6.51**	2.67	2.44	17.19**	8.29	2.07	0.510
TN	4051.68	-1.13	2.13	0.53	-0.68	1.78	0.38	5.28***	1.66	3.19	0.112
TX	5307.22	-10.45***	0.94	11.09	-2.36***	0.89	2.65	-1.51***	0.45	3.34	0.146
UT	3825.46	-3.36	5.17	0.65	12.60**	5.93	2.12	-7.34***	2.02	3.63	0.369
VA	3969.15	8.79***	1.18	7.42	4.51**	1.99	2.27	-4.39***	1.46	3.01	0.359
VT	4406.77	13.49***	2.93	4.60	9.67	7.42	1.30	-107.47	79.29	1.36	0.076
WA	5072.04	-5.03***	0.85	5.93	1.33	2.02	0.66	2.98	3.20	0.93	0.109
WI	5621.78	3.35**	1.45	2.30	17.10***	3.79	4.51	-13.39***	2.96	4.52	0.056
WV	5945.86	-10.73***	4.06	2.64	-5.10	13.68	0.37	2.27	7.23	0.31	0.083
WY	6547.93	-10.40	9.35	1.11	17.50	10.74	1.63	-94.62***	26.46	3.58	0.233

Regressions weighted by numbers of pupils per district

*** Significant at p< .01

** Significant at p< .05

* Significant at p<.10

coefficient on the percent minority variable, and seven states having a significant negative coefficient. Eleven states have a positive but not statistically significant coefficient and five states have a negative but not statistically significant coefficient. In Georgia, the coefficient on proportion of African American students is positive and significant, indicating the each one percentage point increase in the proportion of African American students is associated with an increase of ten dollars in weighted adjusted per-pupil spending, controlling for district size and property wealth.

The earlier analysis of intra-state disparities singled out several states that appeared to have within-state distributions of spending that worked to the detriment of minority students. The regression results support these findings in Nebraska, which shows a significant negative coefficient on percent African American, but the remaining states have positive coefficients or negative but not statistically significant coefficients. Of the five states with negative significant coefficients, only Kansas has a higher average proportion of minority students in districts above the adequacy benchmark than in those below. Most of the states with significant negative coefficients have very small African-American populations, however.

The estimates using percent minority students (Table 7) produce similar results. Several of the large states (notably California and Texas) with larger minority student bodies in lower spending districts have significant negative coefficients in these regressions. Interestingly, though, the state with the most pronounced difference in racial composition of districts above and below the national benchmark (Pennsylvania) has a positive significant coefficient rather than the expected negative sign.

The two control variables also yield some interesting results. In Table 6, 36 states have significant coefficients for median housing value, but surprisingly only half of these are positive. Georgia has a negative significant coefficient on the housing value variable,

suggesting that wealthier districts tend to spend less per-pupil. This result is not consistent with *a priori* expectations. Twenty-five states have negative coefficients on district size (19 are significant), supporting the earlier hypothesis that small size and the resulting diseconomies of scale drive up per pupil costs, particularly in rural districts.[13] In Georgia, however, the coefficient is not significantly different from zero.

[13]Though modeled as a linear function in this equation, other research (for example, Parrish, Matsumoto and Fowler, 1995) finds a non-linear relationship between district size and per-pupil expenditures, with diseconomies of scale most apparent in district serving fewer than 1000 students.

Conclusions

This report provides a starting point for estimating the cost of providing adequate educational resources in Georgia and across the nation, and for examining disparities in adequate educational opportunities across racial groups. The analysis does not attempt to determine an adequate funding level for different types of students, but instead uses existing estimates of adequate funding and differential costs to cost out the additional funding needed to achieve adequacy. Several conclusions arise from the analyses:

- ?? Using the national median of per pupil spending as the estimate of an adequate funding level, additional spending of approximately $14 - $16 billion is needed to raise all districts in the country to this benchmark, an increase of approximately five to six percent in total current expenditures. This figure is close to – though slightly below – previous estimates.
- ?? The required additional spending to bring all Georgia districts to adequacy is $321 million using nominal data (an increase of 4.5 percent in current expenditures), but only $96.8 million when the data are adjusted to reflect student needs and geographic cost of education differences.
- ?? The most consistent disparities across states are regional, with Northeastern states generally having high levels of adequacy and Southeastern states having low levels of adequacy. These disparities largely remain even when differences in the cost of education and student needs are taken into account.
- ?? Adequacy index values are only weakly (positively) correlated with the proportion of African-American students in a state, but strongly negatively related to the percentage of minority students in a state. This result may be driven in large part by several large states, such as California, Texas, and Arizona, with low OPAI values and high proportions of Latino and other minority students.
- ?? Inter-state racial disparities in adequacy are generally greater than intra-state disparities. In most states, districts below the national benchmark tend to serve lower proportions of African-American and minority students than do districts above the benchmark. Only a small number have substantially higher than average proportions of African-American and minority students in lower spending districts. Controlling for district size and housing values, spending in most states tends to be higher in districts with higher proportions of African-American and minority students.
- ?? Using cost- and need-adjusted expenditure data, I find that rural areas tend to be disproportionately represented in districts spending above the adequacy benchmark, while urban and urban fringe districts are more likely to be below the benchmark. This pattern is readily apparent in Georgia, where many of the highest spending districts are very small rural districts in Southwest Georgia. Lower costs and diseconomies of scale in these rural districts may account for much of this result.

These analyses raise a number of issues for future policy debates and research in Georgia and elsewhere. For example, the estimates show that the additional cost to bring average spending in all districts up to the current national median is relatively low, though the resources would need to be heavily targeted to specific states and districts. Using other standards of adequacy substantially changes the estimates, however. Even raising the bar from $5,333 to $6,000 per pupil, using unadjusted data, more than doubles the additional cost to the nation. In Georgia, the cost of meeting the $6,000 per pupil goal would be over $1 billion (Table 8). Achieving a more ambitious goal, such as nominal spending of $7,000 per pupil in all districts would require an additional investment of over $2 billion in Georgia, primarily because only 2 percent of school districts spent over $7,000 per pupil in 1997.

TABLE 8. COST OF ADEQUACY IN GEORGIA AT VARIOUS BENCHMARK LEVELS

	OPAI	Percent Districts Below	Percent Students Below	Additional Funds For Adequacy	Additional Funds Per Pupil
$5,000 Benchmark	.984	40.0	26.7	$104,858,000	$292
$5,333 Benchmark	.955	70.0	63.3	$321,392,637	$377
$6,000 Benchmark	.875	91.7	87.8	$1,007,352,000	$851
$7,000 Benchmark	.758	97.8	95.2	$2,276,837,000	$1,777

The analyses also produce somewhat surprising results regarding racial disparities in adequacy. While inter-state differences are largely correlated with the proportion of minority group students in a state, African American and minority children within states do not appear to be concentrated in lower spending districts. Therefore, a national strategy to address adequacy may be more effective than state-level strategies. In Georgia, higher spending districts tend to serve larger minority student populations than do lower-spending districts. Therefore, efforts to bring all districts up to the national median in Georgia could largely miss districts with high percentages of students of color. Many of the Georgia districts with higher per-pupil spending, however, are poor, rural, South Georgia districts. Therefore, measuring adequacy simply in terms of per-pupil expenditures may miss very important deficiencies in the resources available to students.

The sensitivity of the estimates to the level of adequacy specified suggests that more work needs to be done to accurately determine adequate resource levels for different students. In addition, it may not be sufficient to measure adequacy purely in terms of dollars spent. Rather, as a number of researchers have attempted to do, we may need to identify adequacy in terms of the resources (personnel and otherwise) that these dollars purchase. Only then can we hope to ensure that all students have the opportunity to achieve the educational goals set out for them.

Appendix: Data and Methods

All data in this report come from the Common Core of Data (CCD) from the National Center for Education Statistics (NES) for the 1996-97 school year. To exclude atypical districts and those not providing primarily general education services, I exclude very small districts (those with fewer than five students), those not reporting current expenditures, those with over 50 percent of students in special education as indicated by the presence of an Individualized Education Plan (IEP), and any districts classified as college-grade, vocational or special education systems, non-operating systems and educational service agencies. These exclusions result in a total of 14,145 districts in the database.

To account for differences in exogenous costs facing each district, the data were adjusted using the cost of education index created by Chambers (1998). Chambers's Geographical Cost of Education Index (GCEI) uses a hedonic wage model to control for factors outside local districts' control that affect their costs, including amenities that make teaching and other staff positions relatively more or less attractive.

In addition the cost-of-education adjustments, I weight the enrollment data (fall membership) to account for student needs that may require the spending of additional resources. Individual student-level data do not currently exist at a national level to facilitate study of each student's resource needs, but we can group students in broad categories that suggest differential resource needs. The most common of these categories are students requiring special education services, students from low-income families and students with limited English proficiency (LEP). Students with these special needs typically require more intensive resources, such as smaller classes, special adaptive tools or teachers with special training, to enable them to achieve at desired levels. The amount of additional resources is likely to vary across students, but estimates are available to give a general sense of the additional weights that should be applied to such students. Following Parrish, Matsumoto

and Fowler (1995), I use weights of 1.2 for students from low-income families and for LEP students, and a weight of 2.3 for students in special education. Thus, for example, a student in special education is assumed to require 2.3 times the funding of a student in general education. While the weights are an simply an estimate of the additional funding these students require, they provide a more accurate assessment of resource needs than would unweighted data. Weighted per pupil expenditures are then created by dividing total current expenditures by the weighted student count. Because the weighted student count is, by construction, larger than the unweighted count, weighted per-pupil expenditures will be lower. Therefore, districts with relatively high proportions of students with special needs but not the associated higher levels of expenditures will have low weighted expenditures per pupil relative to nominal expenditures.

While no consensus exists about the level of spending required to achieve adequacy for all students, Odden and Picus have developed a measure – the Odden-Picus Adequacy Index (OPAI) – that quantifies how far a given finance system is from achieving adequacy, assuming an adequate spending level is determined (Odden and Picus, 2000, 71). The index is similar to the McLoone Index in that it concentrates on students in districts below a given funding level. While the McLoone index uses a state or district median as the benchmark, the OPAI can be set at any level deemed to be "adequate". Specifically, it is calculated as:

(1) $OPAI = PCTABOVE_i + [PCTBELOW_i * (EXPBELOW_i/EXPADEQ_i)]$

where $PCTABOVE_i$ is the percentage of students in state i enrolled in districts spending above the adequate level, $PCTBELOW_i$ is the percentage of students in state i enrolled in districts spending below the adequate level, $EXPBELOW_i$ is total expenditures in state i by districts spending below the median, and $EXPADEQ_i$ is estimated expenditures in state i if all districts below the adequate level spent at the adequate level. Note that schools could be substituted for districts. School-level data, in fact, might provide a more accurate

assessment of the resources that actually reach students, though such data are rarely available on a large scale (Berne and Stiefel, 1994; Rubenstein, 1998).

Using the CCD, I calculate the OPAI for all states. As the object of analysis, the calculations use current expenditures per pupil on elementary and secondary education.[14] The data are weighted to account for student needs, and adjusted to reflect cost of education differences across districts. The analyses also compare the percentage of students above and below the adequate level, additional total and per-pupil spending required to bring all students up to the adequate level, and the relationship between the adequacy measures, district racial composition and district location.

[14]This variable includes current operating expenditures for instruction, student support services and "other" current expenditures such as food service. The variable excludes capital expenditures and expenditures for adult education and community services.

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