HOUSING POLICY *IS* SCHOOL POLICY

An Analysis of the Interaction of Housing Patterns, School Enrollments, and Academic Achievement in the Baltimore Area Public Schools

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EXECUTIVE SUMMARY

In 1966, sociologist James Coleman released his path-breaking study, *Equality of Educational Opportunity*. The Coleman Report concluded that the socioeconomic characteristics of a child and of the child's classmates (measured principally by family income and parental education) were the overwhelming factors that accounted for academic success. "The educational resources provided by a child's fellow students," Coleman summarized, "are more important for his achievement than are the resources provided by the school board…. The social composition of the student body is more highly related to achievement, independent of the student's own social background, than is any school factor."

For over three decades, educational researchers, including Coleman, have revisited, refined, and debated Coleman's original findings. There has been no more consistent finding of educational research than the paramount importance of a school's socioeconomic makeup on academic achievement.

This study examined the degree to which these findings applied to the 372 public elementary schools in the seven-county Baltimore metropolitan area. The study goals were three-fold:

1) to analyze the relationship between pupils' socioeconomic status (or SES), as measured by eligibility for subsidized school meals (FARM), and standardized test scores on the Comprehensive Test for Basic Skills (CTBS) for 2000, 2001, and 2002;

2) to analyze the impact of different percentages of middle class (i.e. non-FARM) classmates on CTBS test scores of low income (i.e. FARM) pupils for 2001 and 2002; and

3) to analyze the degree to which further segmentation occurred by income class between these two broad groupings (FARM and non-FARM) and the educational consequences of such segmentation by income.

The findings were

[1.] **The Baltimore region's schools are highly racially and economically segregated.** At one end of the spectrum, of the 372 schools

44 were 99-100 percent African American and another 27 were 95-99 percent African American. All 71 virtually all-black schools had majorities of low income (FARM pupils) – 89 percent and 78 percent, respectively. The average majority black school had 74 percent low income pupils.

At the other end of the spectrum, there were 129 schools that were 90-100 percent white. Only four had a majority of low income pupils. The average majority white school had 21 percent low income pupils.

Racially segregated schools are economically segregated schools.

[2.] **There was a very high correlation between socioeconomic status and academic achievement; *a school's percentage of FARM pupils explained 81 percent of the school-by-school variation in CTBS results.*** In layman's terms, knowing the percentage of FARM pupils, one can predict a school's CTBS score and fall within 7.5 percentiles of the actual score about 95 percent of the time. On average, every one percent change in the proportion of FARM vs. non-FARM students changes the school's median composite CTBS scores by 0.48 percentile. As the proportion of FARM pupils increases, for example, a school's median CTBS score goes down.

[3.] **There is a powerful, statistically significant relationship between test scores of low income pupils and the percentage of classmates that are middle class.** For every one percent increase in middle class classmates, a low income pupil's scores will improve, on average, 0.18 percentiles. FARM pupils in 90-100 percent FARM schools averaged in the 31st percentile in their CTBS test battery. (FARM Pupils in a subset of six schools that were almost totally FARM eligible averaged in the 24th percentile.) FARM pupils in 90-100 percent middle class (that is, non-FARM) schools averaged in the 48th percentile.

[4.] **There is clear and striking socioeconomic segmentation of the Baltimore region's middle class.** There were 101 "designer clothes" schools – all in the city's suburbs. There were another 100 "white/pink collar" schools – all but one (Mount Washington: 71.5% non-FARM) located in the suburbs. There were 78 "blue collar" schools. These were also overwhelmingly suburban schools.

The relationship of class and achievement appears to be somewhat discontinuous and curved rather than a steady linear relationship. Middle class (non-FARM) pupils in "designer clothes" schools (90-100 percent non-

FARM) averaged in the 72nd percentile in their CTBS test battery. Scores remained relatively high (albeit lower) for the next two deciles of heavily middle class, "white/pink collar" schools.

Achievement levels of non-FARM pupils in "blue collar" schools (that is, between 30 percent and 50 percent non-FARM classmates), dropped sharply downward from 64.5 percentile to 57.4 percentile. Thereafter, scores hit a plateau in the mid-50s before beginning to drop sharply again after the school became 60 percent or more FARM pupils ("medium poverty schools"). In "high poverty" schools, non-FARM scores plummeted.

By comparison, the slight differentiation among low income pupils did not seem to explain the significant improvement in their test scores as the socioeconomic environment of their schools improved.

[5.] **Greater economic school integration can be achieved in the region's schools primarily through a region-wide inclusionary zoning policy.** While actions to balance school enrollments socio-economically by school boards *within* each district would have hypothetically reduced economic school segregation by 15 percent from 61.7 to 53.5, modeling a region-wide, 20-year, mixed-income housing policy would have further reduced economic school segregation to 25.8 – a 60 percent reduction!

The consequences for Baltimore City would have been dramatic. From a system with 83 percent FARM pupils, the district average would have been reduced to 53 percent. Meanwhile, no suburban district would have exceeded the regional FARM average (35 percent). No suburban elementary schools would have been majority FARM. While the schools attended by the "designer clothes" set would no longer have been the former preserves of near-exclusive privilege, they would typically have had about 25% FARM pupils – many of them the children of the public employees, retail and service workers whom the "designer clothes" class sees and relies upon within their communities every day.

The educational results would have been a significant improvement in academic outcomes (and life opportunities) for low income children and, most probably, for "blue collar" children as well.

Housing policy *is* school policy!

INTRODUCTION

In 1966, sociologist James Coleman released his path-breaking study, *Equality of Educational Opportunity*. Sponsored by the then-US Office of Education, Coleman and his research team examined pupil, family, and school characteristics for over a million public school children in search of factors that were associated with academic success.

The Coleman Report concluded that the socioeconomic characteristics of a child and of the child's classmates (measured principally by family income and parental education) were the overwhelming factors that accounted for academic success. Nothing else – expenditures per pupil, pupil-teacher ratios, teacher experience, instructional materials, age of school buildings, etc. – came close. "The educational resources provided by a child's fellow students," Coleman summarized, "are more important for his achievement than are the resources provided by the school board." So important are fellow students, the report found, that "the social composition of the student body is more highly related to achievement, independent of the student's own social background, than is any school factor."[1]

For over three decades, educational researchers, including Coleman, have revisited, refined, and debated Coleman's original findings. There has been no more consistent finding of educational research than the paramount importance of a school's socioeconomic makeup on academic achievement. Summarizing the enormous body of research, the Century Foundation's Richard D. Kahlenberg writes

> "What makes a school good or bad is not so much the physical plant and facilities as the people involved in it – the students, the parents, and the teachers. The portrait of the nation's high poverty schools is not just a racist or classist stereotype: high-poverty schools are often marked by students who have less motivation and are often subject to negative peer influences; parents who are generally less active, exert less clout in school affairs, and garner fewer financial resources for the school; and teachers who tend to be less qualified, to have lower expectations, and to teach a watered-down curriculum. Giving all students access to schools with a core of middle class students and parents will significantly raise the overall quality of schooling in America."

[1] Quoted in Richard D. Kahlenberg. *All Together Now: Creating Middle-Class Schools through Public School Choice.* Brookings Institution Press: Washington, DC. (2001), page 28. The succeeding quotation is from page 47. The 33 pages of footnotes to chapters 3 and 4 catalogue most major studies on the effects of racial and economic school integration.

I first explored the relationship between socioeconomic status and academic achievement in the Baltimore area schools in a 1998 report for the Abell Foundation that was presented in an *Abell Report* headlined "To Improve Poor Children's Test Scores, Move Poor Families." As a prologue to the current study, it is worthwhile to review my earlier findings.

> "[The 1998 study] tracks the relationship between the percentage of low-income pupils in 213 elementary schools in Baltimore City and Baltimore County[2] and each school's MSPAP [Maryland Scholastic Performance Assessment Program] pass rate.[3]
>
> The correlation is .81. This means 81% of the variation in test scores among the 213 schools is "explained" by each school's percentage of low-income children. The statistical relationship is very strong.[4]
>
> Some 52.9 % of all elementary school pupils in the city and county systems combined were low-income, and the average MSPAP pass rate was 28.2%. The analysis predicts that for every point a school's percentage of low-income students declined (-1%), the school's MSPAP pass rate percentage increased about six-tenths of a percentage point (+ 0.60%).
>
> To illustrate, let's vary a school's low-income rate by 20 percentage points above or below the study-wide average (which is 53%). A school with 73% low-income pupils is predicted to have a 16% pass rate. The predicted pass rate would be 40% for a school with 33% low-income students.
>
> The statistical "standard error" is 8.5%. That means that elementary schools with 73% low-income pupils will have MSPAP pass rates that fall between 4% and 20% over 95% of the time. Conversely, schools with 33% low-income students will have passing rates between 32% and 48% over 95% of the time.
>
> To be an educational fortune-teller, you don't have to know the background of a school's principal or its teachers, its expenditure per student, its average class size, etc. to have a pretty good idea what the school's academic level will be. At least 80% of the answer lies in the circumstances of the children's homes – and their neighborhood.

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[2] To determine the percentage of low-income children, a three-year average was taken of the percentage of children receiving free-or reduced price school lunches from 1994-5 to 1996-7.

[3] For the study I averaged each school's percentage of children passing all parts of the MSPAP test battery (reading, writing, and math) for three successive years (1994-5 to 1996-7).

[4] For the statisticians among the *Abell Report* readership, the F value of the least-squares linear regression is a whopping 899, and the t value is a highly significant -29.98.

Good principals, good teachers, etc. can make some difference. So can bad principals, bad teachers, under-funded schools, etc….

The real gap, however, was between overall city and county student profiles. The region's 61 most poverty-impacted elementary schools were all city schools, while 43 of the region's 44 most economically advantaged student bodies attended county elementary schools. This deep schism by income – and race – was the biggest reason for the city schools' perceived "failure" and the county schools' perceived "success."

This new study expands upon the 1998 study in four ways;

- First, rather than examining just 213 elementary schools in the Baltimore City and Baltimore County districts, this study covers all 372 elementary schools in the seven-county Baltimore metropolitan area, adding the Anne Arundel County, Carroll County, Harford County, Howard County, and Queen Anne's County school districts.

- Second, rather than use MSPAP results, the study uses scores from the nationally-normed Comprehensive Test of Basic Skills (CTBS). Though we initially analyzed MSPAP 3rd and 5th grade reading and math scores for 1999-2002, by 2002 the Maryland State Department of Education had announced that use of the MSPAP would be abandoned in favor of CTBS. After considerable work, it became clear that many MSPAP results for 2002 were very unreliable. Clearly, many schools had not put serious effort into the 2002 MSPAP. Thus, the study shifted to analysis of 2nd and 4th grade reading and math CTBS scores for 2001 and 2002.

- Third, using CTBS shifts the nature of the results. MSPAP reported what percentage of pupils passed key thresholds (i.e. satisfactory and excellent level scores). CTBS provides median scores for each school, providing a continuous curve as the socioeconomic profile changes.

- Fourth, and most importantly, data now available allow differentiating between scores for low income pupils and middle class pupils. This allows analysis of the effect of varying the socioeconomic profile of classmates on each group.

Part I: Study Methodology
a. School Report Cards

The Maryland State Department of Education publishes annual "report cards" for every public school on the Internet. They are treasure troves of information. They are available to any parent, student, or member of the public, and I have relied on these reports exclusively for this study. However, though data are summarized at the state and individual school district levels, compiling the data for a multi-school study like this one requires considerable dedication and patience. Unlike the state of Connecticut's school report card system, one cannot simply order up customized spreadsheets over the Internet.[5]

Most states now issue annual school report cards. Maryland's data, however, offer a rare opportunity for researchers. In addition to providing overall test scores for each school's pupil population, Maryland's data break down results by different categories of pupil characteristics – by gender, by race and ethnicity, by special education status, by Limited English Proficiency (LEP), and, most importantly for this study, by general economic status. For consistency with other studies I chose to use eligibility for free and reduced price meals (FARM) rather than Title I eligibility as the measure of economic status.[6]

Out of all the potential information, I culled out what I believed to be the most insightful items for this inquiry. The study goals were three-fold:

4) to analyze the relationship between pupils' socioeconomic status (or SES), as measured by eligibility for subsidized school meals, and standardized test scores;

5) to analyze the impact of different percentages of middle class (i.e. non-FARM) classmates on test scores of low income (i.e. FARM) pupils; and

[5] That will change shortly when "user friendly" spreadsheets of school data become available from the University of Maryland's Maryland Assessment and Research Center for Education Success (MARCES).

[6] The FARM group itself divides into two groups: students with family incomes up to 135 percent of the poverty level (who qualify for free meals) and students with family incomes from 135 percent to 185 percent of the poverty level, who qualify for subsidized meals on a sliding scale. Though many states report data separately for the two groups, the Maryland State Department of Education does not.

6) to analyze the degree to which further segmentation occurred by income class between these two broad groupings (FARM and non-FARM) and the educational consequences of such segmentation by income;

The study had the following parameters:

1) The study focused on 2nd and 4th grade standardized test scores. Standardized tests were also given at the middle school and high school levels. However, I excluded middle school and high school results for two reasons. First, there would be many fewer middle and high schools than elementary schools, reducing the statistical reliability of any findings at the secondary school level. Second, though the proportion of pupils applying for subsidized meals in middle schools usually tracks eligibility at the elementary school level, across the USA the proportion of high school students receiving subsidized meals drops off sharply. Some analysts have speculated that many parents may have progressed to higher income levels by the time their children reach high school. I believe the reasons are simpler. Many teenagers hate cafeteria food and, with some money in their pockets (often from after-school jobs) and with the option of going to a nearby MacDonald's, they pass up subsidized lunches. Also, many may not want to be stigmatized as being poor in the eyes of their peers.

2) The study was limited to CTBS tests taken in 2000, 2001, and 2002. To compare school-wide scores, I calculated three-year averages for test scores and SES. To differentiate between low income pupils and middle class pupils, I used two-year averages. (Differentiated scores for 2000 were not available.) Test scores (particularly among young children) are notorious for their wide variations from year to year and from subject matter to subject matter. Averaging smoothed out some of the variability. This study did not evaluate year-to-year variation but used the averages of two and three years of data for cross-sectional analysis.

3) "Averages" were non-weighted means (e.g. two years of test scores added together and divided by two).

4) In order to maintain the confidentiality of results for individual pupils, it was Maryland's policy to suppress test score results when the number of pupils in a given category was five or less. This was an understandable and defensible policy, but it meant that for 2nd and 4th grades with very small numbers of FARM or non-FARM test takers, test results were unavailable for the small minority. Thus, one of the study's central hypotheses – that low-income pupils learn best in middle class schools – was somewhat hampered by unavailability of data for a "best-case" scenario (when low-income pupils were typically less than 10 percent of 2nd and 4th grade test takers).

b. Statistical Method

Except as otherwise noted, the primary statistical method used is least-squares, linear regression analysis. Linear regression measures to what degree a dependent (or *y*) variable is related to an independent (or *x*) variable. Relating a dependent variable to multiple independent variables is termed "multi-variate analysis;" each of the independent variables acts as a "control" for the others.

The strength of the relationship is measured by the *adjusted r-square*. If the value of the adjusted r-square is 1.00, that means that changes in the independent variable (*x*) will always produce the same proportional changes in the dependent (*y*) variable. In simple terms, the closer the adjusted r-square approaches 1.00, the more the independent variable "explains," "accounts for," or "is correlated with" the dependent variable.

At the other extreme, if the adjusted r-square is 0.00, that means that there is no relationship between changes in *x* and changes in *y* – the two variables have no relationship to each other. There is no "correlation."

If one depicts an array of data on a two-axis scatter plot and there is a measurable degree of correlation, the data points will tend to group around an imaginary straight line running through the data points that can be drawn based on least-squares linear regression. If the data points are grouped closely above and below the line, there is a high degree of correlation. If they are scattered widely above and below the line, the correlation is low.

The *coefficient estimate* measures the degree to which a unit change in *x* (the independent variable) produces a change in the value of *y* (the independent variable). Suppose, for example, that *x* is a school's percentage of low income pupils and *y* is the school's average CTBS reading and math scores. If the coefficient estimate of *x* is - 48.16, then every 1% increase in the percentage of low income pupils will be associated, on average, with a 0.48 percentage point decline in the school's CTBS reading and math scores.

A positive sign for the coefficient estimate means that changes in the *x* variable are related to changes in the *y* variable in the same direction: a higher *x* produces a higher *y* – a lower *x* produces a lower *y*. A negative sign for the coefficient estimate means that changes in *x* are associated with changes in *y* in the opposite direction: a higher *x* means a lower *y* – a lower *x* means a higher *y*.

The *standard error* of a coefficient estimate can be used to calculate a confidence region around the coefficient estimate. The commonly sought 95% confidence region, for example, is the region within 1.96 standard errors of the coefficient estimate. Roughly speaking, the confidence region is the area within which the true coefficient is likely to lie with 95% confidence. (The exact definition is far more complicated.)

Good researchers normally focus their discussion of results on coefficient estimates that are statistically significant. These are coefficient estimates that have t-statistics (the coefficient estimate divided by the standard error) that are more than 1.96. Focusing on coefficient estimates this large reduces (in reverse English) the probability of incorrectly saying that there is an effect of *x* on *y* to less than 5%. Focusing on even larger coefficient estimates (say, with t-stats over 2.57) reduces this probability to less than 1%. Looking at smaller coefficient estimates (those with t-stats as low as 1.64) increases the probability to 10%. In the tables presented, we denote t-stats over 1.64 by *; over 1.96 by **; and over 2.57 by ***.

The standard error reflects both the number of observations (*n*) and the degree to which the data points are scattered tightly or loosely around the regression line. In general, the more tightly the data points are packed around the regression line and the larger the number of observations, the smaller the standard error is. The more widely the data points diverge from the regression line and the smaller the number of observations, the larger the standard error is. The standard error, in effect, expresses mathematically what can otherwise be seen graphically in a scatter plot.

Part II:
1. Segregated Neighborhoods, Segregated Schools

Maryland is a state of "Big Box" local governments and "Big Box" school districts. While the seven-county Baltimore metro area does have 22 municipalities, all except Baltimore City and Annapolis are small; county government is the general local government for over 95 percent of the region's residents. The Baltimore region's school systems are even Bigger Boxes than local general government. The region has only seven, county-wide school systems that, while they are under the local policy direction of their school boards, fall under the fiscal authority of county governments.[7]

With their system of neighborhood schools, the region's school enrollment patterns reflect residential patterns by race and income.

Table 1.1
Overall enrollment levels in metro Baltimore school districts 1993-2002

School district	1993	2002	pct
Baltimore City	110,662	95,475	-14%
Baltimore County	93,270	107,212	+ 15%
Anne Arundel County	67,427	75,081	+ 11%
Carroll County	23,165	28,127	+ 7%
Harford County	33,797	39,966	+ 18%
Howard County	32,959	46,257	+ 40%
Queen Anne's County	5,752	7,232	+ 26%
Totals	367,032	399,350	+ 9%

Table 1.1 shows that the city schools lost -14 percent of their students; the older, inner suburbs' enrollment (Baltimore County and Anne Arundel) grew modestly (+15 percent and + 11 percent, respectively). The outer suburbs' enrollment (except Carroll County) grew more robustly.

[7] Only Howard County Public Schools and Carroll County Public Schools have locally elected school boards (five and six members, respectively, including a student representative on the latter board). The Anne Arundel (seven members), Baltimore County (eleven members), Harford County (seven members), and Queen Anne's County (five members) school boards are all appointed by the governor of Maryland. Baltimore City Public Schools Board of Education (nine members) is jointly appointed by the mayor of Baltimore and the governor. All appointed boards but Queen Anne's County also have one additional student member (presumably also appointed by the same process).

Table 1.2 traces a more complex enrollment pattern by race, limited to trends among black and white students. Proportionally, the number of Asian, Hispanic, and Native American students grew significantly during the decade. However, these minorities accounted for only 5.5 percent of total students by 2002. In contrast with many metropolitan areas that are more diverse, metro Baltimore is still a story told primarily in black and white.

Table 1.2
Racial enrollment trends in metro Baltimore school districts 1993-2002

school district	white 1993	white 2002	white pct	black 1993	black 2002	black pct
Baltimore City	18,297	9,967	- 46%	91,029	83,719	- 8%
Baltimore County	70,297	64,018	- 9%	19,071	36,160	+90%
Anne Arundel County	54,395	55,802	+3%	10,843	15,107	+39%
Carroll County	22,372	26,833	+20%	474	680	+43%
Harford County	28,702	32,048	+8%	3,864	5,897	+53%
Howard County	25,566	31,789	+24%	4,844	8,234	+70%
Queen Anne's County	4,830	6,369	+32%	852	740	- 13%
Totals	224,459	226,826	+ 1%	130,977	150,537	+ 15%

There are three notable trends. First, black students are being steadily dispersed throughout the metro area's school districts (except for Queen Anne's County), although Baltimore City Public Schools still accounts for 56 percent of the area's African American students. Second, there was a negligible one percent increase in white students region-wide. And third, while the city schools and now Baltimore County Public Schools are losing white students, clearly white, child-rearing families are decamping to the outer suburbs with Carroll, Howard, and Queen Anne's counties experiencing double-digit increase in white enrollment during the decade.

However, district-wide statistics tend to mask the very substantial degree of segregation by race that still exists in the area's public schools. Tables 1.3 and 1.4 summarize racial enrollment patterns in the region's 372 elementary schools in 2002.

For many phenomena in nature and society a "normal" distribution is a bell-shaped curve. When dealing with most racial phenomena in American society, a bi-polar curve is typical with blacks clustered at one end and whites at the other. Metro Baltimore elementary schools are no exception. At one extreme, in 2002 there were an astounding 44 elementary

schools (all in Baltimore City) that were 99 to 100 percent black; over one-quarter (27 percent) of the region's African American pupils attended these all-black schools. Eighty-one elementary schools were over 90% black, and enrolled 54 percent of the region's black pupils. In fact, 74 percent of African American pupils attended majority black schools.

Table 1.3
Enrollment by race in 125 majority black
Baltimore area elementary schools in 2002

pct black	no. of schools	black pupils	white pupils	cumulative pct of all blacks
99-100% black	44	18,188	51	27%
95-98.9% black	27	13,774	216	47%
90-94.9% black	10	4,871	167	54%
80-89.9% black	12	4,491	423	60%
70-79.9% black	14	4,532	1,006	67%
60-69.9% black	7	2,464	895	71%
50-59.9% black	11	2,597	1,597	74%

At the other extreme, there were 129 elementary schools that were over 90 percent white; they enrolled 59 percent of the region's white pupils. More than three out of four white pupils (77 percent) attended elementary schools that were 80 percent or more white. An astounding 96 percent of white pupils attended majority white schools.

Table 1.4
Enrollment by race in 247 majority white
Baltimore area elementary schools in 2002

pct white	no. of schools	black pupils	white pupils	cumulative pct of all whites
50-59.9% white*	17	3,272	3,144	96%
60-69.9% white*	20	3,978	5,896	93%
70-79.9% white*	31	3,644	9,495	87%
80-89.9% white*	51	3,655	18,520	77%
90-94.9% white*	50	1,890	21,006	59%
95-98.9% white*	65	1,027	32,574	39%
99-100% white*	14	52	6,730	7%
Totals (tables 1.3 & 1.4)	372	68,435	101,720	na

There were few racially balanced schools. African American pupils constituted 38 percent of total elementary school enrollment. If we adopt an assumption that a racially balanced school would have 38 percent black pupils (plus/minus 20 percentage points), only 79 elementary schools fell within that range. Only 20 percent of both black and white pupils attended racially balanced schools.

Of course, there has been some progress towards greater racial integration over the decades since *Brown v. Board of Education (1954)* desegregated Maryland's public schools. But progress has been slight in recent years. On a scale of 0 to 100 (100 = total apartheid), the black segregation index for the Baltimore region's elementary schools was 74.3 in 1989-91; by 1997-99, it had improved slightly to 73.3; by 2002, to 72.2. In 1999-00, the Baltimore area's schools were the 34th most segregated out of 331 metros areas – and the sixth most segregated "Southern" schools.

2. Racially segregated schools = economically segregated schools

Table 2.1 summarizes enrollment trends by students' economic status. As is typical, the area's school districts categorize students economically in just two groups: those who qualify for "Free And Reduced-price Meals" (FARM) and those who do not (non-FARM).

Table 2.1
Percentage of FARM students in Baltimore area public schools 1993-2002

school district	**1993**	**2002**
Baltimore City	68%	82%
Baltimore County	19%	33%
Anne Arundel County	13%	17%
Carroll County	9%	9%
Harford County	16%	19%
Howard County	7%	10%
Queen Anne's County	21%	17%
Total	31%	36%

Overall, the proportion of FARM students regionally increased from 31 percent to 36 percent with dramatic jumps upward occurring in Baltimore City (68 percent to 82 percent) and Baltimore County (19 percent of 33

percent). The proportion of low income students inched upward in the other counties with the exception of Queen Anne's County (in transition from a poor rural to a suburbanizing county).

Tables 2.2 and 2.3 illustrate the high correlation between racial segregation and economic segregation.[8] Of the 44 all-black schools, all 44 had a majority of FARM pupils; on average, 89 percent of pupils in all-black schools qualified for subsidized meals. Similarly, all 27 nearly all-black schools had majorities of low income children; an average of 78 percent of their pupils qualified for subsidized meals.

In fact, 84 percent of majority black schools also had a majority of low income pupils. The average percentage of low income pupils in the 125 majority black schools was 75 percent.

Table 2.2
Economic profile of 125 majority black
Baltimore area elementary schools in 2002

pct black	number of schools	majority FARM schools	average pct FARM
99-100% black	44	44	89%
95-98.9% black	27	27	78%
90-94.9% black	10	5	60%
80-89.9% black	12	9	66%
70-79.9% black	14	11	68%
60-69.9% black	7	3	58%
50-59.9% black	11	6	51%
	125	105	75%

The results are equally striking at the other end of the scale (Table 2.3). Only four of 129 schools that are 90 percent or more white have majorities of FARM pupils. In fact, only 26 of all 247 majority white schools have majorities of FARM pupils. In other words, the odds are nine to one that a child in a majority white school will have a majority of middle class (non-FARM) classmates. The 247 majority white schools averaged only 21 percent low income children.

[8] Using linear regression analysis, the adjusted r-square between percentage of black pupils (independent variable) and percentage of FARM pupils (dependent variable) is 0.74.

Table 2.3
Economic profile of 247 majority white
Baltimore area elementary schools in 2002

pct white	number of schools	majority FARM schools	average pct FARM
50-59.9% white	17	6	45%
60-69.9% white	20	3	33%
70-79.9% white	31	7	30%
80-89.9% white	51	6	23%
90-94.9% white	50	3	14%
95-98.9% white	65	1	10%
99-100% white	14	0	7%
Totals	247	26	21%

Racially segregated schools are economically segregated schools. What are the educational consequences?

PART III:
3. Socioeconomic status and school-wide CTBS scores

From each school's "report card" on the Internet, I copied down each school's median percentile for 2nd and 4th grade reading and math on the Comprehensive Test of Basic Skills (CTBS) for 2000, 2001, and 2002. I then compared the composite percentiles (in other words, six observations for each school) with the average percentage of FARM pupils over the same three-year period.

There was a very high correlation; *a school's percentage of FARM pupils explained 81 percent of the school-by-school variation in CTBS results.*[9] In somewhat imprecise layman's terms, knowing the percentage of FARM pupils, one can predict a school's CTBS score and fall within 7.5 percentiles of the actual score about 95 percent of the time. On average, every one percent change in the proportion of FARM vs. non-FARM students will change the school's median composite CTBS scores by - 0.48

[9] Using linear regression analysis, the adjusted r-square was 0.81 with a standard error of 7.53 and a coefficient estimate of -48.12. The relationship was statistically significant at a <0.01% level of significance. The adjusted r-square was identical to my 1998 study using MSPAP scores, and the standard error was lower than the standard error in 1998 (8.48) because of the greater number of schools observed in this study (372) than in 1998 (213).

percentile. As the proportion of FARM pupils increases, for example, a school's median CTBS score will go down.

Table 3.1 summarizes results of the linear regression analysis of five different combinations to illustrate how the explanatory value (adjusted r-square) becomes stronger as data are averaged more and more. A school's percentage of FARM pupils explains 67 percent of the variation in 2nd grade reading scores for a single year 2002. Averaging three years of 2nd grade reading scores raises FARM's explanatory value to 73 percent. Combining three years of 2nd grade scores with 4th grade scores raises FARM's explanatory value to 79 percent. Math scores (three years of both 2nd and 4th grade) are even slightly more related to socioeconomic status (80 percent). Finally, combining both tests for both grades over three years produces FARM's highest explanatory value (81 percent). However, ranging from 67 percent to 81 percent, all regressions show a very high explanatory value.

Table 3.1
Linear regression analysis of SES and academic outcomes in 372 schools
Dependent variables (*y*): median CTBS percentiles
Independent variable (*x*): a school's percentage of low income pupils (FARM)

	adjusted r-square	coefficient estimate	standard error
2nd grade reading in 2002	0.675	-39.98***	9.05
2nd grade reading (3-yr mean)	0.734	-42.50***	8.23
2nd & 4th grade reading (3-yr mean)	0.786	-44.04***	7.40
2nd & 4th grade math (3-yr mean)	0.805	-52.19***	8.29
2nd & 4th grade reading & math (3-yr mean)	0.809	-48.12***	7.53

*** = <0.01% level of significance

This relationship is further depicted visually in Chart 3. The vertical (or *y*) axis lists CTBS percentile scores for the last regression listed above (a school's 2nd and 4th grade reading and math median percentiles averaged over 2000, 2001, and 2002). The *y* axis rises from the zero percentile to the 100th percentile. The horizontal (or *x*) axis lists the percentage of FARM pupils, moving left to right from zero percent to 100 percent. The 372 blue diamonds represent each school's place on the chart, while the straight line is the least squares, linear regression line. Note that most diamonds are clustered closely around the line, indicating the very high correlation.

4. Socioeconomic mix and low-income pupils' CTBS scores

The school report cards also break down CTBS scores by various sub-categories, including FARM and non-FARM status. This database is not as satisfactory because 1) only CTBS scores for 2001 and 2002 are available for these sub-groups, and 2) in the interests of maintaining individual pupils' confidentiality, results are suppressed when there are fewer than five pupils in a category. This latter policy only affects availability of CTBS results from schools at the socioeconomic extremes – that is, those with very few low income pupils or, more rarely, with very few middle class pupils. As a result, data from only 337 schools were available for this part of the study – 228 schools with all eight observations (that is, both 2nd and 4th grade reading and math scores for both years), 33 with six observations, two with five observations, 43 with four observations, two with three observations, and 29 schools with just two observations. Fewer observations reduce the reliability of the analysis.

Moreover, young children's test results can be notoriously variable. In an earlier study of CTBS scores for 1,108 pupils from public housing households in Albuquerque, I found that there was, on average, only a 51 percent correlation between a child's 3rd grade scores and that same child's 5th grade scores! Thus, the larger the number of observations that can be combined as composite scores, the less the level of random variability.

Table 4.1 finds the same relationship between classmates' socio-economic status and low income pupils' test results for metro Baltimore in 2001-2002 that Coleman first identified 37 years ago: low income pupils make measurable academic progress when attending middle class schools.

Table 4.1
Linear regression analysis of SES and CTBS median percentiles for FARM pupils
Dependent variables (*y*): median CTBS percentiles for low income pupils (FARM)
Independent variable (*x*): a school's percentage of middle class pupils (non-FARM)

	adjusted r-square	coefficient estimate	standard error
2nd & 4th grade reading (2-yr mean)	0.211	+ 14.74***	8.94
2nd & 4th grade math (2-yr mean)	0.278	+ 21.13***	10.70
2nd & 4th grade reading & math (2-yr mean)	0.272	+ 17.69***	9.10

*** = <0.01% level of significance

The proportion of middle class (non-FARM) classmates has a lower explanatory value on CTBS scores of low income (FARM) pupils than did our previous regressions regarding the socioeconomic profile and school-wide CTBS scores. Classmates' SES explains only 21 percent of the variation in FARM pupils' reading scores, 28 percent of the variation in math scores, and 27 percent for the combined scores. There are 170 schools, for example, where FARM pupils represent less than 25 percent of total enrollment, leading to high variability in scores among the low numbers tested. Nevertheless, it is a powerful, statistically significant relationship. For every one percent increase in middle class classmates, a low income pupil's scores will improve, on average, 0.18 percentiles.

Table 4.2 illustrates this relationship by grouping schools into deciles based on SES. FARM pupils in 90-100 percent FARM schools averaged in the 31st percentile in their CTBS test battery. (FARM Pupils in a subset of six schools that were almost totally FARM eligible averaged in the 24th percentile.) FARM pupils in 90-100 percent middle class (that is, non-FARM) schools averaged in the 48th percentile.

Table 4.2
Distribution of CTBS median percentiles for FARM pupils by deciles of percentage of FARM and non-FARM pupils in 337 elementary schools in 2001 and 2002

pct of FARM or pct of non-FARM	number of schools	mean of FARM median percentiles
90-100% non-FARM	101	48.2
80-89.9% non-FARM	53	45.8
70-79.9% non-FARM	47	45.0
60-69.9% non-FARM	18	41.1
50-59.9% non-FARM	19	40.4
50-59.9% FARM	26	41.4
60-69.9% FARM	15	39.7
70-79.9% FARM	22	35.7
80-89.9% FARM	27	35.1
90-100% FARM	45	30.8
[95-100% FARM]	[6]	[24.0]

Finally, the relationship is graphically illustrated by Chart 4. The more widely dispersed scattering of the red triangles from the regression line reflects the lower predictive value of the percentage of middle class

classmates (the *x* axis) on the median CTBS scores of low income pupils (the *y* axis).

That finding is remarkably parallel to the findings of other research, as summarized by Richard Kahlenberg (see footnote 13). However, just matching this study with others that I have done

- in my Albuquerque study, the average pupil from a public housing household increased CTBS scores by 0.22 percentiles for every one percent increase in middle class classmates;[10]

- in my study of 186 school districts in the five largest metro areas of Texas, for every one percent increase in middle class pupils, low income pupils increase their chances of achieving a passing rate on the Texas state exams (Texas Assessment of Academic Skills, or TAAS) by 0.27 percentage points;[11] and

- in my study of 60 elementary schools in Madison-Dane County, Wisconsin, for every one percent increase in middle class classmates, a low income pupil's likelihood of scoring at the advanced/proficient level on that state's WINSS tests (Wisconsin Successful Schools) increased by +0.64 percentage point in reading and +0.72 percentage point in math.[12]

Mixing low income children into overwhelmingly middle class schools produces significant gains in their academic achievement. Indeed, socioeconomic integration may be *the* best educational strategy for improving their low academic performance levels.

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[10] David Rusk and Jeff Mosley, "The Academic Performance of Public Housing Children: Does Living in Middle Class Neighborhoods and Attending Middle Class Schools Make a Difference?" The Urban Institute: Washington, DC (May 1994). This document can be found under "New Mexico" in the documents library of my website (www.davidrusk.com).

[11] This study is summarized under the article entitled "Texas: Classmates Count in Texas Schools" in The Abell Report (June/July 1998) that can be accessed through www.abell.org/pubsitems/ARjunjul98.pdf.

[12] This study is entitled "Classmates Count: a Study of the Interrelationship between Socioeconomic Background and Standardized Test Scores of 4th Grade Pupils in the Madison-Dane County Public Schools (July 5, 2002). This document can be found under "Wisconsin: Madison" in the documents library of my website (www.davidrusk.com).

5. De-constructing the Middle Class in Metro Baltimore

As I've discussed, school data divide the student universe into just two groups economically – FARM eligible ("low income") and non-FARM eligible ("middle class"). But the so-called "middle class" covers a very wide income range – some 70 percent of the income spectrum. Does the relationship about parental income and education and their children's achievement levels within that range hold true as well? Is this phenomenon a continuum and not just a function of being poor and not poor?

Determining the actual family background of a school's enrollment would require information about each pupil's family beyond the simple declaration regarding family income that determines whether or not a child falls above or below the FARM eligibility limit. This study can only approximate such information by comparing school attendance zones with census information.

Even if census tracts were to line up perfectly with school attendance zones, such information would still be an approximation. In metropolitan Baltimore in 2000, slightly less than half of all families (48 percent) had school age children and, the 1990 census tells us, about 12 percent were not enrolled in public schools. Thus, census information on family income may not precisely reflect the income of families with public school pupils. To this must be added a small time shift. School data covered 2001 and 2002. Census data reflected 2000 results, and 1999 for crucial income data.

Table 5.1 reports the results of attempting to match elementary schools with census reports. I adopted a methodology of matching elementary schools that carried the same name as a census-enumerated town or Census Designated Place (CDP). (Matching to CDPs is essential in metro Baltimore where, with so few municipalities, county government is the local general government.) Thus, Arnold Elementary School in Anne Arundel County is matched with Arnold CDP, Hampstead Elementary in Carroll County is matched with Hampstead Town, etc. Often a community was served by more than one elementary school. I did not try to determine the identity of other elementary schools serving such an area.

I matched up 33 elementary schools and communities. All were located in the suburbs; none in Baltimore City. I excluded Baltimore City because of 1) the even greater difficulty of matching school attendance zones with census tracts, 2) an even greater gap between the number of

families and the proportion with school age children (25 percent), and 3) lower proportional enrollment in public elementary schools (85 percent, including only 63 percent of white families with children).

Of the 33 schools, seven had more than 30 percent FARM pupils in 2001-2002;[13] 16 had between 10 percent and 30 percent FARM pupils;[14] and 10 had less than 10 percent FARM pupils.[15]

Table 5.1
Characteristics of attendance zones of 33 elementary schools in suburban Baltimore from Census 2000

	more than 30% FARM (7)	10% to 30% FARM (16)	less than 10% FARM (10)
average FARM enrollment	50%	16%	6%
educational attainment:			
high school or less	54%	49%	36%
college graduate or more	19%	23%	37%
occupation:			
manager or professional	30%	35%	44%
median family income	$52,767	$58,158	$74.254
more than $35,000	70%	77%	87%
family income classes:			
$35,000 to $49,999	25%	23%	15%
$50,000 to $99,999	60%	60%	53%
more than $100,000	15%	17%	32%

[13] The higher-poverty schools were Brooklyn Park (Anne Arundel County); Dundalk, Lansdowne, Randallstown, and Owings Mills (Baltimore County); and Havre de Grace and Edgewood (Harford County).

[14] The low-poverty schools were Severn, Riviera Beach, Odenton, Southgate, Ferndale, and Glen Burnie Park (Anne Arundel County); Arbutus, Essex, Reistertown, Catonsville, Carney, and Perry Hall (Baltimore County); Taneytown and Manchester (Carroll County); and Joppatowne and Bel Air (Harford County).

[15] The very low-poverty schools were Lake Shore, Pasadena, Arnold, Severna Park, and Crofton (Anne Arundel County); Timonium (Baltimore County); Westminster, Mount Airy, and Hampstead (Carroll County); and Elkridge (Howard County).

There is a clear pattern of social and economic differentiation. In terms of educational attainment

- In the higher-poverty schools (that averaged 50 percent FARM), 54 percent of adults (25 years and older) were only high school graduates (or dropouts); only 19 percent were college graduates. I will call these the "blue collar" schools.

- In the low-poverty schools (that averaged 18 percent FARM), 49 percent had not gone beyond high school, but 23 percent had college degrees. These are "white/pink collar" schools.

- In the very low-poverty schools (that averaged 6 percent FARM), while 36 percent had still not progressed beyond high school, 37 percent had college degrees (including 14 percent with graduate and professional degrees). These are the "designer clothes" schools.

With regard to income levels, the poverty cutoff for a family of four was $17,400 in 1999. Thus, depending on family size, a child could qualify for free school meals with a family income up to $23,500, and for partially subsidized school meals with a family income up to slightly over $32,000 in 1999. In light of how the census grouped family incomes, I assumed that family incomes below $35,000 qualified for FARM. I then allocated the percentage of non-FARM families among the remaining groups to add up to a 100 percent distribution. Family incomes were grouped as follows:

- For the "blue collar" schools, 25 percent of families fell within the $35,000 to $49,999 range; only 15 percent of families had incomes above $100,000.

- For the "white/pink collar" schools, there was little change in income distribution from the previous group. These, however, had still somewhat higher average family incomes ($58,158 to $52,767) and had a greater proportion engaged in management and professional occupations (35 percent to 30 percent) than did the "blue collar" schools.

- For the "designer clothes" schools, one-third (32 percent) had family incomes above $100,000. Median family incomes

were much higher ($74,254) and almost half were engaged in management and professional occupations (44 percent).

In summary, despite the shortcomings of the methodology, there is clear and striking socioeconomic segmentation of the Baltimore region's middle class. There were 101 "designer clothes" schools – all in the city's suburbs. There were another 100 "white/pink collar" schools – all but one (Mount Washington: 71.5% non-FARM) located in the suburbs. There were 78 "blue collar" schools. These were also overwhelmingly suburban schools. Only the city's Medfield Heights (50.5% FARM) and Garrett Heights (55.5% FARM) fell within this category. Finally, there were 94 very high-poverty schools. All but seven were located in Baltimore City.[16]

For the reasons cited above, I have not tried to characterize Baltimore City's middle class families by schools. Almost one in five (19 percent) of adults were college graduates; one-third (32 percent) worked in management and professional occupations; and 8 percent had family incomes above $100,000. It is most probable that most of the city's higher end families chose not to enroll their children in the city's public schools – and probably an equal number of "white/pink collar" families were sacrificing financially to send their children to parochial or private schools. Most of the 6,459 "middle class" pupils in the city's public elementary schools in 2002 must have been from very modest income families.

6. Academic Performance within a Segmented Middle Class in Metro Baltimore

Is this pronounced segmentation of the "middle class" reflected in student academic achievement? Table 6.1 groups schools into deciles based on SES and further characterizes them by the categories identified in the previous section; majority "middle class" schools are identified as "blue collar," "white/pink collar," and "designer clothes" schools. Furthermore, I draw a distinction between majority low income schools that are "medium poverty" and those that are "high poverty" schools.

[16] The seven very high-poverty suburban schools were Anne Arundel County's Tyler Heights (70% FARM) and Van Bokkelen (75%); Carroll County's Magnolia (73%); and Baltimore County's Sandlewood (74%), Mars Estates (76%), Deep Creek (77%), and Riverview (78%). Baltimore City had 76 elementary schools with higher FARM rates than Riverview, the suburbs' most poverty-impacted elementary school.

The relationship of class and achievement appears to be somewhat discontinuous and curved rather than a steady linear relationship. Middle class (non-FARM) pupils in "designer clothes" schools (90-100 percent non-FARM) averaged in the 72nd percentile in their CTBS test battery. Scores remained relatively high (albeit lower) for the next two deciles of heavily middle class, "white/pink collar" schools.

Table 6.1
Distribution of CTBS median percentiles for non-FARM pupils by deciles of percentage of non-FARM pupils in 337 elementary schools in 2001 and 2002

pct of FARM or pct of non-FARM	number of schools	mean of non-FARM median percentiles
	designer clothes schools	
90-100% non-FARM	101	71.6
	white/pink collar schools	
80-89.9% non-FARM	53	66.6
70-79.9% non-FARM	47	64.5
	blue collar schools	
60-69.9% non-FARM	18	57.4
50-*59.9% non-FARM*	*19*	*56.4*
50.0-59.9% FARM	*26*	*56.2*
	medium poverty schools	
60.0-69.9% FARM	15	51.9
	high poverty schools	
70-79.9% FARM	22	45.1
80-89.9% FARM	27	42.0
90-100% FARM	45	37.0
[95-100% FARM]	[6]	[25.5]

Achievement levels of non-FARM pupils in "blue collar" schools (that is, between 30 percent and 50 percent non-FARM classmates), dropped sharply downward from 64.5 percentile to 57.4 percentile. Thereafter, scores hit a plateau in the mid-50s before beginning to drop sharply again after the school became 60 percent or more FARM pupils ("medium poverty schools"). In "high poverty" schools, non-FARM scores plummeted.

The gap between non-FARM and FARM pupils' scores steadily narrowed as schools became more and more low-income. In the 101 "designed clothes" schools (90-100 percent non-FARM), non-FARM pupils outscored FARM pupils by almost 24 percentiles (71.6 to 48.2) although FARM pupils performed at their highest levels in such schools.

By contrast, in schools that were 90 percent or more FARM (very "high poverty" schools), the differential between non-FARM and FARM test scores all but disappeared (6 percentiles, or 37.0 to 30.8). In fact, for a small subset of six schools that were 95 percent or more FARM, any differential had disappeared.

I saw this phenomenon before in the Milwaukee Public Schools, another high-poverty district (68% FARM) like, though less poverty-impacted than, Baltimore City (82% FARM). In effect, in over 70 percent FARM schools, any academic distinction between low income and middle class pupils disappeared. In fact, among Milwaukee's 100 elementary schools, there were 43 high-poverty schools in which "middle class" pupils' reading scores fell below low income pupils' reading scores.

I commented in that report that

> Physicists speculate that the gravitational forces within a black hole are so powerful that many of the Newtonian laws of physics are suspended. It appears that within the tremendous disadvantages of very high-poverty schools, the benefits of coming from a somewhat higher income home are just torn asunder. For middle class children sucked into the social vortex of a very high-poverty school, the normal laws of society don't work.
>
> In reality, unlike black holes in the cosmos, very high-poverty schools expel rather than attract middle class pupils. There would have been very few pupils from higher income families attending the Milwaukee Public Schools and probably none enrolled in very high-poverty schools. In very high-poverty schools, most of the non-FARM eligible pupils were probably just a shade above qualifying for subsidized lunches themselves.

The same observations would apply even more to Baltimore City Public Schools.

Thus, it is probable that the sharp decline in "middle class" pupils' scores as the proportion of their low income classmates increases was primarily due to a simple fact: these weren't the same "middle class" kids in the various "blue collar," "white/pink collar," and "designer clothes"

schools. There were sharp differences in family educational attainment and income that were reflected in children's academic performance probably far more than any adverse impact caused by their poor classmates themselves – at least, until their school surroundings reached very high-poverty status.

But could a parallel explanation be applicable to the measurable academic gains that FARM pupils made as the proportion of middle class classmates increased?

7. De-constructing the Poor in Metropolitan Baltimore

Intuitively, there should be less variation by occupation, educational attainment, and income among the families of FARM children than of non-FARM children. Non-FARM children came from families covering about the top 70 percent of the income range; FARM children came from families that covered only about the bottom 30 percent of the income range. Some educators I have met (and some research studies) report a measurable different in academic performance between free meal pupils (up to 135 percent of the poverty level) and subsidized meal pupils (up to 185 percent of the poverty level). Maryland's report cards do not make that distinction.

Table 7.1 focuses on community profiles for the same 33 elementary schools from the perspective of FARM pupils' families. On the one hand, "blue collar," "white/pink collar," and "designer clothes" schools all had remarkably even percentages of FARM pupils from somewhat better off families economically. The proportion of FARM pupils with incomes from $25,000 to $34,999 were 42 percent, 47 percent, and 46 percent, respectively; these might be presumed to be families of children who qualified for partially subsidized meals.

The three types of schools were also quite similar in the proportions of children from families with incomes below $25,000 – 58 percent, 53 percent, and 54 percent, respectively. It was only with regard to the lowest income portion of this group (that is, with family incomes below $10,000) that there was any measurable difference – 15 percent, 12 percent, and 10 percent, respectively – a gap also reflected in the relative proportions of high school dropouts among the three types of schools. Nevertheless, even these differentials at the bottom were not nearly as great as revealed by the de-construction of the middle class in the previous section.

Table 7.1
Characteristics of low-income families in attendance zones of 33 elementary schools in suburban Baltimore from Census 2000

	more than 30% FARM (7)	10% to 30% FARM (16)	less than 10% FARM (10)
average FARM enrollment	50%	16%	6%
educational attainment:			
high school dropout	22%	16%	10%
high school graduate	32%	33%	25%
family income classes:			
$25,000 to $34,999	42%	47%	46%
$15,000 to $24,999	32%	32%	33%
$10,000 to $14,999	10%	8%	12%
less than $10,000	15%	12%	10%
poor persons at less than 50% of poverty level (1989)	44%	44%	41%

Undoubtedly, there were differences. FARM pupils at Sharp-Leadenhall (93% FARM), a small school located within a public housing project near the Inner Harbor, were undoubtedly poorer than the handful of FARM pupils at Crofton Elementary (2% FARM) were. Yet the depth of poverty was fairly uniform – at least, throughout the suburbs. In all three groupings, the percentage of poor people below 50 percent of the poverty standard *in 1989* was essentially the same (the low 40 percent range).[17]

And if, in 1989, the percentage of Baltimore City's poor that fell more than 50 percent below the poverty level was higher (54 percent) than the suburban poor's level (41-44 percent), by 2000, that gap may have closed. In 1989, 67 percent of the region's poor lived in Baltimore City; by 1999, the city's share of the poor had dropped to 59 percent. With the de-concentration of poverty that occurred 1) through Housing Authority of Baltimore City's HOPE VI projects, re-creating the notorious Lafayette Courts, Lexington Terrace, Flag House Courts, and Murphy-Julian Homes as mixed-income communities; 2) decentralized use of HOPE VI rent vouchers (many in suburban areas) under the HABC-ACLU settlement; 3) the quiet implementation of Phase I of the Moving To Opportunity Program

[17] Census 2000 has yet to release comparable figures for 1999.

despite the much-broadcast initial public outcry; and 4) more geographically widespread use of regular Section 8 vouchers, more of Baltimore city's poorest families probably found suburban homes during the past decade.

Moreover, the results of this study closely track the results of a similar study I did in Albuquerque almost a decade ago. Tracking *individual* test results for 1,108 FARM-eligible public housing pupils over a decade's time, the analysis showed that their CTBS test scores increased by 0.22 percentile points for every one percent increase in non-FARM classmates. This was remarkably close to the Baltimore result (0.18 percentile points) for the same test battery.

In the Albuquerque case, there was no question of a discernible difference among the relative poverty of the public housing pupils. (To the researchers' surprise, even having two parents rather than one parent seemed to play no role in school performance.) Household heads on the waiting list were offered the next available opportunities in one of Albuquerque's small, scattered site projects or the next available rent voucher. Rejecting what was offered would have placed the family back at the end of the waiting list. Self-selection seemed to play little role in whether a family ended up in a lower-poverty or higher-poverty neighborhood.

Thus, the evidence suggests that sorting by income and educational attainment occurs extensively among the middle class, substantially explaining wide differences in test performance: who the "middle class" kids are counts. However, much less such sorting occurs within the ranks of low income families: who their classmates are counts more.

Economic school integration works.

Part IV: Achieving Greater Socioeconomic Integration
8. Integration by School Assignment Policies

The Century Foundation commissioned a study of the potential for racial and economic integration of America's public schools. The study by Duncan Chaplin concluded that, on a nationwide basis,

> "complete integration *within* school districts [emphasis added] would improve racial integration of minorities (nonwhites) by about 11 percent and economic integration by approximately 20 percent. More precisely, it would reduce the white/nonwhite segregation index from around 63.3 to about 56.4 and the free or reduced-price lunch eligible to non-eligible index from 50.0 to 40.2. However, it would still leave schools quite segregated both economically and racially, in part *because most segregation appears to occur across school districts and not within* [emphasis added]. When one integrates up to the [metropolitan] level, the [segregation] indexes are reduced by far more. Minority/white segregation is reduced by 38 percent [to 39.3] and economic segregation is reduced by 55 percent [to 22.6]."[18]

In 2002, the economic segregation index for metro Baltimore's elementary schools, I have calculated for this study, was 61.7. In 1999-2000, according to the Lewis Mumford Center at SUNY-Albany, metro Baltimore's elementary school index was 55.9, the 23rd most economically segregated region out of 306 metro areas for which data were available.[19]

The Baltimore region has fewer school districts than any comparably sized, multi-county region in the country. What would be the result if each of the seven school boards adopted a common policy to achieve maximum economic integration *within* each of the seven districts?

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[18] Duncan Chaplin, "Estimating the Impact of Economic Integration of Schools on Racial Integration," in Richard Kahlenberg, ed. *Divided We Fail: Coming Together through Public School Choice*. The Report of The Century Foundation Task Force on the Common School. The Century Foundation Press: New York (2002), pp. 101-02.

[19] Though it is conceivable that economic school segregation increased so substantially (5.8 index points) in the three years that coincided exactly with the end of the economic boom, I doubt it. More probably, though some increase in economic segregation may well have occurred, the reports submitted by the Maryland Department of Education to the National Center for Education Statistics (the data source for both the Mumford Center and Duncan Chaplin's calculations) were deficient. The data base for this study has a much higher level of quality control.

School boards in La Crosse, Wisconsin; Cambridge, Massachusetts; Wake County (Raleigh) North Carolina; and San Francisco, California have adopted just such policies in recent years. The most common approach is to try to have FARM enrollment in every school equal to the district-wide average (plus or minus 15 percentage points).

I have simulated the effects of such a policy for the Baltimore metro area. Table 8.1 lists the current and simulated distribution of pupils by socioeconomic status.

Table 8.1
Simulated SES integration of Baltimore area elementary schools by school board action within each district in 2002

district	least FARM (current)	most FARM (current)	least FARM (simulated)	most FARM (simulated)
Anne Arundel	0.0%	78.0%	12.4%	34.1%
Baltimore County	1.2%	79.1%	20.7%	48.1%
Carroll	1.8%	28.4%	3.9%	23.9%
Harford	2.8%	72.0%	11.2%	33.6%
Howard	0.4%	45.0%	3.8%	24.8%
Queen Anne's	7.7%	31.3%	7.7%	31.3%
Baltimore City	29.3%	98.6%	69.3%	90.4%

Post-SES integration policy economic segregation index: 53.5

For all schools I maintained their 2002 enrollment levels. However, within each district, I replaced FARM pupils with non-FARM pupils in high-poverty schools until I had brought each school to within 15 percentage points of the district-wide FARM percentage. Then I shifted enough FARM pupils into low-poverty schools until all transfers within the district balanced out. (The floor for the lowest FARM schools may be closer to the district-wide FARM average than 15 percentage points.)

Substantial realignment occurs within Anne Arundel County, Baltimore County, and Harford County. A modest realignment occurs within Howard County. Little realignment occurs within Carroll County, and none within Queen Anne's County. With only one elementary school below 50% FARM, such a SES policy would not be worth doing in Baltimore City, but I carried out the mathematical exercise anyway.

The net effect of having school boards maximize socioeconomic integration within each district would be to lower the economic school segregation index from 61.7 to 53.5 – about a 13 percent improvement.

9. Economic Integration by Inclusionary Housing Policies

As we have seen, there is little racial or economic integration that could be achieved solely within Baltimore City's elementary schools, which were 89 percent black and 83 percent FARM by 2002. There are just not sufficient white or non-FARM pupils left within the city schools to make any difference. Yet 69 percent of the region's black elementary school pupils and 53 percent of its FARM pupils are currently in the city schools – quarantined away from better educational opportunities.

To achieve much greater racial and economic integration, we must act on a metropolitan-wide basis through changes in the housing market. More racially and economically integrated neighborhoods will produce more racially and economically integrated neighborhood schools. But producing more economically integrated neighborhoods (with their concomitant greater racial integration) requires changing local governments' traditional practices in shaping their housing markets.

Where and what kinds of housing are built are not the result of the workings of some unfettered "free market." Such a "free market" is a myth. "Public policy dictates where development occurs," the National Association of Homebuilders (NAHB) has acknowledged. Local governments' zoning decisions regulate the allowable uses of land – what can be built and at what density of development. Building and engineering codes set standards that private developers must follow. Public taxes (sometimes without developer cost-sharing) install the utility systems, create the street network, provide the parks, schools, fire stations, and other public facilities that are essential for most urban development.

Many suburban governments carry out these policies and programs in ways that seek to exclude low-income households from their communities. Large, minimum lot sizes for new homes; severe restrictions (even outright bans) on townhouse and apartment development; deep building setbacks mandated from lot lines; excessive off-street parking requirements – all contribute to a pattern of what is typically termed "exclusionary zoning."

Over 150 local communities, however, have adopted "inclusionary zoning" policies that deliberately seek to create economically diversified new housing. These communities seek to assure that housing for modest proportions of moderate and low-income families will be provided in any new, market-rate housing developments.

For almost thirty years Montgomery County, Maryland has had the USA's most comprehensive inclusionary zoning policy. Complying with the near-countywide policy adopted in 1973, private, for-profit homebuilders have delivered over 11,000 Moderately Priced Dwelling Units (MPDUs) as integral parts of new subdivisions and apartment complexes. Carrying out another provision of the county law, the county's public housing authority, the Housing Opportunities Commission, has purchased 1,700 highly scattered MPDUs and rents another 1,500 for very low-income families. The basic provisions of the MPDU are

- any new housing development of 35 or more units must include at least 12.5 percent MPDUs that are affordable for households at no more than 65 percent of the county's median household income (the lowest one-third of the income scale);

- as an incentive to provide up to 15 percent MPDUs, the county offers density bonuses of up to 22 percent (in effect, removing all land costs for both MPDUs and up to four percent more market rate units);

- re-sale prices of MPDUs are controlled for ten years and rent levels of for-rent MPDUs are controlled for twenty years; and

- the county's public housing authority is directed to buy or rent one-third of the MPDUs in order that the program will assist very low-income households. (Non-profit agencies can acquire another 6 2/3 percent.)

The MPDU policy is the most innovative centerpiece of Montgomery County's 40,000 mixed income housing units. The USA's 13th wealthiest counties and the global center of bio-medical research, Montgomery County is also one of the country's most racially and economically integrated communities.

Adopting a Montgomery County-type inclusionary zoning law would be the most important single step that any metro area – including greater Baltimore – could take to reverse trends toward greater economic segregation.

10. Inclusionary Zoning's Impact on the Regional Housing Market

I have simulated what might have been the results of a Montgomery County-type inclusionary zoning law's having been adopted by all local governments (primarily the seven county governments) for the last twenty years. Some 316,000 new housing units were built from 1980 to 2000 (about 30 percent of the total housing stock).

I assume that half of the units built were individual, custom-built homes, duplexes, tri-plexes or other sub-divisions and apartment developments that would be too small for the inclusionary requirements to apply (whatever that level would be for the different communities).[20] Thus, a 15 percent MPDU requirement for eligible housing developments was really a 7.5 percent share of the entire new housing market.

I assume also that two-thirds of the MPDUs would have been purchased or rented by eligible, modest income households directly ("workforce housing") and one-third of the MPDUs would have been purchased or rented by a regional public housing authority or network of local authorities ("welfare-to-workforce housing").

A region-wide MPDU policy would have produced 15,800 units of workforce housing for modest income workers (young teachers, police recruits, sales clerks, etc.) and another 7,900 units of "welfare-to-workforce housing" (for very low income households). Less than 10 percent of the MPDUs (1,650 units) would have been located in Baltimore City. Most MPDUs would have been integrated into new, middle class subdivisions and new, market rate apartment complexes in newly developing communities.

[20] Fairfax County, VA (and Montgomery County, MD, for most of the MPDU policy's history) set minimum project size at 50 or more units. In 2002 Montgomery County lowered its minimum to 35 units. Cambridge, MA requires 10 percent of any housing development of 10 or more units to be affordable; Arlington, MA, 15 percent of seven or more units; and Santa Fe, NM, one out of every four units minimum. Key West, FL is considering requiring one out of a minimum size of every two units to be affordable!

Baltimore County would have had the largest number of MPDUs (6,900), followed by Anne Arundel County (5,550) and Howard County (4,200), mirroring the relative pace of home construction in those counties from 1980 to 2000. (Of course, relatively more MPDUs would be constructed in the outlying counties in coming decades as sprawl continues unless Maryland's Smart Growth policies really take hold.)

Table 10.1
Hypothetical MPDU Policy's Impact
on Housing Supply for Metro Baltimore 1980-00

Jurisdiction	Total housing units built	Work-force MPDUs at 5%*	welfare-to-workforce MPDUs at 2.5%*
Metro Baltimore	316,000	15,800	7,900
Baltimore City	22,000	1,100	550
Baltimore County	92,000	4,600	2,300
Anne Arundel County	74,000	3,700	1,850
[Annapolis City]	[4,200]	[210]	[105]
Carroll County	24,000	1,200	600
Harford County	40,000	2,000	1,000
Howard County	56,000	2,800	1,400
Queen Anne's County	8,000	400	200

*assumes that half of total units built would not be covered by MPDU policy

Hypothetically, what would be the impact on concentrations of poverty of a regional MPDU policy? Table 10.2 focuses solely on the impact of the 7,900 "welfare-to-workforce" housing units that would be acquired by a regional housing authority (or consortium of local authorities).

In this simple illustration, I assume that Baltimore City would be the only "sending" jurisdiction since it had a poverty rate above the 9.8 percent regional average. All of the suburban counties would have been "receiving" jurisdictions. At an average of 2.5 persons per poor household, the 7,900 housing authority-controlled MPDUs in the suburban counties would have offered relocation opportunities for an estimated 18,375 poor persons from Baltimore City. Hypothetically, these relocations would have dropped Baltimore City's poverty rate from 22.9 percent to 20.0 percent.

Had such a program been targeted on poor residents of Baltimore City's poorest neighborhoods, its hypothetical impact would have been even more dramatic. In 1990 there were 61 city census tracts with poverty rates above 30 percent (including 35 above 40 percent!). Relocating 18,375 poor residents from those neighborhoods into low-poverty suburban locations would have reduced poverty rates below 30 percent in each of the 61 tracts!

Table 10.2
Hypothetical MPDU Policy's Impact on Poverty Rates for Metro Baltimore 1980-00

Jurisdiction	net shift of poor persons	Pre-- MPDU poverty rate	Post- MPDU poverty rate
Metro Baltimore	0	9.8%	9.8%
Baltimore City	- 18,375	22.9%	20.0%
Baltimore County	+ 5,750	6.5%	7.3%
Anne Arundel County	+ 4,625	5.1%	6.1%
Carroll County	+ 1,500	3.8%	4.8%
Harford County	+ 2,500	4.9%	6.0%
Howard County	+ 3,500	3.9%	5.3%
Queen Anne's County	+ 500	6.3%	7.5%

Continued implementation of HOPE VI and judicious use of the Housing Authority of Baltimore City's own 550 MPDUs within the city limits would have achieved further reductions in the concentration of poverty.

Finally, the Urban Institute has recently calculated that 95,225 poor persons would have had to move from high-poverty to low-poverty census tracts to have eliminated totally economic segregation in the Baltimore region in 2000 (that is, to reach a segregation index of "0"). The 18,375 poor persons that could have been moved through a regional MPDU policy would have achieved 20 percent of that ideal goal. Hypothetically, metro Baltimore's residential economic segregation index for 2000 would have been reduced from 43.3 to 34.6 – 15 percent below the economic segregation index of 40.1 recorded three decades earlier.

11. School Integration by School Board SES *and* MPDU Policy

The above calculations focus only on the relocation of public housing eligible families ("welfare-to-workforce housing"). However, setting the MPDU eligibility ceiling at 65 percent of median household income approximates the ceiling for FARM eligibility. In other words, all 23,700 MPDU units built during our 20-year period would have come into play.

I have simulated what would have been the impact on school economic integration if the school boards' SES policy had been reinforced by an MPDU policy implemented by county and municipal governments. I have assumed that 75 percent of the MPDUs built would have been available to low income families with children and that each such family would have had one child enrolled in public elementary school. Furthermore, the number of low income pupils "transferring" (that is, moving into new attendance zones) would have been limited so that no suburban district would have been lifted above the regional average of FARM pupils (35.8 percent in 2002). This effectively would have limited the number of newcomers to Baltimore County (33.1% FARM) that was already close to the regional FARM average by 2002.

Table 11.1 shows those hypothetical calculations. The effects would be dramatic. While progressive Cambridge-Wake County-type enrollment policies by school boards would have hypothetically reduced economic school segregation by 15 percent from 61.7 to 53.5, adding a region-wide, 20-year, Montgomery County-type, MPDU policy would have further reduced economic school segregation to 25.8 – a 60 percent reduction!

The consequences for Baltimore City would have been dramatic. From a system with 83 percent FARM pupils, the district average would have been reduced to 53 percent. Meanwhile, no suburban district would have exceeded the regional FARM average (35 percent). No suburban elementary schools would have been majority FARM. While the schools attended by the "designer clothes" set would no longer have been the former preserves of near-exclusive privilege, they would typically have had about 25% FARM pupils – many of them the children of the public employees, retail and service workers whom the "designer clothes" class sees and relies upon within their communities every day.

Table 11.1
Simulated SES integration of Baltimore area elementary schools by school board action and 20-year MPDU policy as of 2002

district	least FARM (current)	most FARM (current)	least FARM (simulated)	most FARM (simulated)
Baltimore City	29.3%	98.6%	29.3%	53.6%
Anne Arundel	0.0%	78.0%	28.7%	46.3%
Baltimore County	1.2%	79.1%	25.1%	50.8%
Carroll	1.8%	28.4%	18.7%	28.4%
Harford	2.8%	72.0%	27.9%	45.9%
Howard	0.4%	45.0%	23.4%	39.4%
Queen Anne's	7.7%	31.3%	29.0%	31.3%

Post-SES integration policy economic segregation index: 25.8

It is probable that a more balanced income mix in the classroom would lift not only FARM pupils' achievement levels but those non-FARM pupils from "blue collar" families.

12. Thoughts about Re-gentrification

Implicit in the math of Table 11.1 is also an assumption that, as families with FARM-eligible children move into new suburban subdivisions, their places in the city and older suburbs are taken by middle class families with children moving back into closer-in neighborhoods. That, of course, is a heroic assumption. Though re-gentrification is occurring in Baltimore as in many cities, the middle class newcomers are overwhelmingly either households without children or choosing to send their children to parochial or private schools. No central city has yet succeeded in re-attracting large numbers of middle class children back into its city school district.

Nonetheless, Baltimore City has some strong assets around which it could rebuild its middle class pupil population *school-by-school*. The city continues to be the location of major, high-quality employment centers – a strong downtown with its corporate headquarters, banks, utilities, law, accounting, and other business services firms and federal, state, and city-county office complexes; major medical centers; and major university and college campuses, like Johns Hopkins University.

Across the country there are many examples of major private and public employers that use their own corporate or institutional funds to provide grants for down payments and to subsidize lower-interest mortgages for employees who will buy homes in surrounding neighborhoods.[21] Such "employer-assisted housing benefits" are becoming increasingly common both to reduce employees' commuter times and costs and as a strategy to re-gentrify the declining neighborhoods in which many such hospitals and college campuses are located. Surrounding your institution with friendly, law-abiding neighbors is more cost effective than paying hundreds of thousands or millions of dollars annually for large security services.

Such programs may still not succeed in encouraging employee-residents to enroll their children in neighborhood schools with very high percentages of low income children. Many middle class parents hesitate to have their child be among the few non-poor children. They are seeking some "critical mass" – typically, a *majority* middle class pupil population that is unattainable based on current neighborhood demographics.

However, those major employer institutions (that may be providing employer-assisted housing benefits) have hundreds of other employees with children – many more than will take advantage of employer-assisted housing inducements – who continue to live in homes scattered across the region. Some employees may prefer to have their children attend a high-quality, full-day school near their employment location rather than face "latchkey" problems 10, 20, or 30 miles away. This is especially true with the growth of both single parent and two working parent families.

In Albuquerque the city government and school district have collaborated on creating two elementary schools – Longfellow and Lew Wallace – with special enrollment policies. Both schools are located in predominantly poor, but slowly re-gentrifying neighborhoods surrounding downtown Albuquerque. The school district provides an enriched, magnet-school type curriculum. The city covers the costs of an extended day program. A smaller neighborhood attendance zone has been created so that no more than half of each school's capacity is filled by neighborhood children. The rest of the enrollment is reserved for children of downtown office workers who drop their children off at school on the way to work and

[21] Indeed, as part of its Smart Growth policies, the state of Maryland has established a multi-million "Walk-to-Work" fund to match

pick them up again at the end of the work day. Both schools have been very popular with working parents.

Albuquerque Public Schools is a unified, countywide system (almost as large as Baltimore County Public Schools) that covers both the city and outlying areas. APS easily accommodates such intra-district transfers. But within New Mexico's system of educational finance, even inter-district mobility raises no fiscal issues; the state funds 100 percent of the operating budgets of all school districts. Hence, dollars follow children.

In greater Baltimore any inter-district transfers, such as might be the result of creating Longfellow/Lew Wallace-type schools, could raise fiscal issues. Some special program of state aid might be required. The state of Missouri, for example, provides special funding both to 16 suburban districts that enroll 12,500 black students annually from the city of St. Louis and to the city school district that enrolls 1,500 suburban students annually in its magnet high schools as part of a long-standing, "voluntary," cross-district integration program that was brokered in the shadow of a civil rights suit.

On a school-by-school basis, such creative policies might rebuild the middle class enrollment of Baltimore City Public Schools.

13. Summing Up

In Part IV, I have been engaged in a hypothetical exercise. Even if a uniform MPDU policy were adopted region-wide, it would not be carried out with the mathematical precision that I have hypothesized. For starters, several of the suburban counties would have a legitimate need – and political imperative – to use a portion of their "welfare-to-workforce" MPDUs to reduce pockets of poverty within their own borders. If the standard applied were that communities only qualified as "sending communities" if their poverty rates exceeded the regional average (9.8 percent), a dozen suburban communities would still qualify.[22] That would deduct from the MPDUs available for relocation of poor city households.[23]

[22] Qualifying suburban communities would be in Baltimore County (Essex, Lansdowne-Baltimore Highlands), Carroll County (Taneytown, Union Bridge), Harford County (Aberdeen, Edgewood, Havre de Grace), and Queen Anne's County (Centreville, Church Hill, Millington, and Templeville).

[23] Montgomery County's MPDU program gives priority to eligible households that already live or work in the county. However, over time, many in the county's growing minority community (now 41 percent of the county's population) have moved to the county from Washington, DC, the region's central city.

Furthermore, many poor city residents might be very reluctant to move to new suburban communities regardless of how much "better" the schools were, or how much safer the neighborhoods were, or how much greater access to available job opportunities there was. And, of course, the whole discussion ignores the deep-seated fears of many suburbanites to the prospect of such new neighbors – fears based on both class and race that produced a firestorm of opposition in eastern Baltimore County to the Moving To Opportunity program in 1993.

Nevertheless, the design on which this model MPDU policy is based is a modest one, shaped by the successful quarter-century experience of Montgomery County. A region-wide policy could opt to require that 20 percent of new housing developments would be MPDUs. (Twenty percent is the formula for the federal Low-Income Housing Tax Credit program.) That would increase the number of MPDUs produced by one-third. Or the minimum development size at which the inclusionary requirement would be triggered could be lowered to capture more of the new market. That would also increase MPDU production.

In 1998, the Maryland General Assembly generously increased state funds for Baltimore City Public Schools by $50 million a year for five years. At the time, I pointed out that $50 million a year would be sufficient to allow the Housing Authority of Baltimore City to buy 500 MPDUs a year to relocate poor families from high-poverty to low-poverty neighborhoods – and from high-FARM to low-FARM neighborhood schools.[24] In fact, the plan outlined in section 10 would call for housing authority acquisition of only about 400 MPDUs a year.

The Baltimore region has Big Box county governments and Big Box school districts. It has the successful example of Montgomery County's 30-year MPDU policy right next door. Neighboring Frederick County has just adopted its own MPDU policy. The region has a tradition of progressive government. Greater Baltimore is better positioned to bring into being a greater Baltimore than any region I know.

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[24] Under the State Supreme Court's *Abbott* ruling, the state of New Jersey is currently allocating $400 million in new funds to rebuild all the public schools in Camden. Camden is now one of the USA's most depressed cities with just 80,000 residents (94 percent minority), a 36 percent poverty rate, and over 90% FARM in its 11,000 student school district (98 percent minority). For $400 million, the state of New Jersey could buy standard suburban homes for three-quarters of Camden's poor families, moving their children into school districts averaging one-twelfth the city's FARM rate!