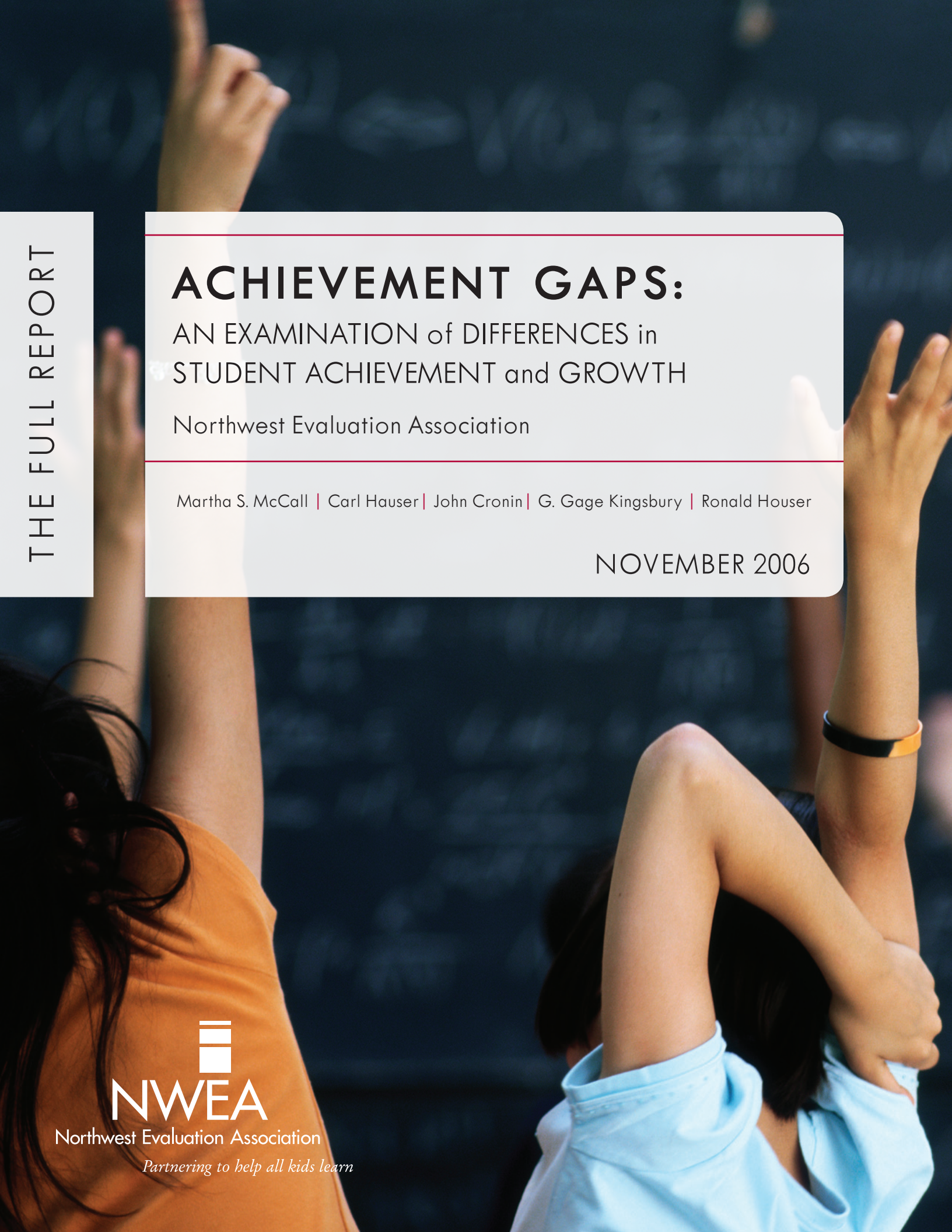

THE FULL REPORT

ACHIEVEMENT GAPS:

AN EXAMINATION of DIFFERENCES in STUDENT ACHIEVEMENT and GROWTH

Northwest Evaluation Association

Martha S. McCall | Carl Hauser | John Cronin | G. Gage Kingsbury | Ronald Houser

NOVEMBER 2006

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A technical report from the NWEA Growth Research Database

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Abstract

The difference between the academic performance of poor students and wealthier students and between minority students and their non-minority peers is commonly known as the achievement gap. The current study examines the achievement gap using a large sample of students from a wide variety of school districts across the United States. It examines the achievement gap by measuring student achievement and student growth along a continuous, cross-grade measurement scale. Examination of results in mathematics and reading in grades three through eight found these differences in achievement and growth among the students studied:

- An achievement gap exists between European-American students and African-American students in each grade and subject studied.
- An achievement gap exists between European-American students and Hispanic students in each grade and subject studied.
- An achievement gap exists between students in low-poverty schools and those in high-poverty schools.
- Achievement gaps exist among European-American students, Hispanic students, and African-American students in schools with similar levels of poverty.
- In mathematics, students enrolled in high-poverty schools tend to grow less academically during the school year than students enrolled in low-poverty schools.
- African-American students grow less academically during the school year than students in other groups. This difference is more noticeable in mathematics than in reading.
- Low-performing students in all groups continue to grow during summer months, but African-American students, Hispanic students, and students enrolled in high-poverty schools tend to grow less.
- High-performing students tend to lose achievement during the summer months, with African-American students and Hispanic students losing more achievement than similar European-American students.
- High-performing students enrolled in high-poverty schools lose more achievement during the summer than similar students who are enrolled in low-poverty schools.

Several things are clear from the findings. Central among these is that the "achievement gap" is not simply the difference in average performance between European-American students and minority students that is commonly depicted in both the popular and academic media. It affects students across the range of performance. The narrowing of the achievement gap will clearly not be an easy task and it requires concentration on all students, not just the low performers. The findings describe the nature of the gap, but do not suggest causes or potential remedies. It may be that schools can narrow the gap, but schools may not be able to close it without larger societal support.

Achievement Gaps: An Examination of Differences in Student Achievement and Growth

McCall, Hauser, Cronin, Kingsbury, Houser

The achievement gap is commonly defined as the difference between the academic performance of poor students and wealthier students and between minority students and their non-minority peers. The achievement gap is a perennial topic in U. S. educational policy and research. The gap has persisted through a variety of policies intended to close it, but Americans show no signs of abandoning the effort to do so. A substantial majority of Americans believe that closing the gap is both important and possible. Results of the Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools (Rose & Gallup, 2006) show that fully 88% of the public view the African-American/European-American and Hispanic/European-American gap as either "very important" (67%) or "somewhat important" (21%). Eighty-one percent replied "yes" to the question, "Do you believe that the achievement gap can be narrowed substantially while maintaining high standards for all children?"

There is a division of opinion on who is responsible for closing the gap. Only 57% of PDK/Gallup poll respondents felt that it was the responsibility of the schools to close the gap. However, to the extent that schools can be effective in closing the gap, it is believed that they should do so. Seventy-seven percent believed that pre-school programs are effective in closing the gap for low-income students and 66% were willing to pay taxes to support such programs. In a survey of African-American and Hispanic families and public school teachers (Johnson, Arumi & Ott, 2006) 84% of African-American and Hispanic students felt that a summer school requirement for students who do not meet standards is a good idea. In general, increased school time, including pre-school, extended school days and longer school years, is seen as a strategy for narrowing the gap (Chaplin & Cappizzano 2006; Gordon, Bridglall & Meroe, 2005; Borman, Dowling, Fairchild, Boulay, & Kaplan, 2002).

These responses are consistent with American belief in equal opportunity and willingness to make pragmatic changes. They are also consistent with findings that, although education improves students' opportunities, schools alone may not be sufficient to eliminate academic differences without larger societal support (Schemo, 2006; Ferguson, 1998; Phillips, Crouse & Ralph, 1998). In general, writers in this area describe *causes* of the gap as coming from family, peer groups, neighborhood, health, housing and in-school factors. They allocate *responsibility* for closing the gap among the family, the community (including governmental agencies) and the school. Rothstein (2004) after studying relationships between within-school and outside-school factors, concluded, "Without complementary investments in early childhood preparation, health care, housing, after-school and summer programs, and other social and economic supports, the achievement gap will never be closed." Thus, while good schools can appreciably narrow the gap, they are unlikely to close it (Betts, Zau & Rice, 2003; Berends, Lucas, Sullivan & Biggs, 2005; Linn, 2005). Since schools, however, are the most visible and controllable of the factors responsible for closing the gap, remedies tend to focus on them.

Historical Perspectives

Discrepancies between wealthy and poor students and between dominant and minority social groups have long been noted, but the groups defining the gap have changed over the years. Bere (1926) noted differences in what was termed "mental capacity" of newly arrived Italian and Eastern European immigrant groups. Since she viewed the results as a reflection of natural order rather than symptoms of a social problem, she did not offer solutions for either school or society. Two decades later Brunner (1948) found that the number of years of education completed increased with the amount of monthly rent paid by students' families. (Rents varied from "Under $10" to "$75 and Over" for the wealthiest group.) His tables show only "Native White Children" but he did collect data showing the same pattern for African-American students. He was not bothered by differences between European-American and African-American students but was concerned that within each group students in cheap housing got less schooling. Believing slum-like conditions to be the source of the problem, he recommended better housing rather than better schools.

These historical articles relate to contemporary issues. Although lower performance of those at the bottom of the social scale has been noted since psychological measurement began, increased social mobility assured that the composition of those groups changed. We no longer hear about the mental limits of Italians and Eastern Europeans "scientifically proven" in Bere's study. That gap closed as these groups integrated socially and economically. The same process is at work today, but economic mobility has decreased in recent years (Hertz, 2005; the *Economist*, 2006a, 2006b), slowing the pace of social cohesion. Nevertheless Berends et. al. (2005) found that the gap decreases in years when affected groups enjoy better social and economic circumstances. Brunner may have failed to see that living in substandard housing was a symptom of larger poverty that forced students to leave school early but, he did see that forces outside of school needed to change to address the needs of low-income students. Both Bere and Brunner note that there is a wide overlap in population distributions and recommend that decisions be based on ability rather than group membership.

Shortly after the passage of the Civil Rights Act, Harold Howe II (1968) testified before the National Council on Race and Education sponsored by the U.S. Civil Rights Commission. Howe advocated ending segregation using conclusions from the influential Coleman (1966) report, which found that family resources were more important than school policy in determining academic outcomes. Concluding that changes to schools themselves would have little benefit, policymakers decided to bring poor students to wealthier neighborhood schools. Busing policies in the 1960s and 1970s were implemented largely as a result of Coleman's findings. Coleman's analysis continues to hold up, but interpretation has changed. A recent reevaluation of Coleman's original data, using more up-to-date statistical methods shows a greater school influence, although effects of factors external to the school remain strong (Viadero, 2006; Borman & Dowling, 2003). School, family and community factors, however, overlap and have complex interaction effects (Shannon & Bylsma, 2002). Family background, especially education, largely determines the peer and community groups a student will encounter. Educated parents tend to have higher incomes and reside in better neighborhoods populated by other similarly situated families. Even when educated parents live in poor neighborhoods, they are better consumers of education, more assertive in their demands of educators, more insistent on a strong academic focus, and more likely to take advantage of magnet, transfer, or private options.

Economic Perspectives

Efforts to close the achievement gap are often seen as part of the civil rights movement in which equal access to education played a major role. There is also an economic case for closing the gap. A group of

economists headed by the Nobel laureate Kenneth Arrow became concerned about the public response to educational and economic inequality in America. They felt that the persistence of school inequality and its resistance to policy changes had caused the public to conclude that investment in education and other social programs was unwise. The economists challenged the belief that academic differences are caused by innate intellectual capacity in a volume called *Meritocracy and Economic Inequality* (Arrow, Bowles & Durlauf, 2000). The authors documented the positive correlation between education and economic prosperity. They argued that exploiting this relationship could increase the wealth of individuals and of society as a whole. Contributors to the volume talk about how investment in social infrastructure (housing, health, school systems) and targeted educational policy lead to a more efficient and equitable economy. The articles reflect a transformation of economic theory in the information age, which views human capital and knowledge infrastructure as central economic assets (Warsh, 2006).

In the terminology of economist Roland Benabou (2000), Americans support "equality of opportunity" but do not require "equality of outcome". Thus it does not bother us if there are wide distributions of income as long as access to high incomes is available to everyone.

Benabou uses a variety of mathematical models (including a helpful meritocracy utility function) to describe how investment in education pays off for society in the long run. He argues that "…equalizing the opportunity for the young's human-capital investment enhances not only social mobility, but also the growth of aggregate output." It is this relationship between individual educational attainment and overall economics and the fact that the least educated segments of the workforce are the fastest growing that led the National Center for Public Policy and Higher Education (2005) to conclude: "If current educational gaps remain, there will likely be a decline in personal income per capita in the United States." If, however, the achievement gap is narrowed, they note, the total U.S. income could gain as much as $425 billion. Education, especially higher education is often viewed in terms of benefits to individuals. Since a rise in education levels means a rise in the human capital, closing the achievement gap is increasingly seen as a public good by economists and other experts.

No Child Left Behind and the Achievement Gap

Reflecting the principle that schooling should provide a level playing field, the No Child Left Behind (NCLB) Act contains explicit goals and timelines for all students to reach predefined proficiency levels. The law requires states to report results by ethnic groups and poverty while working toward a goal of universal proficiency in 2014. This has stimulated publicity about the achievement gap and caused schools and districts to focus on services to these groups. NCLB has also spurred research into effective methods for reaching poor, disabled, non-English speaking and minority groups as districts scramble to meet its provisions. Nevertheless, NCLB provisions have not yet narrowed the achievement gap (Lee, 2006).

The NCLB metric for success is the percentage of students meeting the proficiency standard at a single point in time within and across groups. This metric, is not a complete gauge of the achievement gap. Murray (2006) and Bracey (2005) have pointed out that when the "gap" is defined as the percentage of students meeting a hurdle, the appearance of the gap will change depending on where the hurdle is set on the achievement continuum. The differences in percentages of students meeting standard can close if the proficiency level is changed even when differences between groups remain the same. It is possible to appear to close the gap by setting cut scores closer to 0% or 100%. In order to create a complete picture of the achievement gap, it is clear that we need to consider more than the percentage of students passing a particular point on the achievement continuum.

Similarly, because states have very wide latitude in setting their own proficiency bars for academic achievement, their choice of standard level strongly affects the size of the achievement gap they report. In order to create a complete picture of the achievement gap, it is clear that we need to consider more than the percentage of students passing a particular point on the achievement continuum.

Another concern related to judging the success of a school by the number of students surpassing a hurdle is that it causes schools to concentrate effort on students who are below the standard. Once a student meets the prescribed performance level, schools have no more incentive to promote continued growth. The gap is not only a product of having high proportions of poor and minority students with low skills; it also reflects the low proportion of students at the top. Closing the gap requires that all students reach their potential.

Armor (2004) has suggested that NCLB is trying to reduce the achievement gap without proven methods of reaching poor students, minority students, and students with special needs. "It is possible that school programs can overcome family influences to close achievement gaps, but we have yet to discover how. A school staff cannot simply go to a shelf and find a set of classroom practices that are tested and proven." There are certainly promising practices and programs (Thernstrom & Thernstrom, 2003), many of them inspired by NCLB provisions, but they have either not been reliably replicated or have not been successful on a wide scale. None are sufficient to raise 100% of students above proficiency (Ferguson, 1998). Linn (2003) has also pointed out that no large or diverse district has been able to meet NCLB goals. The likelihood of meeting the 100% goal in 2014 is extremely low. The unintended consequence of this requirement is state opposition, a confusing series of waivers and supplemental rules and a tendency to lower standards.

NCLB reflects the collective desire to close the achievement gap. Its adoption has given urgency to the problem in school systems throughout the United States. We need a more detailed understanding of what the achievement gap really is, so that action and resources can be directed to the problem. While NCLB has given states a mandate, it has not delineated solutions. To find solutions, we need research that starts to describe the achievement gap in all of its aspects.

Growth as an Additional Aspect of the Achievement Gap

Studies which include growth as well as achievement status can provide a broader view of school effectiveness than those that include only single point-in-time analyses (McCall, Kingsbury & Olson, 2004). When individual student performance is followed across time, it is possible to see the effects of instruction more clearly as they are separated from sample effects. The use of growth information about achievement of demographic groups provides a more complete picture of the gap and gives researchers better tools for identifying effective practices. To close the gap in the short run means, at minimum, accelerating the growth of individuals in affected groups. The achievement gap likely emerges prior to these students entering school. Because they begin schooling with lower skills, minority students and students enrolled in high-poverty schools must have greater growth from the day they begin their formal education. This study is designed to provide information about the achievement gap from both a status (one point in time) and growth viewpoint.

This study aims to use individual growth and status in an examination of the achievement gap with the goal of providing better information about how to close it. Examining the growth of individuals across time illuminates patterns that are not apparent from aggregate changes in status.

Study Design

This research investigates growth patterns for students enrolled in low-income schools and minority students compared to students enrolled in higher-income schools and European-American students. The research consists of three component studies.

Study 1. An examination of overall status and growth using mean scale scores and scale score differences within a single school year. This section is based on observed mean status and growth. This analysis provides a view of the groups of interest as composites. It is useful to provide an overall view of the achievement gap. At the same time, it needs to be coupled with more detailed analyses, because it provides us with only a group-level view of the gap.

Study 2. Analysis of overall status and growth using a multilevel model spanning two years with multiple test occasions. Multilevel modeling begins to analyze the within-group differences in performance and growth. This approach uses more information and gives a more detailed picture of growth. By incorporating test scores at several points in time and modeling both ethnic group and poverty categories, the multilevel model estimates true change over time. This analysis also investigates the extent to which the achievement gap is related to ethnicity beyond the effect of poverty.

Study 3. Detailed examination of scale score status and growth by score point. This portion of the analysis looks at status by score level and growth disaggregated by initial score. This more detailed view reveals patterns that are not apparent in summary information. The analysis takes advantage of growth information based on large-scale growth-norming studies (NWEA, 2005). These norms identify patterns of growth by grade and beginning score that are useful in identifying whether group growth patterns differ from expectation. To see whether there are systematic growth differences, initial score must be taken into account. Means of raw growth broken down by initial score were calculated for African-American, Hispanic and European-American students and for poverty categories.

Study 1: Overall Scale Score Status and Growth

The sample for this study is a set of students in grades 3 through 8 who took Northwest Evaluation Association tests in fall of 2004 and spring of 2005. Breakdowns of the sample by grade, ethnic group and poverty category are shown below. Complete tables with ethnic group, poverty category and grade are in Appendix A (Reading) and B (Mathematics). It is worth considering the makeup of this sample. The sample of students is a large sample of convenience from a wide variety of school districts throughout the United States. While a wide variety of districts are included, the very largest, urban districts are not. To the extent that the characteristics of students in extremely large districts such as Chicago and Los Angeles (which are not included) differ from those in smaller districts, the patterns of achievement status and growth observed in these studies may also differ.

TABLE 1.

	Reading		Mathematics	
Grade	N	%	N	%
3	96,731	17%	93,167	17%
4	96,554	17%	92,543	17%
5	98,268	17%	93,931	17%
6	97,734	17%	93,899	17%
7	94,257	17%	88,922	16%
8	86,020	15%	79,595	15%
Total	569,564	100%	542,057	100%

The focus of the study is on African-American, European-American and Hispanic-European-American differences. The distribution of students across all ethnic groups appears below:

TABLE 2.

	Reading		Mathematics	
Ethnic Group	N	%	N	%
Native American	9,987	0%	10,125	0%
Asian/Pacific Islander	14,002	2%	11,823	2%
African-American	58,336	10%	59,394	11%
Hispanic	70,775	12%	64,130	12%
European-American	380,078	67%	365,082	67%
Unknown	32,018	6%	27,209	5%
Multiethnic	4,368	1%	4,294	1%
Total	569,564	100%	542,057	100%

Students were also categorized by the poverty category of the school of enrollment. Poverty categories are those used in NCES reporting. When the bottom two and top two categories are combined, the sample is

divided into three groups. Thus results for the "richest third" combine "10% or less" and "11-25%" free and reduced lunch enrollment. The "poorest third" is a combination of "51-75%" and "Over 75%."

TABLE 3.

School % Eligible for Free/Reduced Lunch	Reading		Mathematics	
	N	%	N	%
10% or less	80,083	14%	67,401	12%
11-25%	135,151	24%	131,845	24%
26-50%	195,650	34%	188,457	35%
51-75%	100,216	18%	98,695	18%
Over 75%	58,464	10%	55,659	10%
Total	569,564	100%	542,057	100%

The study looks at two types of outcome measures. The first outcome measure was the mean spring 2005 for all students in each group. The second outcome measure was the mean growth for all students in each group from fall 2004 to spring 2005. For each student, growth was calculated by subtracting the fall 2004 score from the spring 2005 score. This is observed raw growth. Comparisons of mean status and mean overall growth were made for the following ethnic group pairs: African-American versus European-American, Hispanic versus. European-American. Status and growth comparisons were also made for groups of students attending schools with low-poverty, average poverty, and high-poverty. Students are counted only once in each comparison, but a student can appear in more than one comparison. For example, a European-American student attending a high-poverty school would be included in both the European-American group and the high-poverty school group.

Results: Study 1

There were consistent differences in mean final score at each grade. This is in line with most studies in this area (Perie, Grigg & Donahu, 2005; Perie, Grigg & Dion, 2005). This mean difference in status scores is what most people mean when they talk about the achievement gap. It should be noted that in these comparisons, as well as those that follow, the number of observations is so large that almost any differences would reach commonly used levels of statistical significance, even with very small practical significance. As a result, the results are interpreted in a descriptive manner, and interpretation is given with respect to practical impact.

FIGURE 1.

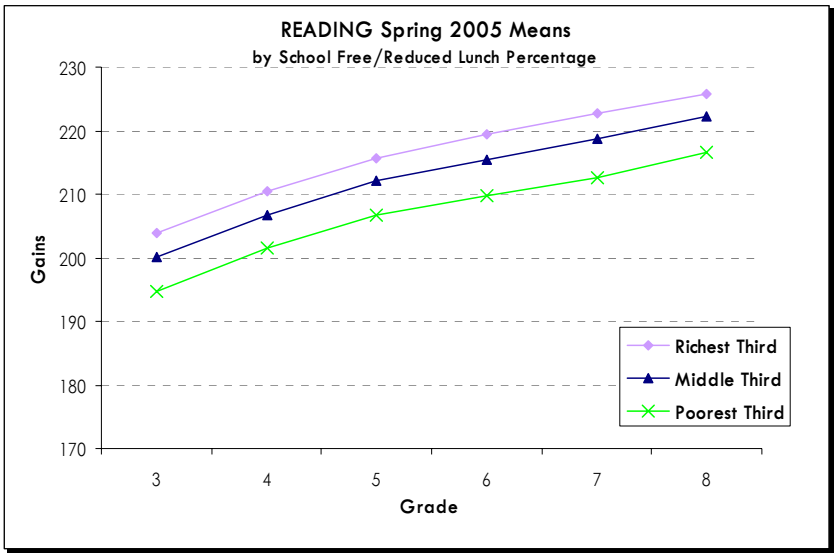
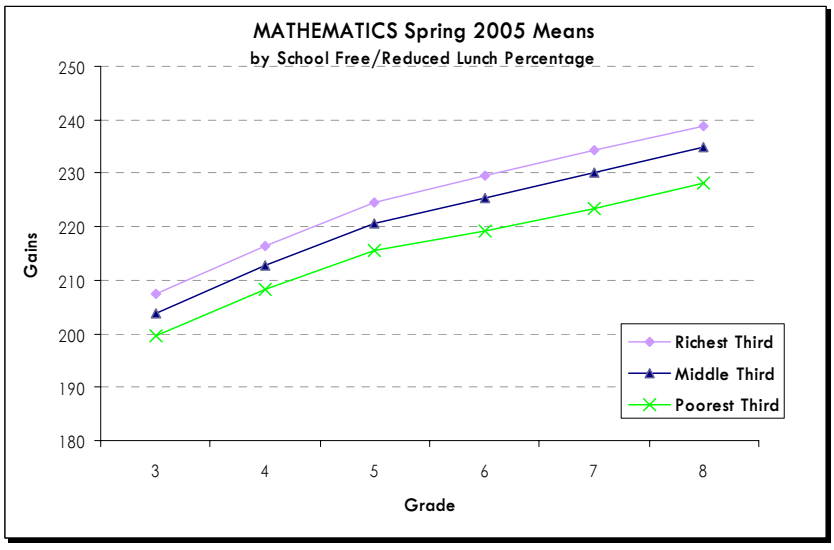


FIGURE 2.



Mean score differences between the poorest and richest third are fairly consistent across grades for both subjects. Ethnic group differences are also about the same at every grade level. Students identified as other (Asian, Native American, multiethnic students, and students not identifying their ethnicity) perform slightly below the European-American group at each grade. The gap between African-American and Hispanic students and European-American students is slightly wider at grades 6, 7 and 8.

FIGURE 3.

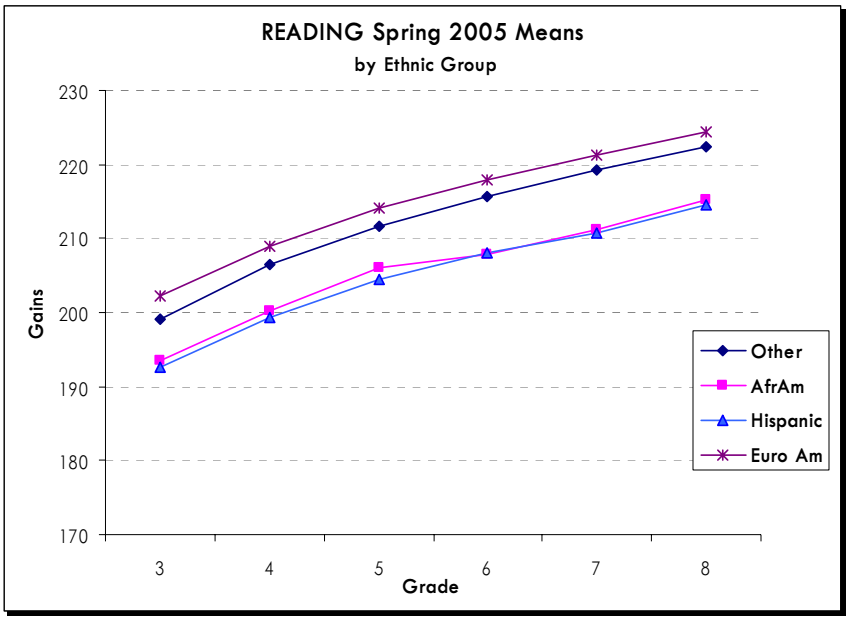
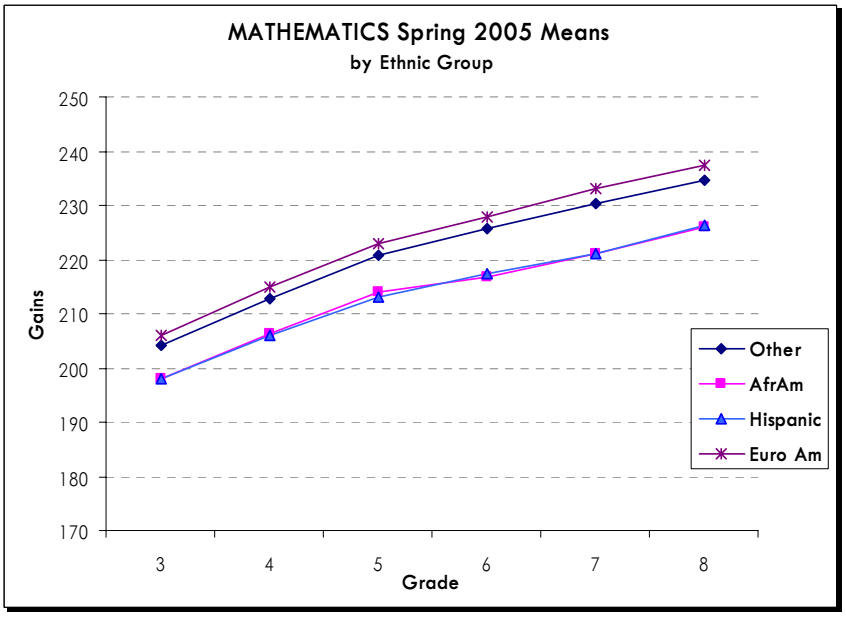


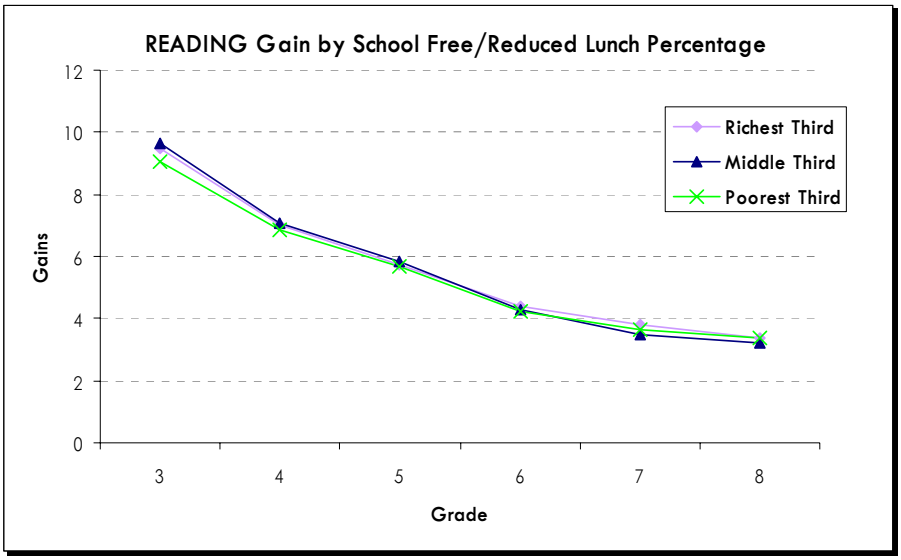
FIGURE 4.



Growth results look quite different. Some studies have found little relationship between ethnic group or poverty level and growth (Coley, 2003, Schemo, 2006) despite persistent gaps in mean scores. This is usually taken to mean that students are growing at the same rate, but come into school with different skill levels. Reading results for poverty categories in this study are consistent with this: both richer and poorer

students make the same amount of growth in a year. In mathematics there are slight differences in growth. Average growth for students enrolled in schools with over 50% of students on free or reduced lunch is slightly less at every grade except grade eight.

FIGURE 5.



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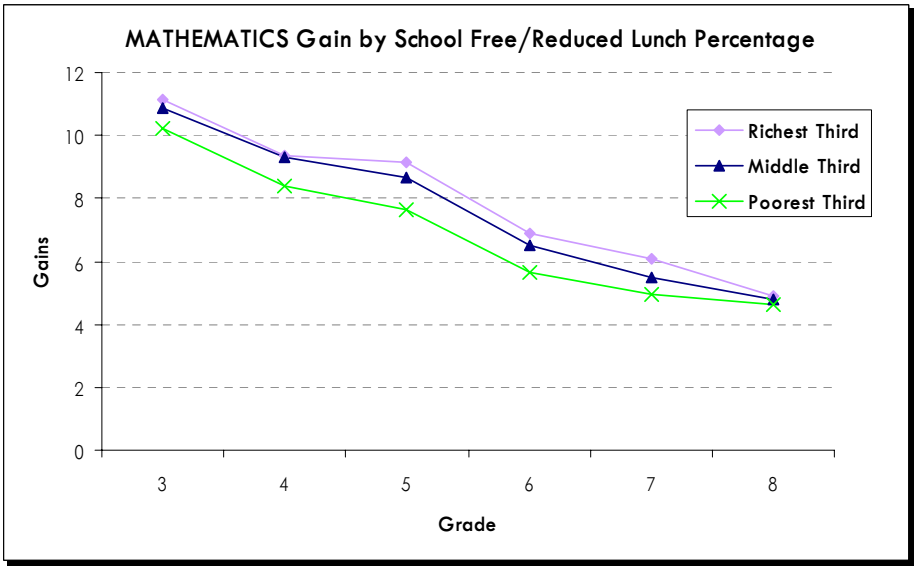


Ethnic group analysis reveals that mean raw reading growth for Hispanic students exceeds that for both European-American and African-American students. African-American growth is the lowest for both subjects and is of particular concern in mathematics. Note that overall differences are less than 2 scale

score points, which translates to .2 logit units. So while the consistency of the pattern is notable, differences in mean growth are relatively small.

FIGURE 7.

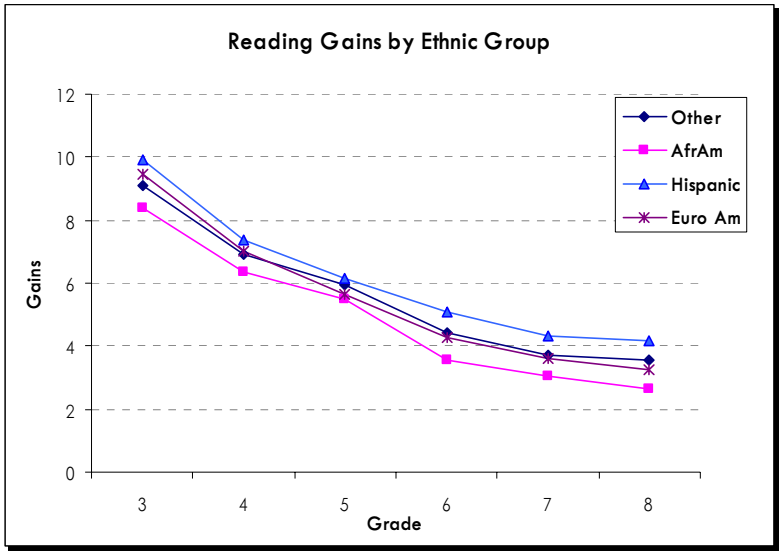
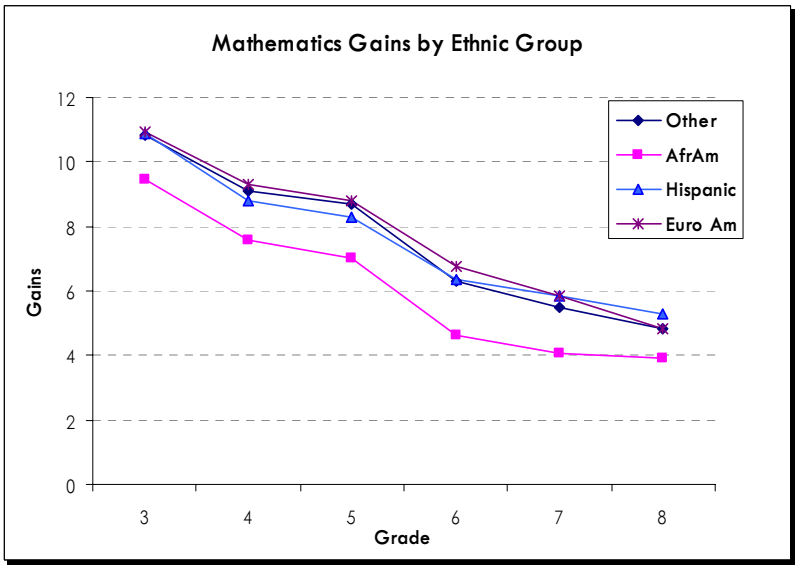


FIGURE 8.



The decreasing pattern of growth across grades is typical of longitudinal growth patterns as illustrated in NWEA's growth norms (NWEA, 2005). Lower initial scores are associated with higher growth both within and across grade level. This property of growth measures is important to remember in light of results reported later in this study.

Poor students, African-American students and Hispanic students tend to begin the third grade with lower skills in both reading and mathematics. In the aggregate, they generally make the same amount of reading growth (as a group) as wealthier and European-American students. Poor and Hispanic students make about the same amount of mean mathematics growth as their peers, but African-American students grow less in mathematics than any other group.

Conclusions: Study 1

This study replicated results from a variety of other studies concerning achievement status. In particular, the study indicated that an achievement gap exists between European-American students and African-American students. This gap was relatively consistent across all grades studied. The pattern of gaps was also consistent across subjects.

The study also indicates that an achievement gap exists between European-American students and Hispanic students in each grade and subject studied. Performance of Hispanic students was very similar to that of African-American students.

Another finding of the study was that an achievement gap exists between students in low-poverty schools and those in high-poverty schools for all grades and subjects studied. This achievement gap was relatively consistent across all grades, indicating that the groups of students in schools with high levels of poverty are no closer to students in low-poverty schools in the eighth grade than they were in the third grade.

In mathematics, students enrolled in high-poverty schools grow less academically during the school year than students enrolled in low-poverty schools in all grades but grade eight. In reading, growth for all ethnic groups is quite similar.

In all grades and subject areas, African-American students grow less academically during the school year than students in other groups. This difference is more noticeable in mathematics than in reading.

This study has replicated the findings of others who have studied the achievement gap using status measures. It has extended the findings using growth measures and has clearly indicated that the growth measures tell a different story about the achievement gap.

While these findings at the group level are interesting, they do not completely represent the achievement gap. The complexity of the gap starts to appear if we consider what we do not know after this study is concluded. While we know groups differ in their current achievement if they are divided by ethnicity or poverty, we do not know whether the determining factor underlying the gap is ethnicity, or poverty, or a combination of the factors. This question requires a slightly different approach to analysis, and is one of the focal points of the next study.

In the next section, another analysis of overall growth is presented. To improve estimates of change over time, a multilevel model is used incorporating a longer time span. In addition, values for school free and reduced lunch, a proxy for poverty, are used retaining more information than the broad poverty categories used earlier.

Study 2: Multilevel Analysis of Status and Rate of Change

Method

Student samples. To examine student achievement trends in reading and mathematics, four datasets were created. These included student test records from the beginning of grades 4 and 7 for both reading and mathematics. Each dataset consisted of test records from students who had a median of 3 to 4 test administrations (range of 1 to 7) between fall 2003 and spring 2005, the first of which always occurred in fall 2003. For identifying each dataset, the subject (reading or mathematics) and grade of students in fall 2003 were used. For example, Reading-Grade 4 consisted of reading test records of student who began grade four in fall 2003 and ended grade five in spring 2005. All test records for a single student represented in each dataset were associated by a common student identifier. In addition to achievement scores and each student's ethnicity, the datasets included for each test administration the date the test was administered, the student's grade at test time, and the percentage of free and reduced price lunch (FRL) students in the school in which the test was taken. These FRL percentages were obtained from the National Center for Education Statistics (NCES) Common Core of Data for 2002-2003.

TABLE 4.

Numbers of Students Included in the Multilevel Models Analysis by Subject-Grade and Ethnic Group

State	Native Amer.	Asian	African Amer.	Hispanic	European Amer.	Total	States Represented
Reading Grade 4	2,089	2,367	9,670	13,488	70,032	97,646	27
Reading Grade 7	1,857	2,884	10,256	14,122	76,085	105,204	26
Mathematics Grade 4	2,177	2,577	9,699	14,292	71,765	100,510	27
Mathematics Grade 7	2,153	2,931	10,533	14,629	76,140	106,386	26

Treatment of time between tests. Test occasions for individual students were centered on the date of the first test taken in the same subject area in the fall of 2003. To cast time in a more familiar context, the time between a student's first fall 2003 test and subsequent tests was transformed into quasi-instructional weeks (QIW). This metric used a "traditional" school calendar as the basis for removing non-instructional (weekend and vacation/break) days from the number of calendar days that occurred between tests. For example, if one test occurred in the fall and was followed by another test that occurred after January but before Easter of the same school year, 15 days would have been subtracted to account for the winter/Christmas break and the number of calendar days remaining would have been multiplied by .714 (5/7) to exclude weekend days. If a third test was administered to the same student after Easter but before June 15 of the same school year, 10 additional days (for a total of 25 days) would have been subtracted to account for spring/Easter breaks, and the number of remaining calendar days between the first and third test would have been adjusted in the same way to exclude weekends days. The numbers of calendar days for tests separated by a summer break were adjusted by 70 days prior to excluding weekend days. These adjustments, allow a first-order approximation of the amount of instruction that a student received between any two tests.

Analysis. Each of the subject-grade datasets were analyzed using a 2-level hierarchical model for change (Raudenbush & Bryk, 2002; Singer & Willet, 2003). The level-1 component of the model represented the amount of change in achievement that may be expected of each student in a subject area. In essence, level-1 contained all the test occasions for a particular student for the duration of the study. Since each dataset contained only enough data across the study period to support a linear change model, change in subject area achievement at the most basic level was posited as a linear function of time. In addition to this basic specification, we also included school economic status as reflected in the schools proportion of free and reduced lunch students as a predictor of achievement status and its rate of change. This variable, called Sch1FRLpct, was incorporated as a time-invariant predictor into the level-2 component of the model. Thus, the SchlFRLpct variable was carried forward as an indicator of economic status for all subsequent test occasions for the student. Treating SchlFRLpct as a time-varying predictor in the level-1 component was also considered. This approach was abandoned following initial analyses which found that placing SchlFRLpct into level-1 introduced more noise into the overall model. Therefore, the formal specification for the level-1 component was a simple linear change trajectory in the form of:

$$Y_{ti} = \pi_{0i} + \pi_{1i}QIW_{ti} + \varepsilon_{ti} \qquad (1)$$

where Y_{ti} is the achievement status of student *i* at test occasion *t* ; π_{0i} is the true value of achievement status for student *i* when the value of QIW for student *i* is zero; π_{1i} is the rate of change (slope) parameter indicating the effect on Y_{ti} that is associated with a one unit change in the number of instructional weeks (QIW) for student *i* on test occasion *t*; and ε_{ti} is the residual error associated for student *i* on test occasion *t*.

In level-2 of the model, a relationship was formulated between the inter-individual differences in the change trajectories specified in level-1 and the individual student characteristics of interest, ethnic group membership and school FRL percentage. More specifically, student ethnic group membership and school FRL percentage were used as predictors for the level-1 intercept parameter, π_{0i}, and for the change parameter, π_{1i}. School FRL percentage was entered into the level-2 model independent of its relationship to minority group status; that is, the interaction of it and a student's minority group membership was not formally considered. Four dichotomous variables reflecting ethnic group membership were created to code membership as 1 (group member) or 0 (not a group member). These included African-American (AfAmer), Hispanic (Hisp), Native American (NaAmer), and non-Minority. The 'non-Minority' group was formed as a result of all codes for the other three groups having a value of zero. Asian-Americans and European-Americans comprised the non-Minority group. Both predictor variables were entered using grand mean centering. Therefore, effects take the form of the coefficient that must be multiplied by the deviation of the predictor from its grand mean and added to the parameter intercept to determine its value.

The formal specification for the level-2 component shows the relationship between each level-1 parameter and this set of predictors. Specifically,

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{SchlFRLpct}) + \beta_{02}(\text{AfAmer}) + \beta_{03}(\text{Hisp}) + \beta_{04}(\text{NaAmer}) + r_{0i},$$

$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{SchlFRLpct}) + \beta_{12}(\text{AfAmer}) + \beta_{13}(\text{Hisp}) + \beta_{14}(\text{NaAmer}) + r_{1i}. \qquad (2)$$

In this component, π_{ki} is the level-1 parameter of interest (where k = 0,1); β_{k0} is the intercept (mean value across all students); β_{k1}, β_{k2}, β_{k3}, and β_{k4} are the coefficients for the different predictors that are added to β_{k0} to provide the influence of the predictor on the level-1 parameter of interest, and r_{ki} is the random effect of student *i* on the level-1 parameter of interest. By virtue of the coding of AfAmer, Hisp, and NaAmer, the sum of these variables could only be one or zero; if zero, the student was a non-Minority student, if one,

only the specific minority group variable that was coded one (β_{k1}, β_{k2}, or β_{k3}) had an influence on the estimate of π_{ki}. The *final* estimation of slope, π_{1i}, included adjusted coefficients which captured the effects of initial status on rate of change as it was manifest indirectly through the predictors (Raudenbush & Sampson, 1999; Raudenbush and Bryk, 2002; Seltzer, Choi & Thum, 2002). The final slope estimate can be formally represented as,

$$\pi_{1i} = \alpha_{10} + \alpha_{11}(\text{SchlFRLpct}) + \alpha_{12}(\text{AfAmer}) + \alpha_{13}(\text{Hisp}) + \alpha_{14}(\text{NaAmer}) + \alpha_{15}(\pi_{0i}) + u_{1i}, \quad (3)$$

where

$\alpha_{10} = \beta_{10} - \alpha_{15}\beta_{00}$,

$\alpha_{11} = \beta_{11} - \alpha_{15}\beta_{01}$,

$\alpha_{12} = \beta_{12} - \alpha_{15}\beta_{02}$,

$\alpha_{13} = \beta_{13} - \alpha_{15}\beta_{03}$,

$\alpha_{14} = \beta_{14} - \alpha_{15}\beta_{04}$, and

$\alpha_{15} = \sigma_{01}/\sigma^2_0$.

The residual, u_{1i}, is that portion of slope that is not explained by initial status and combination of other predictors.

In deciding on the final form of the change model, several models ranging from a very simple unconditional means model to a slightly more complex unconditional growth model to a series of models of increasing complexity were evaluated. This process provided support for the use of the most complex models to describe change.

Results: Study 2

Table 5 provides a summary of how each subject-grade dataset was structured for each ethnic group with respect to the number of test administrations, the school level FRL percentages associated with the fall 2003 test, and the observed RIT (scale) scores for the fall 2003 test.

TABLE 5. TESTS ADMINISTERED AND SCHOOL PERCENT OF FREE/REDUCED PRICE LUNCH AND OBSERVED RIT SCORES FOR FALL 2003 BY ETHNIC GROUP BY SUBJECT-GRADE.

	Tests Administered			Percent Free/Reduced Price Lunch in Fall 2003 School			Observed Fall 2003 RIT Scores				
Ethnic Group	**Mean**	**SD**	**Med**	**Mean**	**SD**	**Med**	**Mean**	**SD**	**Med**	**N**	**Percentage**
					Reading - Grade 4						
African American	3.2	0.97	4	63.1	24.45	68	192.7	14.10	194	9670	9.9
Hispanic	3.1	1.10	3	59.1	24.54	60	191.4	14.54	193	13488	13.8
Native American	3.1	1.08	4	60.7	23.70	62	191.3	14.34	193	2089	2.1
non-Minority	3.2	1.03	4	35.0	20.14	34	201.4	13.59	203	72399	74.1
Overall	3.2	1.03	4	41.6	24.16	39	198.9	14.41	201	97646	
					Reading - Grade 7						
African American	3.0	1.05	3	54.9	24.72	59	207.1	14.69	209	10256	9.7
Hispanic	2.9	1.08	3	53.8	22.07	54	206.7	15.55	209	14122	13.4
Native American	2.7	1.09	3	50.7	21.28	49	206.5	15.09	208	1857	1.8
non-Minority	2.9	1.10	3	32.2	17.65	31	217.5	13.48	219	78969	75.1
Overall	2.9	1.09	3	37.6	21.36	35	214.9	14.67	217	105204	
					Mathematics - Grade 4						
African American	3.2	0.97	4	62.9	24.26	67	196.5	12.51	198	9699	9.6
Hispanic	3.1	1.11	4	59.5	24.38	60	196.5	12.03	197	14292	14.2
Native American	3.1	1.09	4	60.8	23.57	62	195.9	11.74	197	2177	2.2
non-Minority	3.2	1.02	4	35.1	20.24	34	204.1	11.69	205	74342	74.0
Overall	3.2	1.03	4	41.8	24.17	39	202.1	12.29	203	100510	
					Mathematics - Grade 7						
African American	3.0	1.07	3	54.9	24.16	59	214.3	15.89	215	10533	9.9
Hispanic	2.8	1.09	3	54.7	21.61	55	214.6	15.55	215	14629	13.8
Native American	2.8	1.10	3	55.1	22.70	53	213.4	14.98	213	2153	2.0
non-Minority	2.9	1.10	3	33.0	17.67	32	226.0	15.26	227	79071	74.3
Overall	2.9	1.10	3	38.6	21.35	36	223.0	16.17	224	106386	

The table reveals that the average numbers of tests taken during the study period was consistent across minority groups. In contrast to the number of test occasions per student, there were noticeable differences between the three minority groups and the non-minority group. The schools in which

minority students took their fall 2003 tests had mean FRL percentages that were 40% to 43% greater than the schools in which non-minority students took their fall 2003 tests. Differences in the observed fall 2003 RIT scores favored non-minority students over any of the minority groups by differences ranging from roughly 7-8 RIT points (Mathematics-Grade 4) to roughly 11-13 RIT points (Mathematics-Grade 7). Across all subject-grade datasets, the non-minority group performance on the fall 2003 tests was above the minority group performance in a range of .61 to .78 (median = .70) standard deviations. A difference of this magnitude is commonly referred to as a moderate effect size. It is also consistent with other studies (e.g., Lee, 2002) that have examined the achievement gap as differences between means rather than differences between percentages of students in ordered performance categories.

Results from the hierarchical linear change models are presented in Tables 6 through 9 for Reading-Grade 4, Reading-Grade 7, Mathematics-Grade 4, and Mathematics-Grade 7, respectively. All four tables share a common structure. Results from four basic preliminary models are presented along with the Final model chosen as the most parsimonious model across all four datasets. For all models, the fixed effects included in the model are presented for each corresponding level-1 parameter. Of particular interest in the fixed effects are those involving the change parameter, π_{1i}, and its associated predictors. Low *p* values of these predictors (e.g., greater than or equal to .05) argue for the inclusion of the variable as a predictor of the corresponding parameter. Variance and covariance components are presented in the next major section. These components help to document how and to what extent the sequential application of the key models serve to reduce sources of variance.

TABLE 6. RESULTS OF FIVE KEY MODELS FITTED TO THE READING-GRADE 4 DATA.

Units:			**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**		
Level 1 (Within students)	306,026														**Final**		
Level 2 (Between students)	97,646														**(School FRL Percent +**		
			Unconditional Means			**Unconditional Growth**			**School FRL Percent**			**Minority Group**			**Minority Group)**		
Fixed Effects	**Parameter**		Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*
Initial status	π_{0i}																
Intercept		β_{00}	204.0868	0.0424	0.000	199.1157	0.0453	0.000	199.1189	0.0433	0.000	199.1184	0.0433	0.000	199.1200	0.0425	0.000
Schl FRL Pct		β_{01}							-0.1475	0.0018	0.000				-0.1211	0.0020	0.000
Afican Amer		β_{02}										-8.7122	0.1481	0.000	-5.2945	0.1573	0.000
Hispanic		β_{03}										-9.9652	0.1332	0.000	-7.0476	0.1420	0.000
Native Amer		β_{04}										-10.1630	0.3106	0.000	-7.0474	0.3023	0.000
Rate of change (weeks)	π_{1i}																
Intercept		α_{10}				0.6427	0.0079	0.000	0.6642	0.0084	0.000	0.6550	0.0084	0.000	0.6655	0.0086	0.000
Schl FRL Pct		α_{11}							-0.0002	0.0000	0.000				-0.0002	0.0000	0.000
Afican Amer		α_{12}										-0.0119	0.0016	0.000	-0.0080	0.0017	0.000
Hispanic		α_{13}										-0.0015	0.0015	0.320	0.0024	0.0015	0.121
Native Amer		α_{14}										-0.0152	0.0034	0.000	-0.0113	0.0034	0.001
π_{0i}		α_{15}				-0.0023	0.0000	0.000	-0.0024	0.0000	0.000	-0.0023	0.0000	0.000	-0.0024	0.0000	0.000
Variance Components																	
Level 1 within person		σ^2_ε	59.8416	0.1852		30.7030	0.1189		30.7057	0.1195		30.7103	0.1189		30.7084	0.1189	
Level 2 Initial Status		σ^2_0	153.2628	0.7949	0.000	176.0570	0.8327	0.000	158.2641	0.8327	0.000	158.6245	0.8344	0.000	151.9477	0.8043	0.000
Instructional Wks		σ^2_1				0.0042	0.0001	0.000	0.0042	0.0001	0.000	0.0042	0.0001	0.000	0.0041	0.0001	0.000
Covariance		σ_{01}				-0.4000	0.0075		-0.3788	0.0076		-0.3704	0.0075		-0.3632	0.0074	
Pseudo R^2 Statistics and Model Fit																	
$R^2_{y.\hat{y}}$						0.1062			0.1832			0.1790			0.2079		
R^2_ε						0.4869			0.4869			0.4868			0.4868		
R^2_0									0.1011			0.0990			0.1369		
R^2_1									0.0000			0.0095			0.0119		
Deviance			2329932.0			2204339.2			2194315.7			2194693.4			2190611.8		
df			3			6			8			12			14		
Comparison (compared to model)						125592.8 (1)			10023.5 (2)			9645.8 (2)			3703.9 (3)		
df						3			2			6			6		
p						0.000			0.0000			0.000			0.000		

TABLE 7. RESULTS OF FIVE KEY MODELS FITTED TO THE READING-GRADE 7 DATA.

Units:			**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**		
Level 1 (Within students)	304,208														**Final**		
Level 2 (Between students)	105,204														**(School FRL Percent + Minority Group)**		
			Unconditional Means			**Unconditional Growth**			**School FRL Percent**			**Minority Group**					
Fixed Effects	**Parameter**		Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*
Initial status	π_{0i}																
Intercept		β_{00}	214.8599	0.0425	0.000	214.8574	0.0456	0.000	214.8599	0.0425	0.000	214.8606	0.0423	0.000	214.8610	0.0415	0.000
Schl FRL Pct		β_{01}							-0.2039	0.0020	0.000				-0.1354	0.0022	0.000
Afican Amer		β_{02}										-10.35293	0.14985	0.000	-7.2727	0.1547	0.000
Hispanic		β_{03}										-10.7445	0.1377	0.000	-7.8104	0.1457	0.000
Native Amer		β_{04}										-11.0312	0.3488	0.000	-8.5170	0.3375	0.000
Rate of change (weeks)	π_{1i}																
Intercept		α_{10}				0.4251	0.0087	0.000	0.4048	0.0093	0.000	0.4110	0.0094	0.000	0.3986	0.0096	0.000
Schl FRL Pct		α_{11}							0.0002	0.0000	0.000				0.0002	0.0000	0.000
Afican Amer		α_{12}										-0.0095	0.0017	0.000	-0.0125	0.0018	0.000
Hispanic		α_{13}										0.0156	0.0015	0.000	0.0126	0.0016	0.000
Native Amer		α_{14}										0.0089	0.0043	0.036	0.0061	0.0043	0.153
π_{0i}		α_{15}				-0.0010	0.0000	0.000	-0.0014	0.0000	0.000	-0.0014	0.0000	0.000	-0.0014	0.0000	0.000
Variance Components																	
Level 1 within person		σ^2_ε	42.4272	0.1344		32.2411	0.1284		32.2374	0.1284		32.2396	0.1284		32.2344	0.1284	
Level 2 Initial Status		σ^2_0	169.3878	0.8165	0.000	182.7932	0.9179	0.000	163.8266	0.8357	0.000	161.6495	0.8263	0.000	154.9658	0.7973	0.000
Instructional Wks		σ^2_1				0.0029	0.0001	0.000	0.0028	0.0001	0.000	0.0027	0.0000	0.000	0.0027	0.0001	0.000
Covariance		σ_{01}				-0.2711	0.0079		-0.2275	0.0076		-0.2293	0.0075		-0.2108	0.0074	
Pseudo R^2 Statistics and Model Fit																	
$R^2_{y.\hat{y}}$						0.0342			0.1100			0.1200			0.1450		
R^2_ε						0.2401			0.2402			0.2401			0.2402		
R^2_0									0.1038			0.1157			0.1522		
R^2_1									0.0351			0.0421			0.0596		
Deviance			2261504.0			2216871.4			2206602.0			2205112.4			2201214.9		
df			3			6			8			12			14		
Comparison (compared to model)						44632.7 (1)			10269.4 (2)			11758.9 (2)			3897.5 (4)		
df						3			2			6			2		
p						0.000			0.000			0.000			0.000		

TABLE 8. RESULTS OF FIVE KEY MODELS FITTED TO THE MATHEMATICS-GRADE 4 DATA.

Units:			**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**		
Level 1 (Within students)	316,297														**Final**		
Level 2 (Between students)	100,510														**(School FRL Percent + Minority Group)**		
			Unconditional Means			**Unconditional Growth**			**School FRL Percent**			**Minority Group**					
Fixed Effects	**Parameter**		Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*
Initial status	π_{0i}																
Intercept		β_{00}	209.3484	0.0403	0.000	202.3048	0.0384	0.000	202.3069	0.0369	0.000	202.3066	0.0369	0.000	202.3076	0.0363	0.000
Schl FRL Pct		β_{01}							-0.1405	0.0015	0.000				-0.0964	0.0018	0.000
Afican Amer		β_{02}										-7.5628	0.1321	0.000	-4.8815	0.1385	0.000
Hispanic		β_{03}										-7.7148	0.1079	0.000	-5.3711	0.1161	0.000
Native Amer		β_{04}										-8.2016	0.2503	0.000	-5.7342	0.2474	0.000
Rate of change (weeks)	π_{1i}																
Intercept		α_{10}				-0.1323	0.0100	0.000	-0.1116	0.0106	0.000	-0.1162	0.0106	0.000	-0.1075	0.0109	0.000
Schl FRL Pct		α_{11}							-0.0002	0.0000	0.000				-0.0001	0.0000	0.000
Afican Amer		α_{12}										-0.0144	0.0017	0.000	-0.0112	0.0018	0.000
Hispanic		α_{13}										-0.0033	0.0015	0.027	0.0000	0.0016	0.975
Native Amer		α_{14}										-0.0052	0.0035	0.133	-0.0020	0.0035	0.566
π_{0i}		α_{15}				0.0020	0.0001	0.000	0.0019	0.0001	0.000	0.0019	0.0001	0.000	0.0018	0.0001	0.000
Variance Components																	
Level 1 within person		σ^2_ε	80.5937	0.2449		26.2746	0.1006		26.2761	0.1006		26.2755	0.1010		26.2755	0.1006	
Level 2 Initial Status		σ^2_0	133.6555	0.7289	0.000	127.0900	0.6654	0.000	115.5478	0.6142	0.000	115.6573	0.6147	0.000	111.4208	0.5955	0.000
Instructional Wks		σ^2_1				0.0042	0.0001	0.000	0.0042	0.0001	0.000	0.0042	0.0001	0.000	0.0042	0.0001	0.000
Covariance		σ_{01}				0.2494	0.0059		0.2145	0.0057		0.2177	0.0057		0.2047	0.0056	
Pseudo R^2 Statistics and Model Fit																	
$R^2_{y.\hat{y}}$						0.1970			0.2591			0.2580			0.2798		
R^2_ε						0.6740			0.6740			0.6740			0.6740		
R^2_0									0.0908			0.0900			0.1233		
R^2_1									0.0024			0.0024			0.0119		
Deviance			2464795.9			2234139.2			2224931.5			2225084.0			2221469.6		
df			3			6			8			12			14		
Comparison (compared to model)						230656.7 (1)			239864.4 (2)			9055.2 (2)			3461.9 (3)		
df						3			5			6			6		
p						0.000			0.000			0.000			0.000		

TABLE 9. RESULTS OF FIVE KEY MODELS FITTED TO THE MATHEMATICS-GRADE 7 DATA.

Units:			**Model 1**			**Model 2**			**Model 3**			**Model 4**			**Model 5**		
Level 1 (Within students)	306,445														**Final**		
Level 2 (Between students)	106,386		**Unconditional Means**			**Unconditional Growth**			**School FRL Percent**			**Minority Group**			**(School FRL Percent + Minority Group)**		
Fixed Effects	**Parameter**		Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*	Coefficient	Std Err	*p*
Initial status	π_{0i}																
Intercept		β_{00}	227.1104	0.0494	0.000	223.2105	0.0496	0.000	223.2149	0.0473	0.000	223.2116	0.0470	0.000	223.2133	0.0462	0.000
Schl FRL Pct		β_{01}							-0.2282	0.0022	0.000				-0.1506	0.0025	0.000
Afican Amer		β_{02}										-11.8338	0.1636	0.000	-8.5276	0.1681	0.000
Hispanic		β_{03}										-11.5483	0.1398	0.000	-8.2683	0.1494	0.000
Native Amer		β_{04}										-12.8584	0.3288	0.000	-9.5285	0.3208	0.000
Rate of change (weeks)	π_{1i}																
Intercept		α_{10}				0.0945	0.0080	0.000	0.0950	0.0085	0.000	0.0989	0.0085	0.000	0.0963	0.0087	0.000
Schl FRL Pct		α_{11}							0.0000	0.0000	0.480				0.0000	0.0000	0.567
Afican Amer		α_{12}										-0.0267	0.0018	0.000	-0.0264	0.0018	0.000
Hispanic		α_{13}										0.0125	0.0016	0.000	0.0127	0.0017	0.000
Native Amer		α_{14}										0.0218	0.0039	0.000	0.0220	0.0040	0.000
π_{0i}		α_{15}				0.0003	0.0000	0.000	0.0003	0.0000	0.000	0.0003	0.0000	0.000	0.0003	0.0000	0.000
Variance Components																	
Level 1 within person		σ^2_ε	50.8435	0.1607		28.0086	0.1120		27.9958	0.1120		28.0038	0.1120		27.9962	0.1119	
Level 2 Initial Status		σ^2_0	238.7860	1.1287	0.000	238.3856	1.1371	0.000	214.6952	1.0347	0.000	211.9162	1.0227	0.000	203.7019	0.9872	0.000
Instructional Wks		σ^2_1				0.0041	0.0001	0.000	0.0041	0.0001	0.000	0.0040	0.0001	0.000	0.0040	0.0001	0.000
Covariance		σ_{01}				0.0784	0.0079		0.0701	0.0080		0.0656	0.0080		0.0654	0.0078	
Pseudo R^2 Statistics and Model Fit																	
$R^2_{y,\hat{y}}$						0.0630			0.0959			0.1510			0.1756		
R^2_ε						0.4491			0.4494			0.4492			0.4494		
R^2_0									0.0994			0.1110			0.1455		
R^2_1									-0.0024			0.0244			0.0220		
Deviance			2349981.8			2246712.7			2236171.4			2234449.1			2230500.8		
df			3			6			8			12			14		
Comparison (compared to model)						103269.0	(1)		10541.3	(2)		12263.7	(2)		3948.3	(4)	
df						3			2			6			2		
p						0.000			0.000			0.000			0.000		

The final section of Tables 6 through 9 provides pseudo R^2 and model fit statistics. The pseudo R^2 values provide estimates of the proportion of variance that is accounted for by a particular model or model component. In the case of $R^2_{y.\hat{y}}$, the values presented are the squared correlations of the specific model-predicted and observed RIT scores. The values presented for R^2_{ε} represent the proportion of the residual variance in the particular model that is accounted for over and above that accounted for by the unconditional means model, that is,

$$[(\sigma^2_{\varepsilon}\,\text{unconditional means} - \sigma^2_{\varepsilon}\,\text{model of interest})/\ \sigma^2_{\varepsilon}\,\text{unconditional means}].$$

Each of the remaining R^2 s represents the proportion of the particular variance component that the model accounts for *over and above* that accounted for by the unconditional growth model.

Finally, model fit statistics are provided as deviance statistics in the form of -2log-likelihood for the specific model. Smaller deviance statistics indicate better model fit to the sample data. The comparisons provided are the differences of the deviance statistics to those of the previous model (to the immediate left) and evaluated against a large sample χ^2 distribution with $df = df_{\text{current}} - df_{\text{previous}}$. The degree of freedom within each model is simply the number of parameters estimated. In the case of the Final model, the deviance statistic is compared to the better fitting of the two previous models, the School FRL Percent model or the Minority Group model.

Tables 6 through 9 show largely consistent results for each grade level cohort. It can be seen that they are largely consistent from one grade level cohort to the next within each subject area with respect to the final model. Initially, it is notable that the intra-class correlation coefficients (not tabled) indicate that high proportions (between 62% for mathematics-grade 4 and 82% for mathematics-grade 7) of the outcome variance in the unconditional means model is attributable to differences between students. The introduction of time (QIW) as a predictor of performance substantially reduced the student level residual variance, σ^2_{ε}, observed in the unconditional means models by roughly 46% (R^2_{ε} = from 24% for reading-grade seven, to 67% for mathematics-grade 4). Also across all cohorts, School FRL Percent and Minority Group are seen to be negatively associated with initial status. This is not surprising and is consistent with prior studies. The full Final model (School FRL Percent + Minority Group) resulted in the largest $R^2_{y.\hat{y}}$ values and significantly better deviance statistics than the closest better performing growth model alternative (School FRL Percent or Minority Group). Where inconsistencies are observed between cohorts within a subject, they are in the differential influence of School FRL Percent versus Minority Group membership.

For the mathematics-grade 4 cohort, for example, School FRL Percent was more strongly associated with rate of change than Minority Group membership. For this cohort, membership in the Hispanic or the Native American groups carried no useful value for predicting the rate of change in mathematics performance over and above that provided by the cohort mean rate of change, β_{10}. For the mathematics-grade seven cohort, however, we observed a different combination of influence. School FRL Percent carried no predictive value for rate of change in the final model ($p = .567$) and could have been removed from the final model to produce a somewhat better fitting model.

School FRP Percent and Minority Group membership affected the final models for reading for both the grade four and grade seven cohorts. Hispanic group membership in grade 4 and Native American group membership in grade seven could have been eliminated from the final models for these grades and resulted in slightly better fitting models. Of the two predictors, School FRL Percent resulted in a better fitting model than Minority Group membership for reading-grade 4 cohort but the opposite was true for the reading-grade seven cohort.

The results of final models for reading are presented in Figures 8 and 9 for grades 4 and 7 respectively. Each figure represents achievement trajectories for test administrations that are 32, 36, and 70

instructional weeks from the fall 2003 test. Assuming that testing commonly occurs within one or two weeks of the ends of a school year, these values correspond roughly to one academic year (32 weeks), the beginning of the following fall (37 weeks), and the end of the next academic year (70 weeks) from the fall 2003 test. To illustrate the expected achievement differences between students attending schools with different percentages of students on FRL, the values 25% and 50% were chosen. These values correspond to the 33rd and the 66th percentiles, respectively of the school FRL percentages present in the study sample.

Figure 8 reinforces the relative uniformity of change trajectories for all groups in reading at grade four. Although the trajectories for Hispanic students were slightly steeper than those for all other groups, indicating that there was some movement toward narrowing the gap between Hispanic students and non-minority students, the difference was neither substantive nor statistically significant. Native American and African-American groups each lost more than .5 RIT points relative to the non-minority group over the study period. While these differences were statistically significant, their practical difference is not clear. The average grade four minority group student had an initial achievement status in reading that was 6.5 RIT points below the mean of non-minority students. In the spring of grade five the average minority group student has a final achievement status that was 6.9 RIT points below the mean of non-minority students. As a point of reference, the standard deviation of spring grade five reading from the 2005 NWEA norming study was 13.95 RIT points.

FIGURE 8. CHANGE TRAJECTORIES FOR READING BY MINORITY GROUP MEMBERSHIP AND SCHOOL FRL PERCENTAGE WITHIN GRADE LEVEL COHORT.

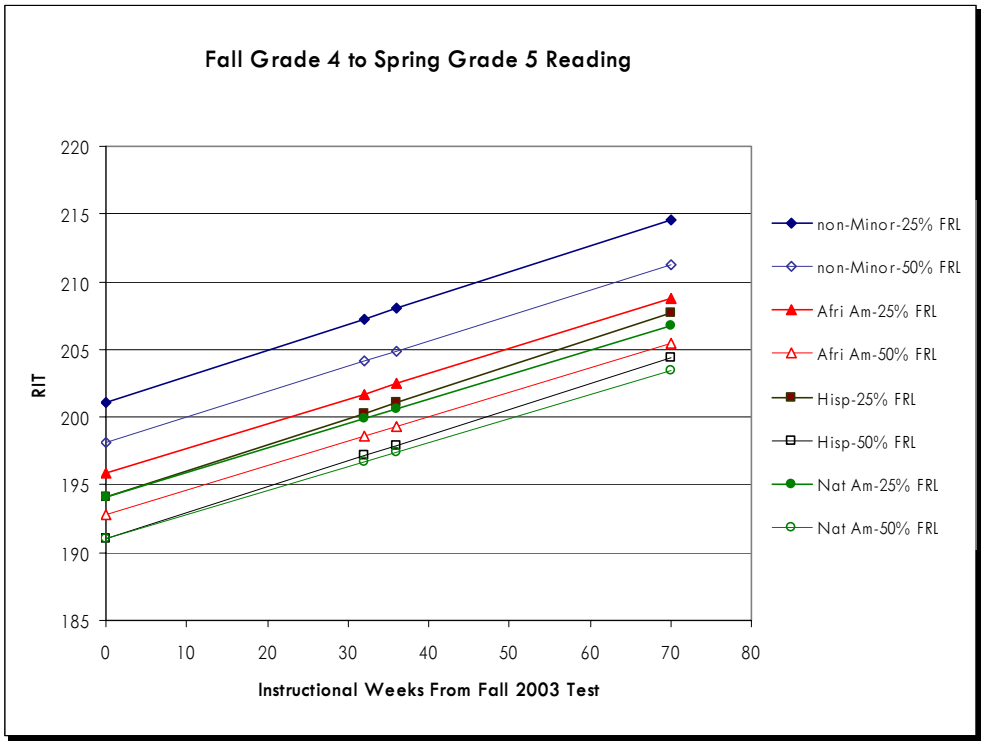
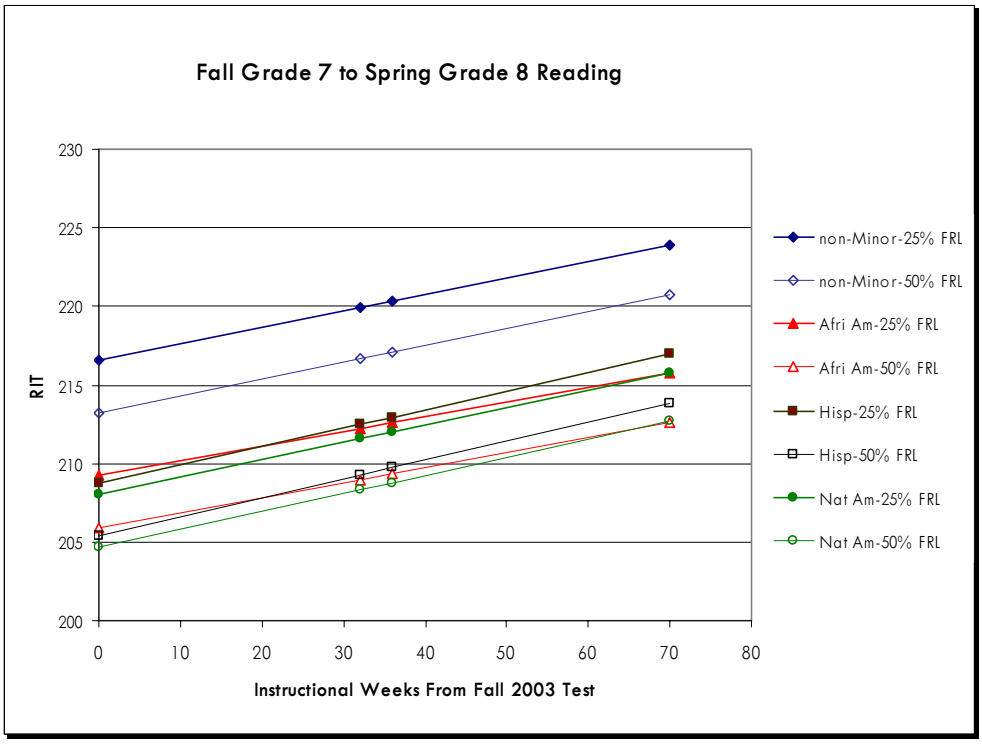


FIGURE 9. CHANGE TRAJECTORIES FOR READING BY MINORITY GROUP MEMBERSHIP AND SCHOOL FRL PERCENTAGE WITHIN GRADE LEVEL COHORT.



In grade seven we see larger between-group differences in starting positions (Figure 9). The African-American – non-minority difference was a full 2 RIT points greater at grade seven than it was for the grade four cohort. For Native American students, this same difference was 1.5 RIT points greater in the grade seven cohort than in grade four cohort. While, however, the average Native American student narrowed this difference, the difference for African-American students grew by .9 RIT points. Hispanic students had an initial status that was roughly .5 RIT points below that of African-American students but ended with a status that was 1.2 RIT points above the status of African-Americans. And while Native American students began the study about 1.2 RIT points below African-Americans, both these groups had the same final status, 8.1 RIT points below the non-minority group. As a point of reference, the standard deviation of spring grade eight reading from the 2005 NWEA norm study was 14.64 RIT points.

For both the grade four cohort and the grade seven cohort, the difference between the two levels of School FRL percentage was virtually the same (≈3.1 RIT points). There was more clustering of minority groups and minority groups within each level of School FRL percentage in grade seven than in grade four. This clustering was accompanied by greater differences between the low School FRL percentage non-minority group and best performing minority group in the low School FRL percentage sub-group. In the grade four cohort, these differences were 5.3 RIT points and 5.9 RIT points for the beginning and end of the study, respectively. These same differences in the grade seven cohort were 7.3 RIT points and 7.0 RIT points, respectively.

Figures 10 and 11 present the mathematics trajectories for the grades four and seven cohorts. The tight pattern of trajectories for minority students in Figure 10 simply reflects the final model in Table 8. There were no differences between the growth rates of Hispanic students or of African-American students and the mean growth rate of non-minority students. The statistically significant negative difference in rate of change between African-American students and non-minority students (see Table 8) resulted in a .8 RIT increase in the gap between these groups. At the conclusion of the study period, the average minority student achievement level was approximately 5.6 RIT points below the mean of non-minority students. This was slightly larger difference than existed at the beginning of the study. As a point of reference, the standard deviation of spring grade five mathematics from the NWEA norming study was 14.74 RIT points.

FIGURE 10. CHANGE TRAJECTORIES FOR MATHEMATICS BY MINORITY GROUP MEMBERSHIP AND SCHOOL FRL PERCENTAGE WITHIN GRADE LEVEL COHORT.

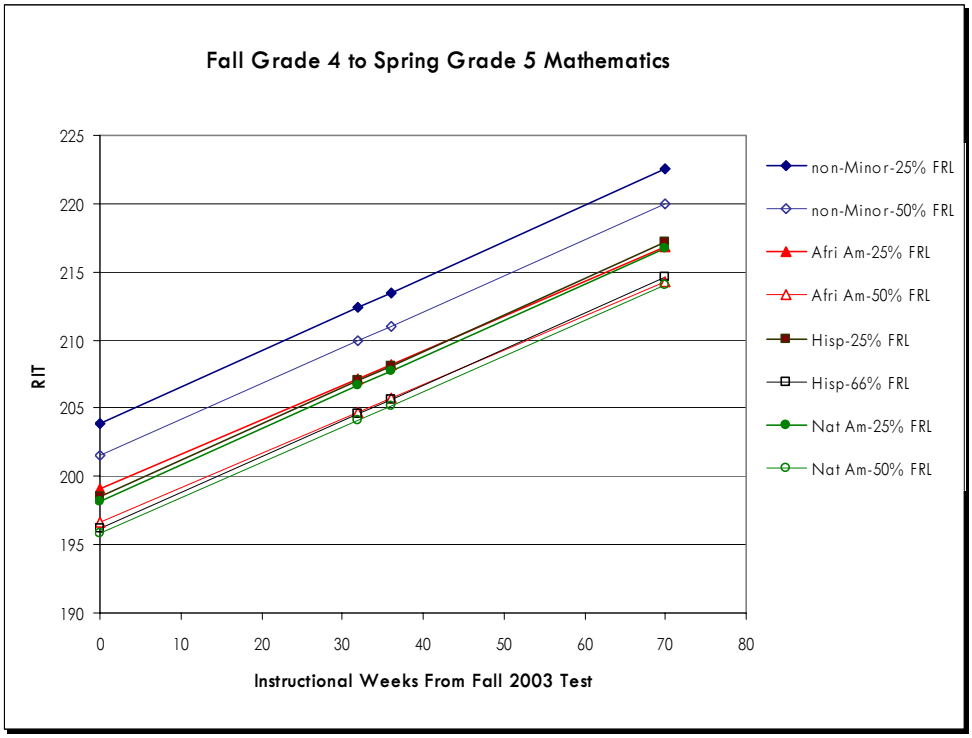
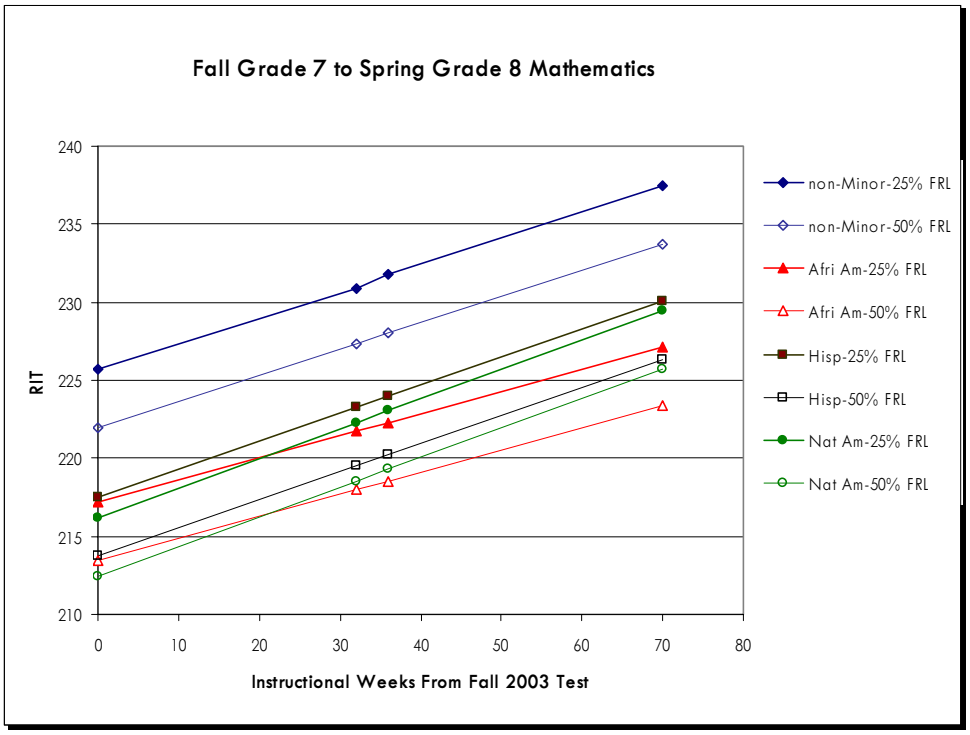


FIGURE 11. CHANGE TRAJECTORIES FOR MATHEMATICS BY MINORITY GROUP MEMBERSHIP AND SCHOOL FRL PERCENTAGE WITHIN GRADE LEVEL COHORT.



In Figure 11, we see clear interactions between the minority groups and rate of change. Hispanic and Native American students managed to narrow the differences between them and their non-minority peers over the study period by .9 RIT points and 1.5 RIT points, respectively. While the Hispanic students and African-American students began at approximately the same achievement level, Hispanic students' rate of change was 60% greater and resulted in end-of-study status that was 2.9 RIT points higher. Perhaps more importantly, the difference in initial status between African-American and non-minority students, which was 8.5 RIT points, increased by roughly 1.9 RIT points to 10.4 RIT points at the conclusion of the study period. As a point of reference, the standard deviation of spring grade eight mathematics from the NWEA norm study was 17.94 RIT points.

A school's percentage of students on FRL, had a greater influence on the achievement levels of grade seven students than on those of grade four students by about 1 RIT. However, when controlling for the effects of minority group membership, School FRL percentage had a miniscule effect on rate of change for the grade seven cohort but a statistically significant, though not necessarily a practically important, effect on the rate of change for grade four students.

Post hoc analysis. The relative effects of minority group membership and school FRL percent on both level of achievement and rate of change were quantified in the hierarchical linear modeling (HLM) analysis. Their joint effects, however, were not part of the HLM analysis. In the interest of more thorough consideration of the achievement gap, we added a descriptive analysis of the joint effects of school FRL percentage and minority group membership on student achievement. This was carried out using the

student level residual Bayes estimates to create individual student trajectories of achievement. Specifically, for each cohort, the empirical Bayes residuals for initial achievement status (r^*_{0i}) and for rate of change (r^*_{1i}) parameters were added to their respective fitted values, β^*_{00} and β^*_{10}, to yield empirical Bayes estimates of each student's initial status, π^*_{0i}, and rate of change, π^*_{1i}. These estimates were substituted into equation 1 for each student with a constant value of 70 QIW as the time variable to determine each student's trajectory and achievement status at the conclusion of the study period. The difference between a student's estimated final achievement status and estimated initial status was used as the estimate of change from fall 2003 to spring 2005. Finally, the two values of school FRL percentage (25% and 50%) that were used to illustrate the HLM analyses were retained as cut points to establish three 'poverty' groups that corresponded to thirds of the school FRL percentage distribution. The descriptive analysis, therefore, was simply the mean of estimated change in each cell of a 4 (minority group) X 3 (poverty level) matrix. These means are presented in Tables 10 and 11 and graphically in Figures 12 through 15. These displays, in presenting the joint influences of minority group membership and school FRL percentage on achievement, reflect in a more familiar form the results that were previewed in Tables 6 through 9.

TABLE 10. ESTIMATED CHANGES IN READING SCORES FROM FALL 2003 THROUGH SPRING 2005 BY ETHNIC GROUP AND SCHOOL FREE/REDUCED PRICE LUNCH PERCENTAGE.

	School Free/Reduced Price Lunch Percentage											
	< 25%			25% - 50%			> 50%			Overall		
Minority Group	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**
						Grade 4						
African American	12.8	2.25	903	12.7	2.36	2041	12.2	2.29	6726	12.4	2.32	9670
Hispanic	13.4	2.19	1294	13.5	2.37	3918	12.9	2.41	8276	13.1	2.39	13488
Native American	12.1	2.14	172	12.1	2.03	500	12.2	2.24	1417	12.2	2.18	2089
non-Minority	13.4	2.08	25061	13.2	2.16	31556	12.9	2.28	15782	13.2	2.17	72399
Overall	13.4	2.09	27430	13.2	2.20	38015	12.7	2.34	32201	13.1	2.24	97646
						Grade 7						
African American	6.1	1.31	1176	6.4	1.36	3126	6.9	1.46	5954	6.6	1.44	10256
Hispanic	7.9	1.42	1792	8.2	1.50	4024	8.5	1.53	8306	8.4	1.53	14122
Native American	7.4	1.25	244	7.7	1.29	752	8.2	1.40	861	7.9	1.38	1857
non-Minority	7.0	1.27	30999	7.3	1.32	36360	7.6	1.42	11610	7.2	1.33	78969
Overall	7.0	1.31	34211	7.3	1.39	44262	7.7	1.59	26731	7.3	1.44	105204

TABLE 11. ESTIMATED CHANGES IN MATHEMATICS SCORES FROM FALL 2003 THROUGH SPRING 2005 BY ETHNIC GROUP AND SCHOOL FREE/REDUCED PRICE LUNCH PERCENTAGE.

	School Free/Reduced Price Lunch Percentage											
	< 25%			25% - 50%			> 50%			Overall		
Minority Group	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
					Grade 4							
African American	17.9	2.74	895	17.6	2.50	2063	17.2	2.57	6741	17.4	2.58	9699
Hispanic	18.5	2.50	1344	18.2	2.42	4040	18.1	2.42	8908	18.2	2.43	14292
Native American	18.1	2.43	180	18.2	2.40	546	17.9	2.39	1451	18.0	2.40	2177
non-Minority	18.5	2.42	25869	18.3	2.41	32102	18.1	2.52	16371	18.4	2.44	74342
Overall	18.5	2.44	28288	18.3	2.42	38751	17.9	2.52	33471	18.2	2.47	100510
					Grade 7							
African American	9.9	1.59	1109	9.9	1.85	3335	9.8	1.94	6089	9.8	1.88	10533
Hispanic	12.5	1.70	1639	12.5	1.79	4187	12.5	1.78	8803	12.5	1.78	14629
Native American	13.1	1.77	233	13.1	1.62	784	13.2	1.87	1136	13.2	1.77	2153
non-Minority	11.6	1.76	29883	11.6	1.80	36708	11.6	1.79	12480	11.6	1.79	79071
Overall	11.6	1.80	32864	11.6	1.89	45014	11.6	2.10	28508	11.6	1.92	106386

FIGURE 12. ESTIMATED CHANGE IN READING SCORES BY MINORITY GROUP AND SCHOOL FRL PERCENTAGE CATEGORY OVER A 70 WEEK PERIOD.

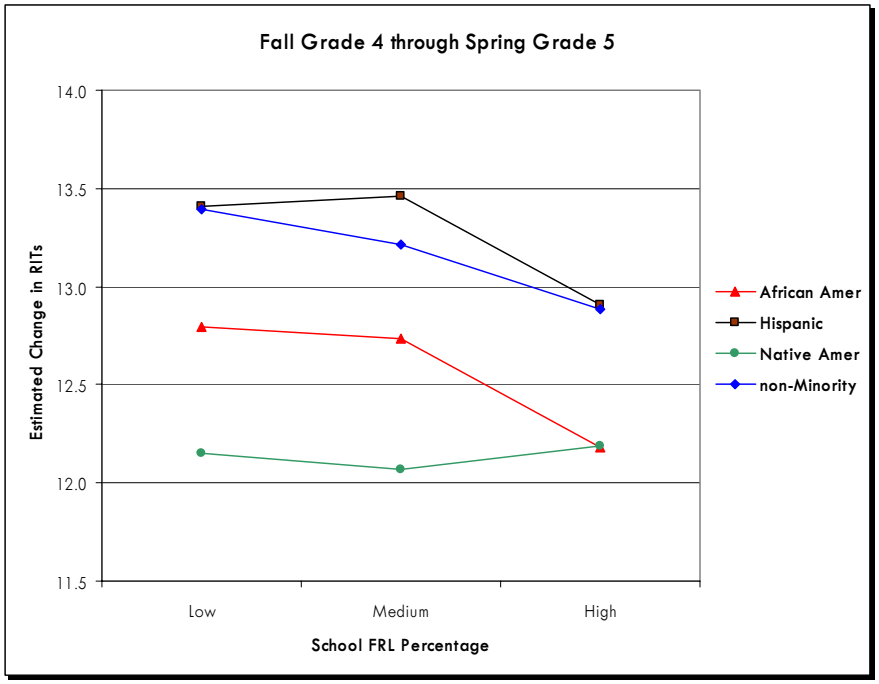


FIGURE 13. ESTIMATED CHANGE IN READING SCORES BY MINORITY GROUP AND SCHOOL FRL PERCENTAGE CATEGORY OVER A 70 WEEK PERIOD.

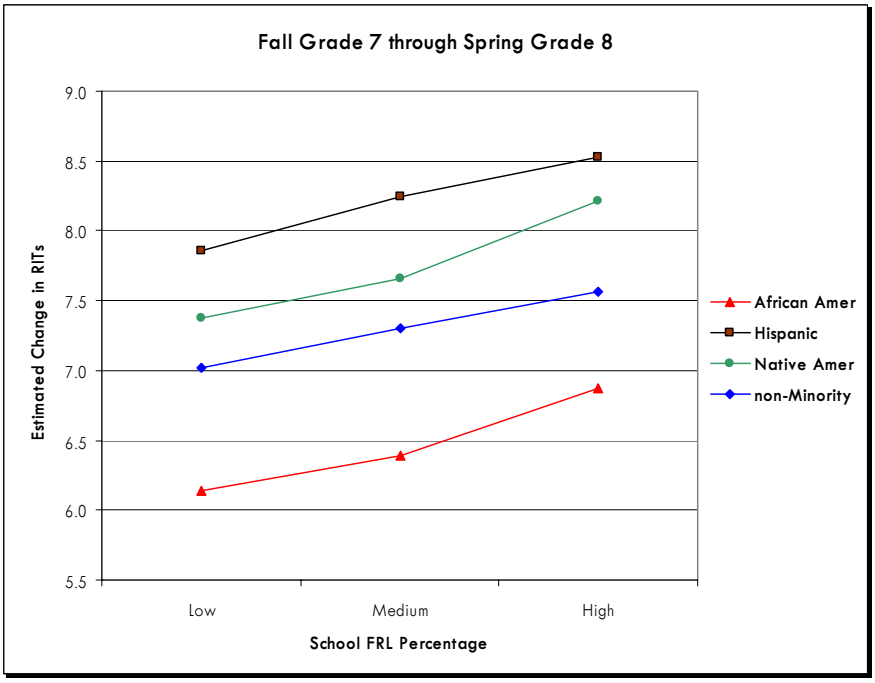


FIGURE 14. ESTIMATED CHANGE IN MATHEMATICS SCORES BY MINORITY GROUP AND SCHOOL FRL PERCENTAGE CATEGORY OVER A 70 WEEK PERIOD.

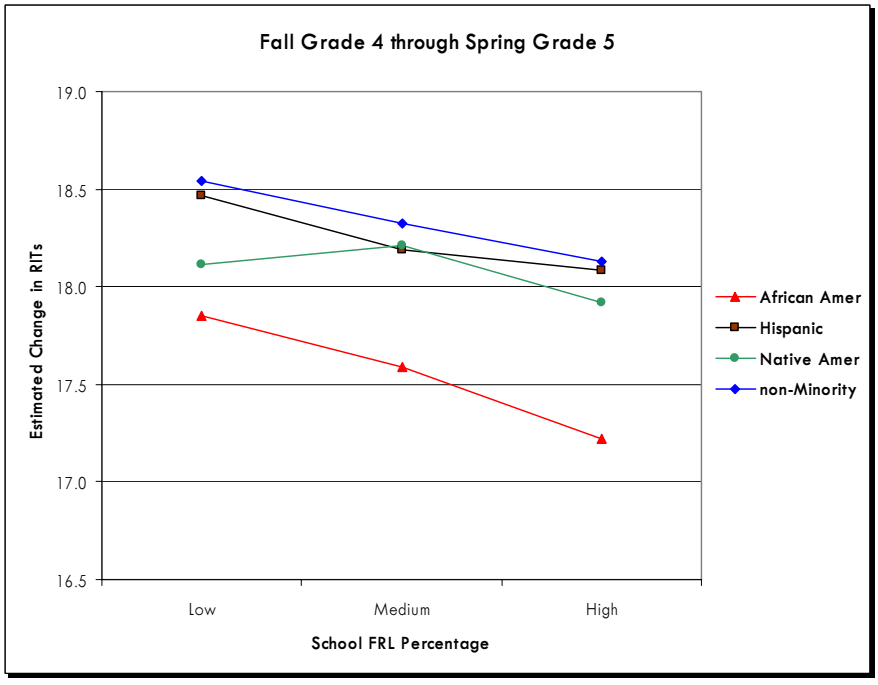
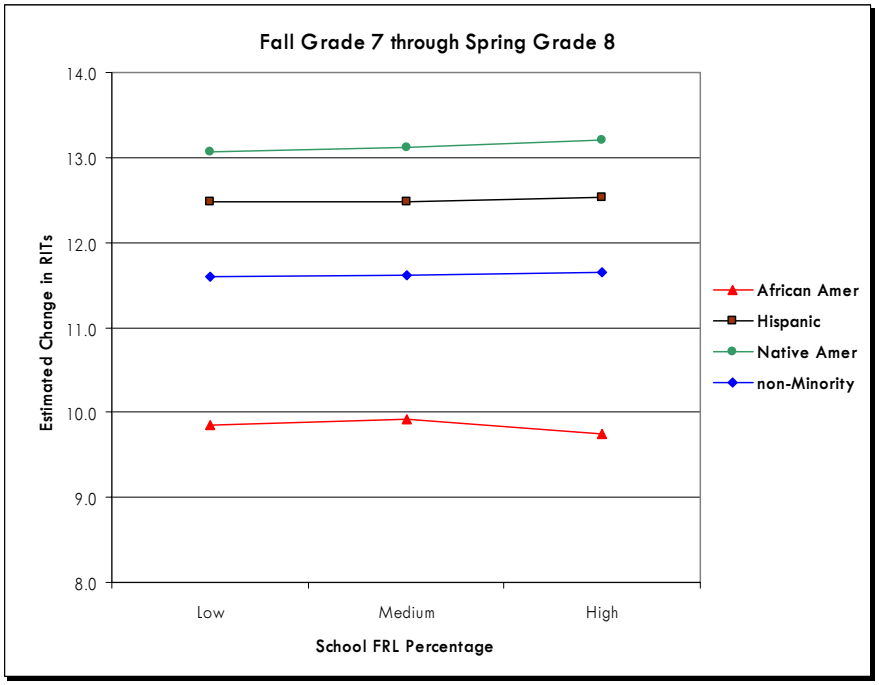


FIGURE 15. ESTIMATED CHANGE IN MATHEMATICS SCORES BY MINORITY GROUP AND SCHOOL FRL PERCENTAGE CATEGORY OVER A 70 WEEK PERIOD.



From Figures 11 through 15 (and Tables 10 and 11) several generalizations can be made. Initially, we can see that for any particular student group, the difference in overall change (from fall 2003 to spring 2005) was never greater than 1 RIT point (Native American, Reading, Grade 7). Second, the two year change for Hispanic students consistently matched or exceeded the two year change for non-minority students. Third, high-poverty schools have the greatest effect on younger students (4^{th} and 5^{th} graders). This is the case across all groups relative to their peers attending schools with lower percentages of FRL, but seems to have the greatest impact for African-American students. Fourth, mean estimates for Native American students in the low and middle categories of FRL percentage should be treated cautiously. The numbers of students contributing to these means are substantially smaller than those for the other groups. Finally, when discounting the means of Native American students in the lower two categories of school FRL percentage, African-American students showed the least amount of two-year change. Their performance was particularly weak in the grade seven cohorts.

Conclusions: Study 2

The achievement status differences observed here between minority group students and non-minority group students are consistent with other studies and reviews that have examined the achievement gap in terms of the differences in mean scale scores (see Berends, et.al, 2005). In this study, the minimum difference in status at grade four was .37 SD; at grade seven the minimum difference was .5 SD. These differences translate into roughly a 14 to 18 percentile rank difference when compared to a student performing at the grade level median.

There is little evidence that these differences are shrinking. We observed only minor differences in the rate of change between non-minority students and minority students. Hispanic students were the only group that evidenced consistently higher rates of change than non-minority students. No rate of change, however, in any minority group was sufficiently strong to close the observed achievement gap between their group and non-minority students in any substantive way before the end of their K-12 career. This is particularly true when we consider that the vast majority of minority students in the study attended high-poverty (greater than 50% FRL) schools, while the vast majority of non-minority students attended schools with less than 50% FRL. Although the grade seven reading results would appear to be an exception to this conclusion, since the magnitude of two-year achievement changes appear to be *positively* related to school FRL percentage, there is reason to be circumspect about this outcome. It is certainly plausible that this pattern reflects a general Title 1 program emphasis in reading to bolster skills before students enter high school. We did not, however, have access to instructional program information to be able to verify this. In any event, the actual rate of growth was not sufficient to meaningfully reduce the size of the observed gap in initial achievement status.

The absence of consistent, persistent, and meaningful differences in the rate of change among cohorts is, perhaps, the greatest cause for concern in narrowing the achievement gap. In the case of the African-American students in these samples, the concern carries added emphasis. Their rate of change over the two-year projection was the lowest of all groups, suggesting that their differences with non-minority students' achievement levels are widening. While the differences between minority and non-minority student achievement were plain, they also revealed that achievement growth was not uniformly related to minority group membership. Perhaps as importantly, economic status (school FRL percentage) was also not uniformly related to minority group membership. This suggests, and the final models of all multi-level analyses bear out, that both minority group membership and school FRL percentage provide different contributions to the examination of achievement and how it changes over time across groups. While it is common for politicians to talk about poverty as if it was the sole cause of the achievement gap, it is clear that ethnicity also plays a part in the difference. This study does not have the information necessary to isolate the causes of this portion of the difference. A likely explanation might have to do with the internal and external student motivation and course taking patterns at the higher grades. Further research may identify these aspects more completely.

The results of this study bring us one step closer to understanding the achievement gap. The finding that poverty and ethnicity interact to affect student growth is important, as is the finding that current rates of growth do not differ enough among ethnic groups to close the achievement gap in a reasonable timeframe. But this study also leaves us with unresolved questions related to individual student growth. The heart of the achievement gap is in how each individual student grows through his or her educational career. The next study investigates the growth of students with similar starting achievement levels, but different ethnicity or school poverty.

Study 3: Status and Change by Scale Score Level

This study uses the same sample as that described in Study 1. It examines student growth as a function of the student's initial score. The basic question being asked in this study is whether students who start with the same achievement but differ in ethnicity and/or school poverty show similar patterns of growth. The figure below shows the initial score distribution for third grade reading for students enrolled in high-poverty schools and low-poverty schools. It shows a pattern of overlapping normal distributions with a substantial group of all students in the middle range. There are more students from poor schools at the low end of achievement and more from wealthier schools at the high end. The same pattern occurs for African-American and Hispanic students compared to European-American students. The examples below are from third grade mathematics. The pattern is the same for other grades and for reading (See Appendices C-H). This is the pattern that Bere (1926) and Brunner (1948) saw in the historical data leading them to caution against making decisions on category alone; there are high and low performers in all groups and most students in any group fall in the middle.

FIGURE 16.

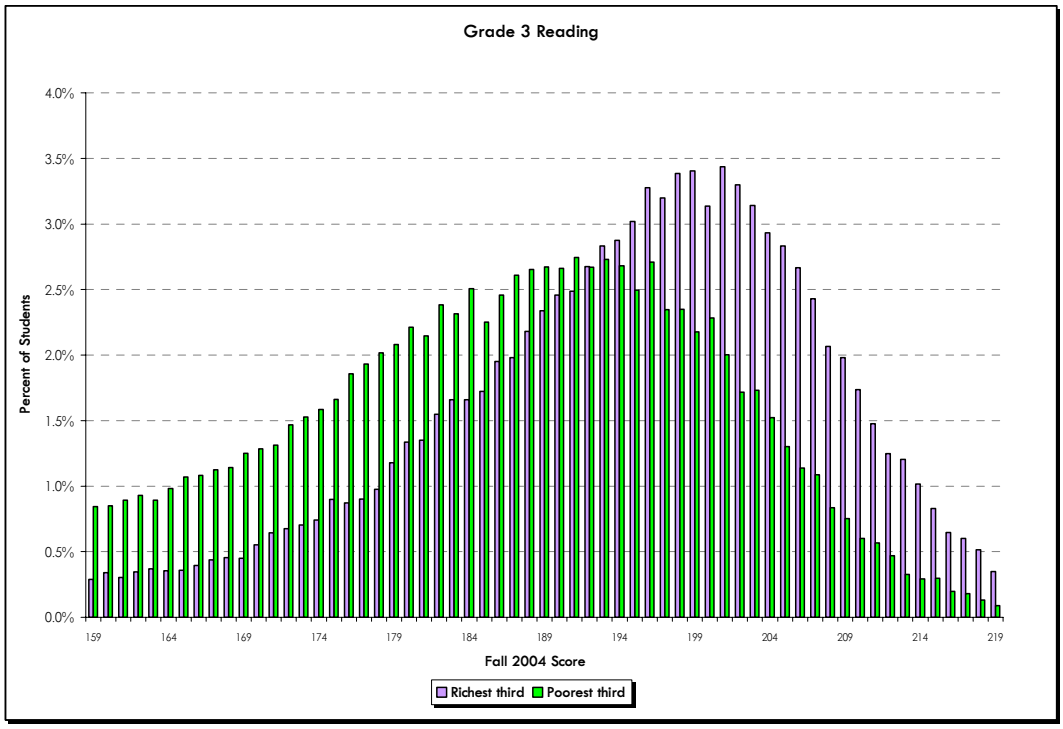


FIGURE 17.

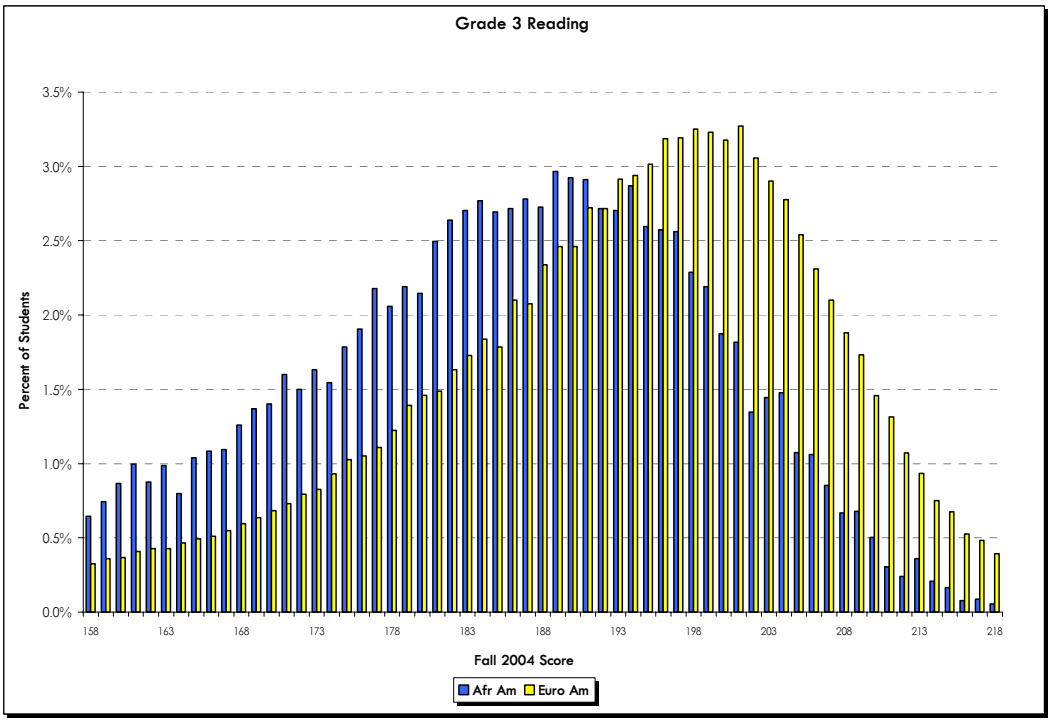
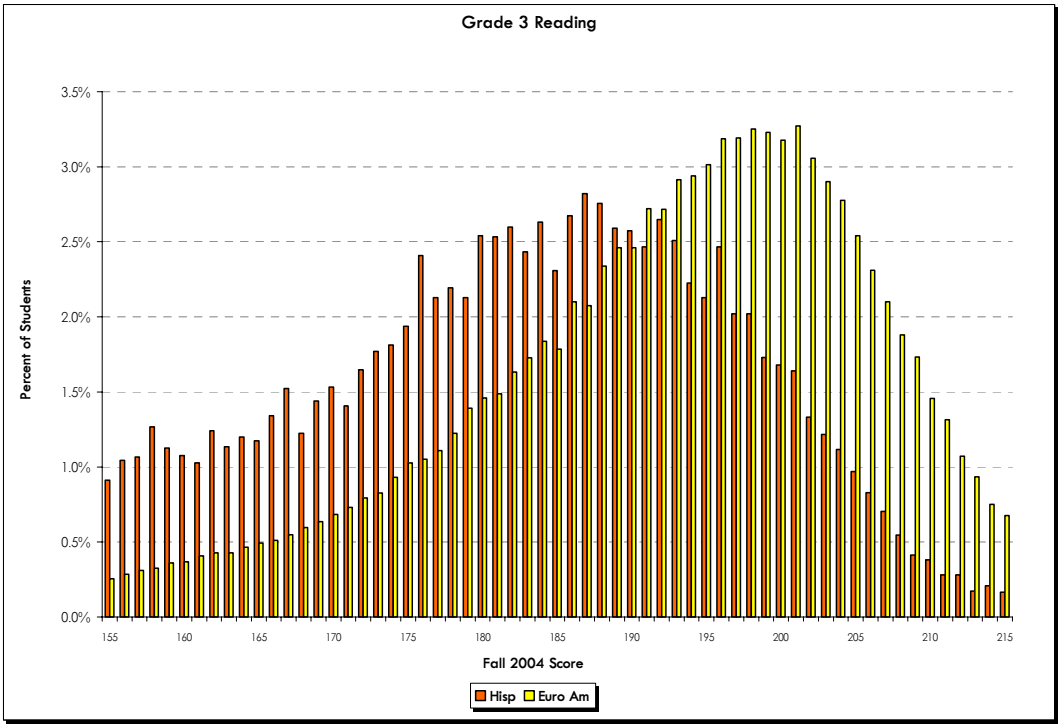


FIGURE 18.



The tables of means by ethnic group and school poverty category displayed below give an idea of score distribution for each grade and subject. Graphs of the population distribution are in the appendix. One of the important points of these figures is to show the considerable overlap in the groups examined here. Students in high-poverty schools and minority students are often stereotyped as having uniformly low skills. It is well to remember that any given student you may encounter, regardless of their group membership, is most likely to perform in the middle of the distribution and possesses mid-level skills. Our concern is with the disproportionately high numbers of poor and minority students with low skills and the relative scarcity of these students with high skills.

TABLE 12. FALL 2004 MEANS BY GRADE AND ETHNIC GROUP.

	Ethnic	Reading		Math	
GRADE	Group	Mean	St Dev	Mean	St Dev
3	Afr Am	185.0	13.7	188.4	10.8
3	Hispanic	182.7	14.5	187.2	11.1
3	Euro Am	192.9	13.8	195.0	11.1
4	Afr Am	193.8	14.0	198.7	11.8
4	Hispanic	191.8	14.9	197.4	11.9
4	Euro Am	202.0	13.3	205.6	11.6
5	Afr Am	200.5	13.7	206.8	13.1
5	Hispanic	198.2	14.8	204.9	12.8
5	Euro Am	208.6	12.8	214.1	12.6
6	Afr Am	204.5	14.2	212.2	14.4
6	Hispanic	203.1	15.1	211.0	14.2
6	Euro Am	213.8	13.0	221.2	13.6
7	Afr Am	208.3	14.2	217.2	15.2
7	Hispanic	206.6	15.6	215.5	15.3
7	Euro Am	217.8	12.8	227.2	14.3
8	Afr Am	212.6	13.9	222.3	15.7
8	Hispanic	210.3	16.1	220.7	16.2
8	Euro Am	221.2	12.8	232.5	14.9

TABLE 13. FALL 2004 MEANS BY GRADE AND SCHOOL POVERTY CATEGORY.

GRADE	% Free/ Reduced Lunch	Reading		Math	
		Mean	St Dev	Mean	St Dev
3	0% to 25 %	194.4	13.6	196.3	11.0
3	26% to 50%	190.5	14.1	193.0	11.1
3	Over 50%	185.7	14.6	189.5	11.5
4	0% to 25 %	203.4	12.9	206.9	11.6
4	26% to 50%	199.6	14.0	203.4	11.8
4	Over 50%	194.6	14.6	199.9	12.3
5	0% to 25 %	210.0	12.3	215.4	12.5
5	26% to 50%	206.3	13.6	211.9	12.7
5	Over 50%	201.0	14.5	207.8	13.5
6	0% to 25 %	215.2	12.6	222.5	13.6
6	26% to 50%	211.1	13.8	218.9	14.2
6	Over 50%	205.4	15.0	213.6	14.9
7	0% to 25 %	218.9	12.5	228.2	14.2
7	26% to 50%	215.2	13.6	224.5	14.9
7	Over 50%	209.0	15.4	218.5	16.0
8	0% to 25 %	222.4	12.5	233.9	14.7
8	26% to 50%	219.0	13.7	230.0	15.4
8	Over 50%	213.2	15.2	223.6	16.5

Results: Study 3—Observed Gains within the School Year

Figures 19 through 21 show the growth observed from fall 2004 to spring 2005 for students in different ethnic groups and poverty levels for grade three reading as a function of their fall 2004 score (All other grades and subjects can be seen in Appendices I-N). From Figure 19 it can be seen that for every score level, students enrolled in low-income schools grow less than students in wealthier schools. This means that for two students who start the school year with the same score, the student who attends the high-poverty school is more likely to end the year behind the student who attends the low-poverty school.

FIGURE 19.

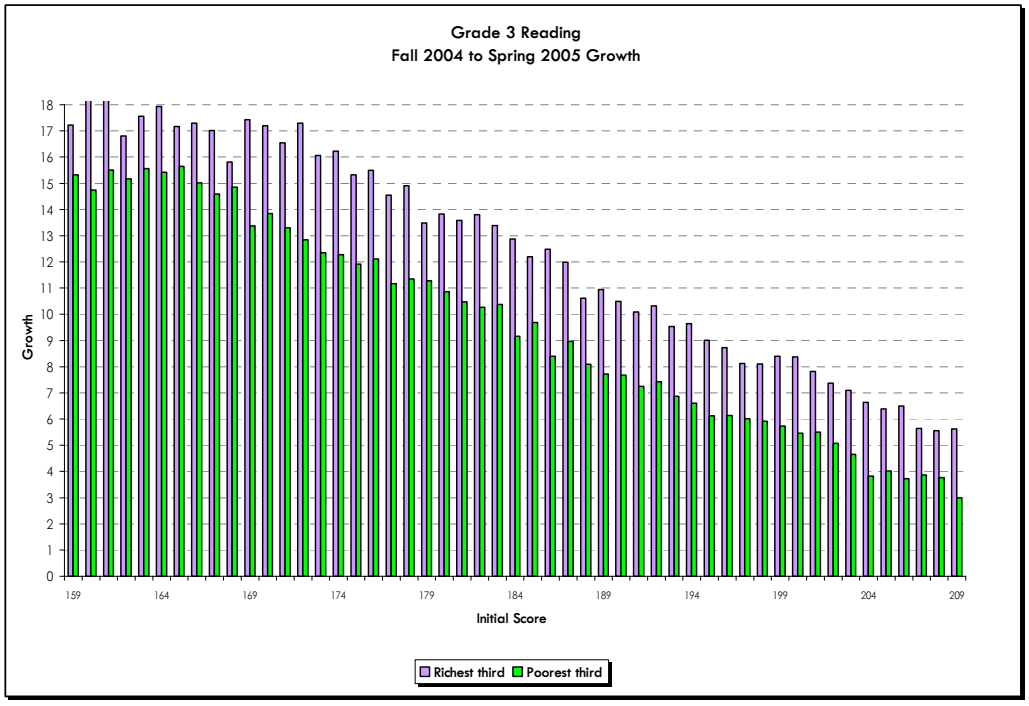
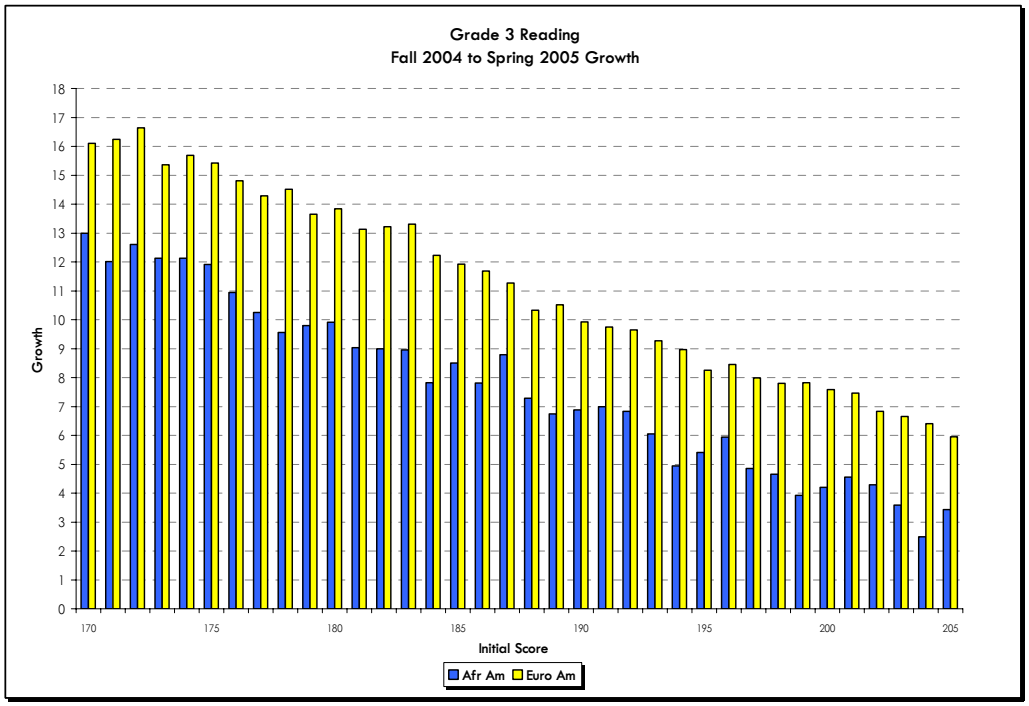
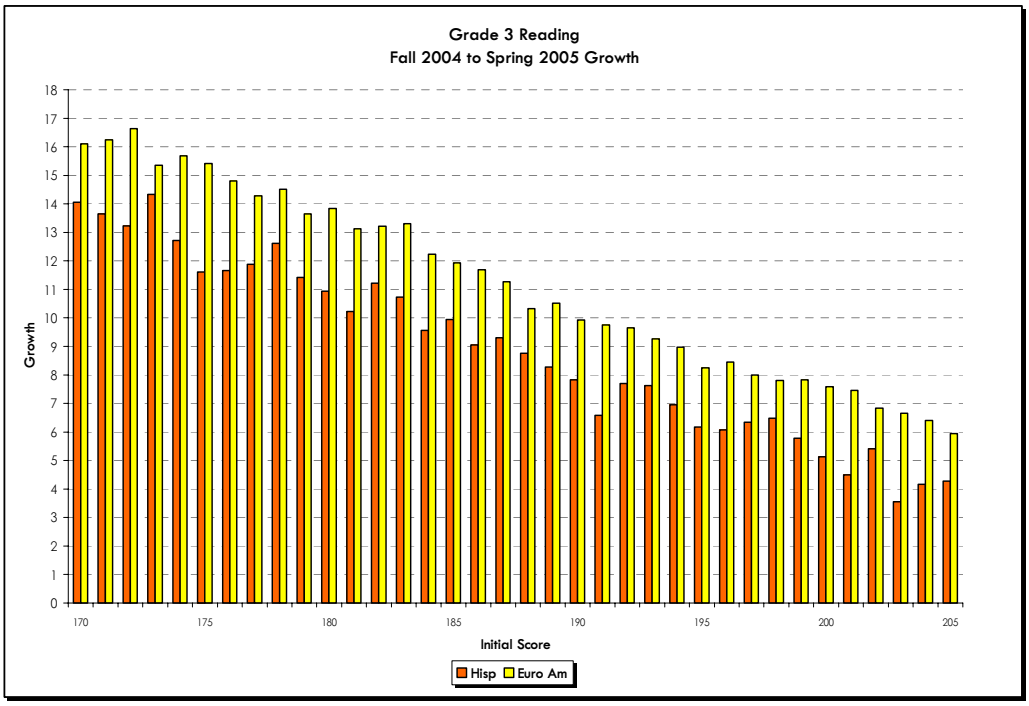


FIGURE 20.



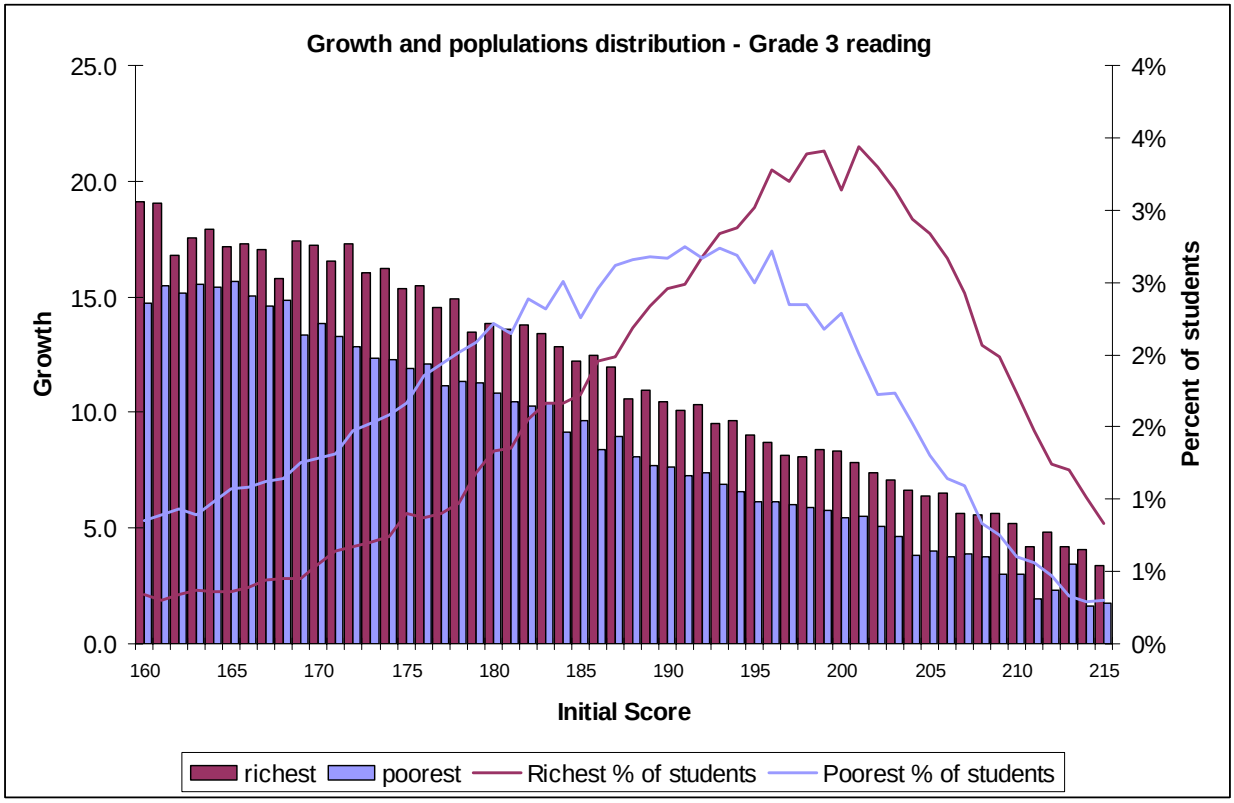
Even for Hispanics whose overall reading gains exceeded those of European-Americans, gains are less at every score level. This finding forces a revision of ideas about gain. Scores and gains are lower across the range of proficiency. This means that the highest performing poor and minority students suffer the effects of the achievement gap. These students, as well as low-performing students, need to be considered in any policy intended to enhance education.

FIGURE 21.



Study 1 showed that overall gains for the two groups are virtually the same. If gains at every score point are lower, how can overall gains be the same? To understand this, we need to review information presented earlier in the report. Figure 5 shows that third grade reading growth means for students enrolled in wealthier schools are only .6 scale score points above those for students in poorer schools. Figure 19 shows a difference of several scale points for every starting score. Figure 19 also illustrates that students who begin with lower skills make larger gains than those who begin with higher skills. Now look at Figure 16. It shows that students from low-income schools are concentrated at the low end of the continuum where growth is highest, while students from wealthier schools cluster at the higher end of the scale where growth is lower. Figure 21B below illustrates the relationship between population distribution and growth. This relationship results in comparable average growth even though poorer students grow less at every score point. Thus, overall growth figures mask the growth gap shown when initial status is taken into account.

FIGURE 21B. Population distribution and growth patterns



Results: Study 3— Observed Change During the Summer

Given the nature of the fall-to-spring findings concerning growth by initial score, a second analysis was conducted to identify trends of gain or loss by students during the summer. The purpose of this analysis was to identify whether or to what extent the patterns of lower growth for some groups affects students during the summer. As before, individual growth was calculated by subtracting the spring 2004 score for a student from the fall 2004 score. Since most students are tested somewhat before the end of school in the spring, and somewhat after the beginning of school in the fall, most students do receive a modest amount of instruction and a larger amount of vacation during the interval examined.

Figures 22 to 24 show the results of this analysis for reading in the summer between grades 3 and 4 (results from other grades and for mathematics are shown in Appendices O-T). The pattern seen here is relatively consistent in all comparisons. Low-income and minority students tend to gain less or lose more than other students who have the same initial score. This means that two students who leave school performing at the same level at the end of grade three are likely to return at with an achievement gap if they differ in ethnicity or the level of poverty in their school.

FIGURE 22.

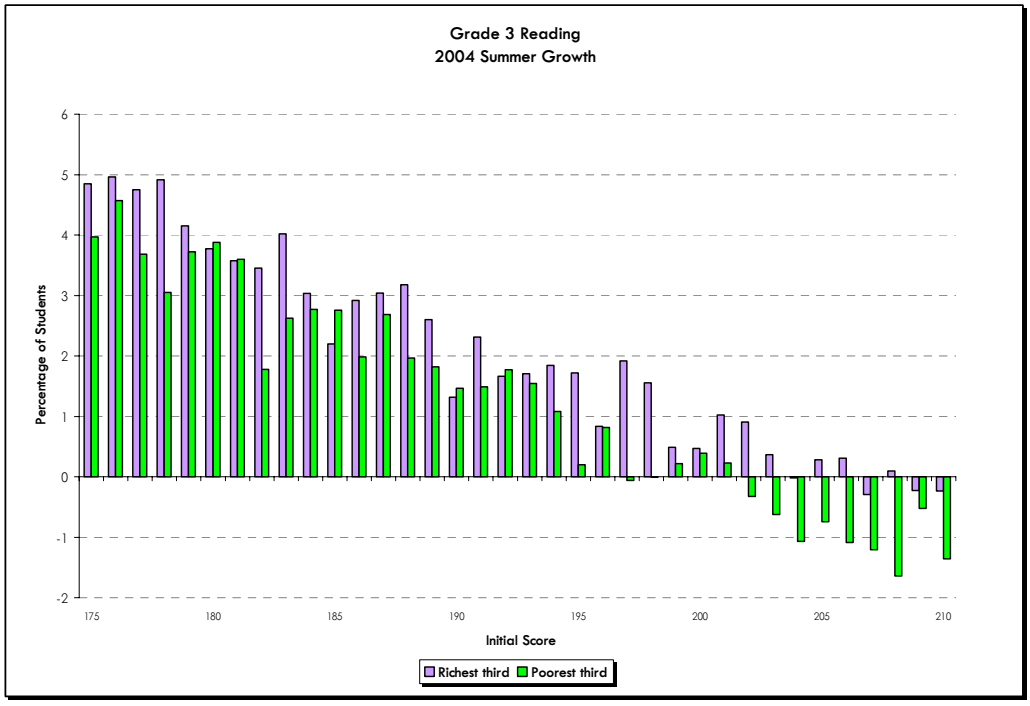


FIGURE 23.

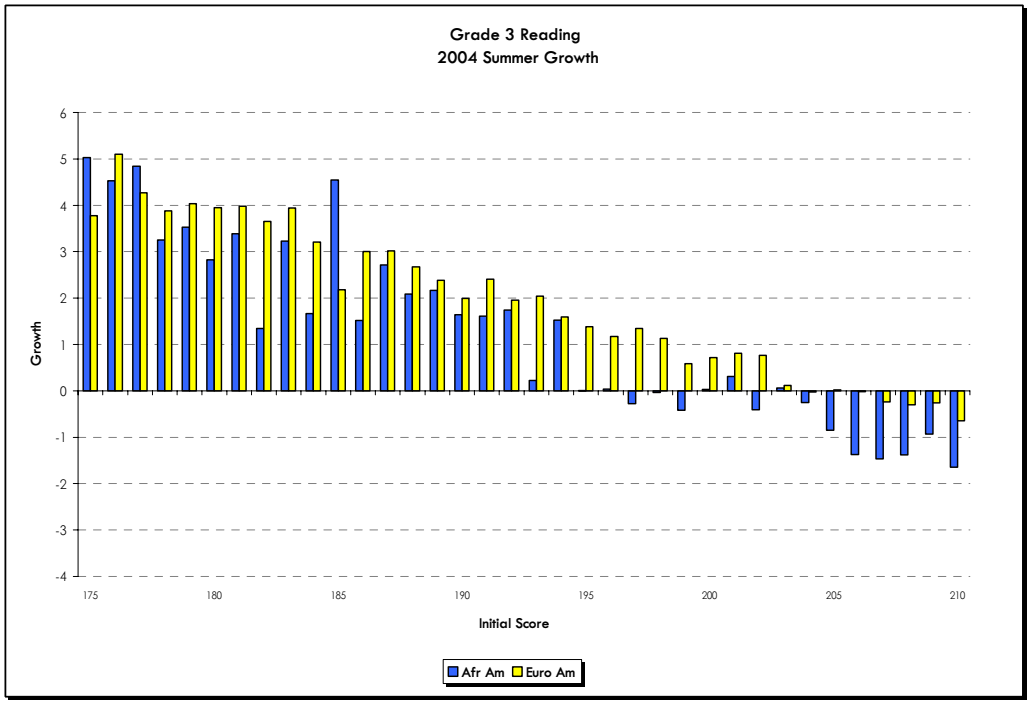
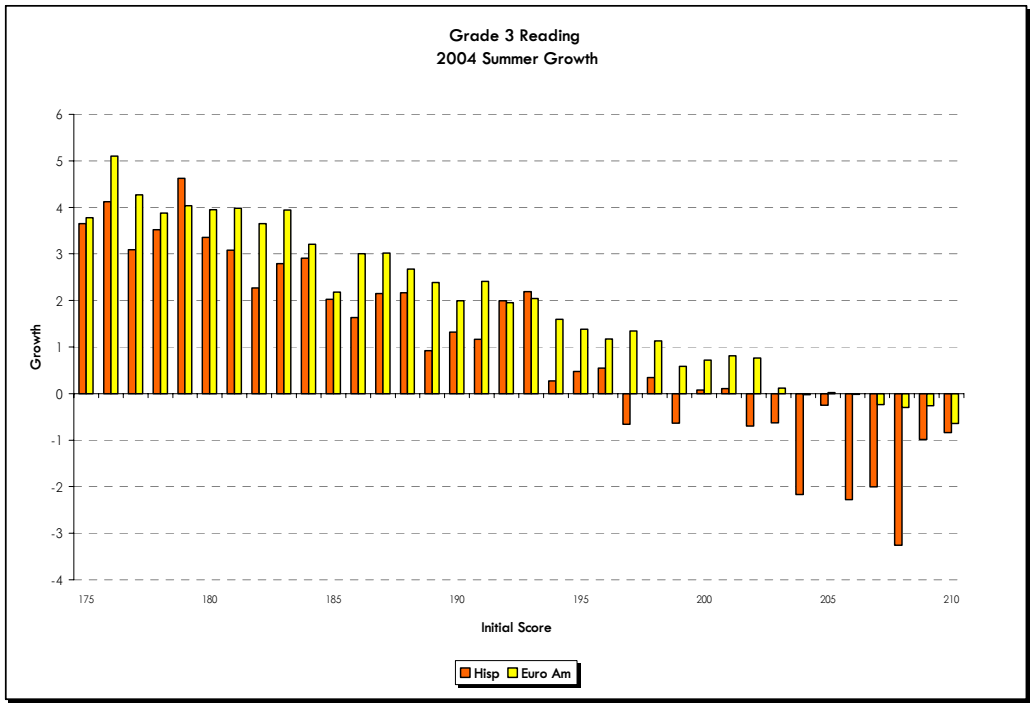


FIGURE 24.



Conclusions: Study 3

When observed growth results are broken out by initial scores, it becomes apparent that individuals in schools with greater poverty, African-American students and Hispanic students make less growth than their peers who begin with the same skill level. Because raw growth is higher for students who begin with lower scores and because the groups of concern have more students with lower scores, aggregate observed growth measures obscure these differences. Although observed yearly growth is a less complex measure than that provided by multilevel modeling, observed scores are used to make decisions about these students in classrooms and schools. The lower growth that becomes evident when results are displayed by initial score affects student placement into programs and higher education opportunities. When evaluating programs or providing comparison groups for achievement gap studies, researchers should consider how individual growth conditioned on initial score and aggregate growth estimates differ. When viewed in this way, results show that poor and minority students are not making the same amount of growth as their peers.

Students from poorer schools and minority students also grow less or lose more ground over the summer than peers who start with the same score. The effect seems particularly pronounced among high performers, which is unfortunate, since it means that high performing students attending less wealthy schools and high performing minority students do not gain the same reward from their academic efforts as others. Since most academic summer programs are aimed at low performers, there may be little done by schools to address this particular issue. Although compensating for summer loss alone is not a sufficient remedy to close the achievement gap, clearly it is a necessary part of any overall solution.

Limitations of the Study

This study looks only at student ethnic group indicators and school free and reduced lunch percentages. Other school indicators from census tract data or the National Center for Educational Statistics could improve multilevel modeling and indicate the proportion of growth attributable to non-school factors. In looking at growth within a school year, only two points in time were used. Because the scores for these growth estimates came from adaptive tests with low standard errors of measurement, the growth estimates are defensible. The multilevel models give improved overall growth estimates, and while they use initial status as a predictor of growth rate, they cannot show the pattern of growth present in the more detailed observed growth model.

It must also be noted that minority group membership and an economic status variable such as school FRL percentage afford a very incomplete set of variables for understanding the achievement gap. In the best case in Study 2, the combination of initial achievement status, time (QIW), school FRL percentage (SchlFRLpct), and ethnic group membership accounted for 28% of the total variance in mathematics achievement in grade four. While this is a substantial improvement over the unconditional growth model and a huge improvement over a model that only considers status, it still leaves a great deal of variance for which we can not account. The future inclusion of predictor variables that capture dynamic and changeable aspects of instructional programs or educational policy may prove to be useful additions to predictor sets that include family, economic, neighborhood, and school demographic variables.

The study is also limited in that it does not include information about course-taking patterns. It would be informative to investigate whether students in different groups who take similar coursework grow in a similar manner. This information would also help identify what might cause the differences in growth of different ethnic groups that are not related to poverty.

Discussion and Conclusions

The studies above have replicated the findings of many of the previous studies that have looked at the achievement gap by investigating group differences at a single point in time. They have expanded these earlier studies by including the mean observed growth of individual students. They have further expanded the analysis by looking at individual student growth across more than just two points in time. Finally, they have focused more precisely on the growth of students with a particular starting point. These studies do not completely define the achievement gap, but they substantially expand our knowledge base.

Our primary finding is that the traditional metrics for measuring the achievement gap mask more critical differences in growth. The gap in growth, which is found at virtually all levels of performance between students in high and low poverty schools and between minority and non-minority students, is the primary metric that must change if equality of opportunity is to be achieved. While most recent studies show achievement gaps that seem stable or seem to even narrow, this seems to be primarily a product of a key distributional difference among these groups, that is, a group with a larger number of low performing students will always seem to reduce an achievement gap because low performers typically grow more. When these distributional differences are controlled for, however, we found that an achievement gap inevitably emerges and enlarges over time that negatively affects students in high poverty schools and minority students. Unless this metric changes, we cannot say we are on a path that will truly eliminate the achievement gap.

This study looked at patterns of achievement and growth across one or two years. It did not follow cohorts of students across their school careers. Nevertheless, the results in this study indicate that the following scenario is not only possible, but likely:

> Students 'A' and 'B' start the third grade in different schools at the same time.
>
> Students 'A' and 'B' start with the same achievement level.
>
> The school student 'A' enters has a much higher level of poverty than the school student 'B' enters.
>
> Student 'A' grows slightly less during the academic year, and loses slightly more achievement during the following summer.
>
> Students 'A' and 'B' now start fourth grade with student 'B' slightly ahead in achievement.
>
> As this cycle repeats from year to year, the slight difference after one year continues to grow.
>
> As the students progress through school, the gap that did not exist when the two students started school has grown into a difference of substantial size.
>
> As a result, student 'A' does not seek college admission while student 'B' tries to decide between a large university and a private school that offers a better aid package.

Our scenario was played out with students in schools with different levels of poverty, but the results of our studies show that it also applies to students in different ethnic groups. This scenario is an implied outcome of a small difference of growth patterns each school year causing a large difference over the course of a student's academic career. The impact of this is that our society may be squandering its most precious resource in the form of raw talent.

A limitation of this set of studies is that it does not include much information about the environments in which the students find themselves. A wide variety of explanations regarding "the soft bigotry of low expectations", or "inequality of access", or "the quality of teachers" can be made to explain the findings, but that is well beyond the scope of this work.

The horrid truth clear from these studies is that students who come to education with the same level of achievement are leaving with different levels of achievement. Whether this affects our ability to compete in the global marketplace is not the point of the exercise. The point is that student A might be Kelly Johnson from a small town in Colorado, and we are not treating Kelly right. We need to consider the needs of Kelly and every student like him in our educational system. The differences in growth that we have observed in this study are small in any one year. This implies that we only have to help Ralph grow a tiny bit more in each year of school to keep the gap from widening. While eliminating the achievement gap sounds like a daunting task, we need to address it by helping every student at risk to learn a little more every year they are in school. If we can reach this small goal, the problem of the achievement gap becomes much more manageable.

Although research into solutions is not part of this study, there have been several promising programs for students in economically deprived areas and for Hispanic and African-American students. Krueger and Whitmore (2001) showed that small class sizes had persistent academic and social benefits for African-American students. Kannapel, Clements, Taylor & Hibpshman (2005) find that high-performing high-poverty schools share characteristics of high expectations, academic focus, continuous assessment feedback and a caring, nurturing environment. Wenglinsky (2004) found that African-American and Hispanic students benefited by more classroom time spent on mathematics. In general, increased school time, including pre-school, extended school days and longer school years has been effective in narrowing the gap (Chaplin & Capizzano, 2006; Aronson, Zimmerman, and Carlos, 2005; Gordon, Bridglall & Meroe, 2005; Borman, Dowling, Fairchild, Boulay, & Kaplan, 2002). Education Trust has also identified a set of successful schools. Americans have both the desire to close the achievement gap and a belief that it can be closed. This, coupled with renewed interest in researching the problem will pay off in promoting academic excellence for all students. The results from this study also indicate that attention needs to be paid to all students in minority groups and in high-poverty schools, to foster and maintain gains throughout the school year and the summer.

Closing the achievement gap demands a clear understanding of achievement data from both a status and growth point of view. It is hoped that researchers looking for models that are effective in reducing group differences will use the findings in these studies to find practices that succeed on a large scale. We remain optimistic about the ability of schools and communities to close the achievement gap, but believe that this begins with a realistic appraisal of growth.

References

Armor, D.J. (2006). Can NCLB Close the Achievement Gap? *Teachers College Record,* Date Published: August 16, 2006. http://www.tcrecord.edu.org ID Number: 12667 Date accessed, 8/23/2006.

Armor, D.J. (2004). No Excuses: Simplistic Solution for the Achievement Gap? Teachers College Record, Date Published: February 12, 2004 http://www.tcrecord.org ID Number: 11268.

Aronson, J., Zimmerman, J., and Carlos, L. (2005). *Improving student achievement by extending school: Is it just a matter of time?* Retrieved on September 19, 2006, from WestEd: https://www.wested.org/online_pubs/timeandlearning/TAL_PV.html

Arrow, K., Bowles, S., Durlauf, S. (2000). *Meritocracy and Economic Inequality.* Princeton, NJ: Princeton University Press.

Benabour, R. (2000). Meritocracy, redistribution and the size of the pie. In Arrow, K., Bowles, S., & Surlauf, S., (Eds). *Meritocracy and Economic Inequality.* Princeton, NJ: Princeton University Press. Pp. 317-339.

Bere, M. (1926). New Studies in Education: The Mental Capacity of Children of Foreign Parentage. *Teachers College Record* Volume 28 Number 2, p. 200-202. http://www.tcrecord.org ID Number: 5891.

Berends, M., Lucas, S., Sullivan, T. & Biggs, R. (2005). Examining Gaps in Mathematics Achievement among Racial-Ethnic Groups 1972-1992. Santa Monica, CA: RAND.

Betts, J.R., Zau, A.C. & Rice, L.A. (2003). *Determinants of Student Achievement: New Evidence from San Diego.* San Francisco: Public Policy Institute of California.

Borman, G.D. & Dowling, N.M. (2003). Schools and inequality: A multilevel analysis of Coleman's Equality of Educational Opportunity data. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Borman, G.D., Dowling, N.M. Fairchild, R., Boulay, M. & Kaplan, J. (2002). The Longitudinal Achievement Effects of Multi-Year Summer School: Evidence from the Teach Baltimore Randomized Field Trial. Center for Summer Learning, Johns Hopkins University.

Bracey, G. (2005). Tips for Readers of Research: Handle Pass Rates with Care, *Phi Delta Kappan*, December, 2005.

Brunner, E.D. (1948). Educational Attainment and Economic Status. *Teachers College Record,* Volume 49, Number 4, pp242-249.

Chaplin, D & Capizzano, J. (2006). Impacts of a Summer Learning Program:

A Random Assignment Study of Building Educated Leaders for Life (BELL). Urban Institute. Retrieved on September 10, 2006 from: http://www.urban.org/url.cfm?ID=411350

Coleman, J. (1966). *Equality of Educational Opportunity.* Washington, D.C.: U. S. Government Printing Office.

Coley, J. (2003). *Growth in School Revisited: Achievement Gains from the Fourth to the Eighth Grade.* Princeton, NJ: Educational Testing Service.

The Economist (2006a). Inequality and the American Dream, June 15, 2006.

The Economist (2006b). The rich, the poor and the growing gap between them June 15, 2006.

Finn, C. (2006). March of the pessimists. *The Education Gadfly* August 17, 2006, Volume 6, Number 31.

Ferguson, R. (1998). Can schools narrow the black-white test score gap? In *The black-white test score gap*. Jencks, C. & Phillips, M., Eds. 1998, Washington, D.C.: The Brookings Institution.

Gordon, E.W., Bridglall, B.L., Meroe, A.S. (2005). *Supplementary Education: The Hidden Curriculum of High Academic Curriculum*. Lanham, MD.: Rownan & Littlefield.

Harris, J. R. (1995). Where is the Child's Environment? A Group Socialization Theory of Development. *Psychological Review*. Volume 102, No. 3, pp. 458-489.

Hertz, T. (2006). *Understanding Mobility in America*. Washington, D.C.: Center for American Progress.

Howe, H. (1968). Picking up the Options. Washington D.C.: National Education Association.

Johnson, J., Arumi, A.M. & Ott, A. (2006). *How Black and Hispanic Families Rate Their Schools.* A report from Education Insights at Public Agenda.

Kannapel, P. J., & Clements, S. K., with Taylor, D., & Hibpshman, T. (2005). Inside the black box of high-performing high-poverty schools. Lexington, KY: Prichard Committee for Academic Excellence. Retrieved October 17, 2005, from http://www.prichardcommittee.org/Ford%20Study/FordReportJE.pdf.

Kim, J. & Sunderman, G. L. (2004). *Does NCLB provide good choices for students in low-performing schools?* Cambridge, MA: The Civil Rights Project at Harvard University.

Krueger, A., Whitmore, D. (2001) "Would Smaller Classes Help Close the Black-White Achievement Gap?" paper prepared for a conference cosponsored by the Brookings Institution and Edison Schools, Inc., entitled "Closing the Gap: Promising approaches to Closing the Achievement Gap."

Lee, J. (2006). *Tracking achievement gaps and assessing the impact of NCLB on the gaps: An in-depth look into national and state reading and math outcome trends.* Cambridge, MA: The Civil Rights Project at Harvard University.

Lee, P. (2002). Racial and ethnic achievement gap trends: Reversing the progress toward equity. *Educational Researcher, 31,(1)*, 3-12.

Linn, R. L. (2003). Accountability: Responsibility and reasonable expectations. *Educational Researcher*, Volume 32, No. 7, pp. 3–13

McCall, M., Kingsbury, G. & Olson, A. (2004). *Individual Growth and School Success.* Northwest Evaluation Association.

Murray, C. (2006). Acid Tests, *Wall Street Journal*, July 27, 2006.

National Center for Public Policy and Higher Education. (2005). Policy Alert: Income of U.S. Workforce Projected to Decline If Education Doesn't Improve. November, 2005. http://www.highereducation.org/reports/pa_decline/index.shtml

NWEA (2005). RIT scale norms for use with Measures of Academic Progress and Achievement Level Tests. Lake Oswego, OR: Author.

Perie, M., Grigg, W., and Dion, G. (2005). *The Nation's Report Card: Mathematics 2005* (NCES 2006–453). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: U.S. Government Printing Office.

Perie, M., Grigg, W., and Donahue, P. (2005). *The Nation's Report Card: Reading 2005* (NCES 2006– 451). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: U.S. Government Printing Office.

Phillips, M., Crouse, J. & Ralph,J. (1998). Does the test score gap widen after children enter school? In *The black-white test score gap*. Jencks, C. & Phillips, M., Eds. 1998, Washington, D.C.: The Brookings Institution.

Raudenbush, S.W. & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed). Thousand Oaks, CA: Sage Publications.

Raudenbush, S. & Sampson, R. (1999). Assessing direct and indirect associations in multilevel designs with latent variables. *Sociological Methods and Research, 28,* pp. 123-153.

Rose, L.C., Gallup, A.M. (2006). 38th Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools. Phi Delta Kappan: retrieved from http://www.pdkmembers.org/e-GALLUP/kpoll_pdfs/pdkpoll38_2006.pdf

Rothstein, R. (2004*). Class and Schools: Using Social, Economic and Educational Reform to Close the Black-White Achievement Gap*. New York: Teachers College Press.

Rothstein, R. (2005*). The charter school dust-up*.

Seltzer, M., Choi, K. & Thum, Y.M. (2002). *Examining relationships between where students start and how rapidly they progress: Implications for constructing indicators that help illuminate the distribution of achievement within schools* (CSE Technical Report 560). Los Angeles, CA: Center for the Study of Evaluation National Center for Research on Evaluation, Standards, and Student Testing, Graduate School of Education & Information Studies, University of California, Los Angeles.

Singer, J. D. & Willett, J.B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence.* New York, NY: Oxford University Press.

Shannon, S. & Bylsma, P. (2002). *Addressing the Achievement Gap: A Challenge for Washington Educators.* Olympia, WA: Office of Superintendent of Public Instruction.

Schemo, D. (2006) It takes more than schools to close the achievement gap. New York Time, August, 2006.

Thernstrom, A. & Thernstrom, S. (2003). *No excuses: Closing the racial gap in learning.* New York: Simon & Schuster.

Viaderi, D. (2006). Fresh Look at Coleman Data Yields Different Conclusions, *Education Week*: June 21, 2006.

Warsh, D. (2006). *Knowledge and the Wealth of Nations: A Story of Economic Discovery.* New York: Norton.

Wenglinsky, H. (2004, November 23) Closing the racial achievement gap: The role of reforming instructional practices. *Education Policy Analysis Archives, 12*(64). From http://epaa.asu.edu/epaa/v12n64/.

Appendix A: Breakdown of Reading Sample by Grade, Ethnic Group, Poverty Category

		10% or less		11-25%		26-50%		51-75%		Over 75%		Group Total	
Grade	Ethnic Category	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
3	Nat Am	58	4	122	8	386	24	517	32	530	33	1613	100
3	Asian	1022	39	573	22	530	20	274	11	202	8	2601	100
3	Afr Am	518	6	792	9	1799	20	2897	32	3127	34	9133	100
3	Hispanic	742	6	1061	9	2841	24	3209	27	4229	35	12082	100
3	Euro Am	12093	19	17743	28	23043	36	9155	14	2302	4	64336	100
3	Unknown	416	7	1788	29	1404	23	1744	28	778	13	6130	100
3	Multi Eth	33	4	102	12	325	39	209	25	167	20	836	100
3		**14882**	**15**	**22181**	**23**	**30328**	**31**	**18005**	**19**	**11335**	**12**	**96731**	**100**
4	Nat Am	47	3	115	7	428	27	497	31	494	31	1581	100
4	Asian	939	38	588	24	499	20	300	12	176	7	2502	100
4	Afr Am	504	5	834	8	1833	18	3084	31	3787	38	10042	100
4	Hispanic	717	6	1107	9	2946	23	3171	25	4725	37	12666	100
4	Euro Am	11728	18	17652	28	23158	36	8995	14	2388	4	63921	100
4	Unknown	413	8	1357	27	1525	30	1257	25	466	9	5018	100
4	Multi Eth	37	4	94	11	319	39	196	24	178	22	824	100
4		**14385**	**15**	**21747**	**23**	**30708**	**32**	**17500**	**18**	**12214**	**13**	**96554**	**100**
5	Nat Am	49	3	159	9	477	26	550	30	602	33	1837	100
5	Asian	888	36	568	23	527	22	271	11	194	8	2448	100
5	Afr Am	523	5	839	8	2010	20	3103	30	3731	37	10206	100
5	Hispanic	707	6	1146	9	2991	23	3139	25	4798	38	12781	100
5	Euro Am	11155	17	18252	28	24192	37	9044	14	2421	4	65064	100
5	Unknown	443	9	1229	24	1775	35	1201	23	493	10	5141	100
5	Multi Eth	21	3	105	13	316	40	195	25	154	19	791	100
5		**13786**	**14**	**22298**	**23**	**32288**	**33**	**17503**	**18**	**12393**	**13**	**98268**	**100**
6	Nat Am	45	3	143	8	567	33	533	31	421	25	1709	100
6	Asian	771	34	688	31	504	22	206	9	86	4	2255	100
6	Afr Am	746	7	665	7	2501	25	2963	30	3130	31	10005	100
6	Hispanic	647	6	1199	11	3448	31	3156	28	2731	24	11181	100
6	Euro Am	9969	15	20030	30	26936	41	7324	11	1724	3	65983	100
6	Unknown	1333	23	1171	20	1716	29	1559	26	121	2	5900	100
6	Multi Eth	17	2	95	14	355	51	136	19	98	14	701	100
6		**13528**	**14**	**23991**	**25**	**36027**	**37**	**15877**	**16**	**8311**	**9**	**97734**	**100**
7	Nat Am	49	3	221	13	536	32	501	30	373	22	1680	100
7	Asian	801	35	626	27	435	19	355	15	87	4	2304	100
7	Afr Am	764	8	625	7	2519	26	3009	31	2690	28	9607	100
7	Hispanic	704	6	1158	10	3375	30	3800	33	2313	20	11350	100

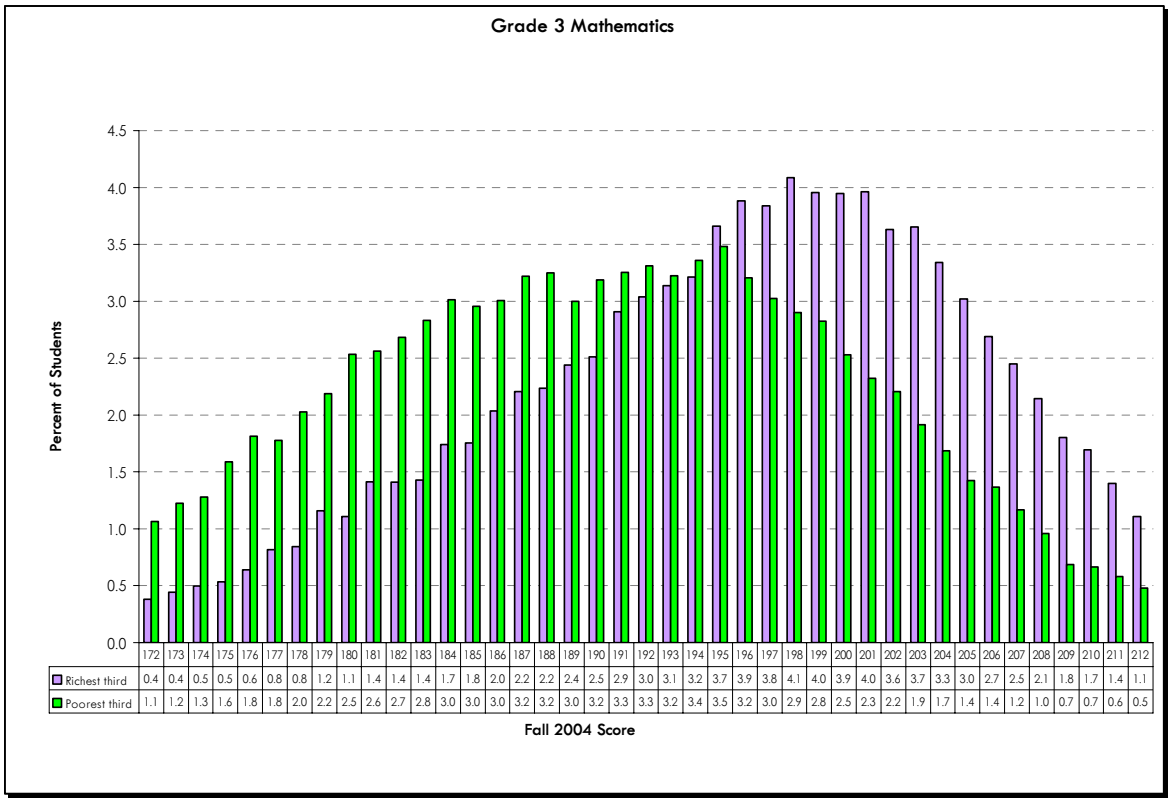
		10% or less		11-25%		26-50%		51-75%		Over 75%		Group Total	
Grade	Ethnic Category	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
7	Euro Am	10071	16	20366	32	24757	39	6502	10	1404	2	63100	100
7	Unknown	1242	22	1090	19	1533	27	1610	29	149	3	5624	100
7	Multi Eth	18	3	76	13	346	58	88	15	64	11	592	100
7		**13649**	**14**	**24162**	**26**	**33501**	**36**	**15865**	**17**	**7080**	**8**	**94257**	**100**
8	Nat Am	39	2	246	16	455	29	432	28	395	25	1567	100
8	Asian	689	36	371	20	425	22	320	17	87	5	1892	100
8	Afr Am	682	7	447	5	2542	27	2927	31	2745	29	9343	100
8	Hispanic	468	4	1062	10	3249	30	3650	34	2286	21	10715	100
8	Euro Am	7594	13	17827	31	24271	42	6561	11	1421	2	57674	100
8	Unknown	369	9	735	17	1502	36	1478	35	121	3	4205	100
8	Multi Eth	12	2	84	13	354	57	98	16	76	12	624	100
8		**9853**	**11**	**20772**	**24**	**32798**	**38**	**15466**	**18**	**7131**	**8**	**86020**	**100**
Totals		**80083**	**14**	**135151**	**24**	**195650**	**34**	**100216**	**18**	**58464**	**10**	**569564**	**100**

Appendix B: Breakdown of Mathematics Sample by Grade, Ethnic Group, Poverty Category

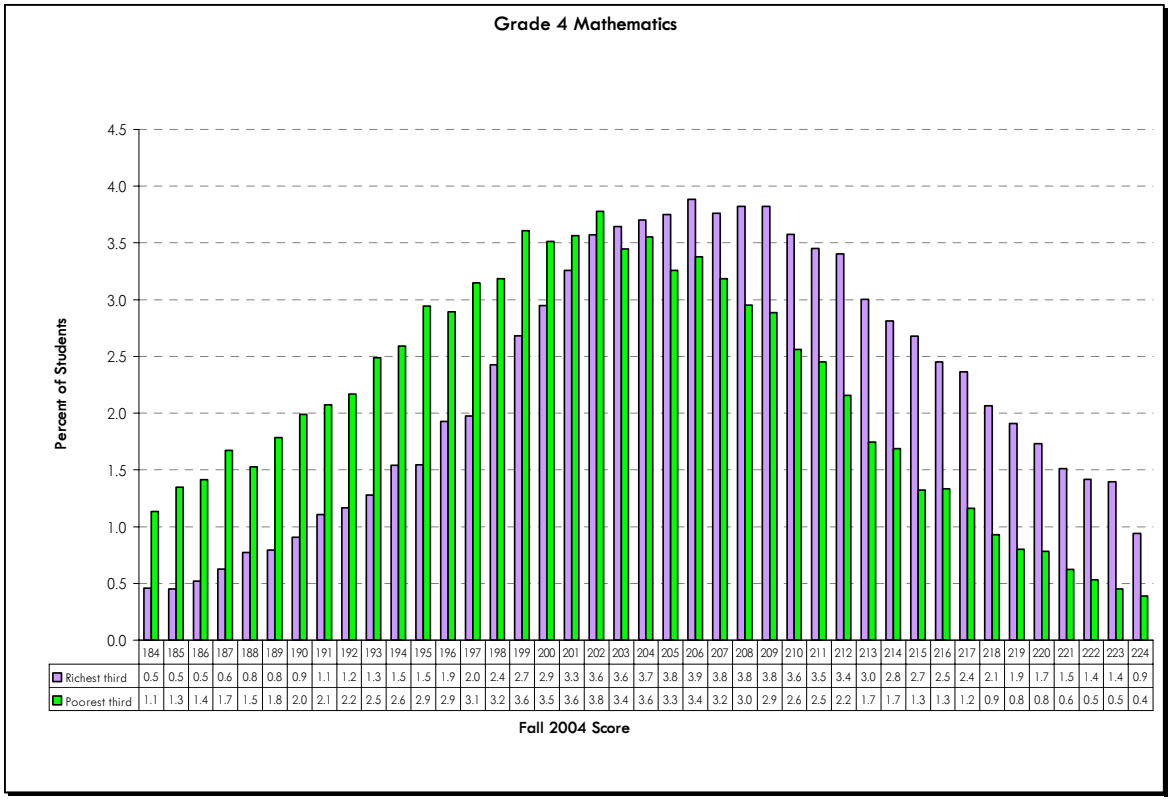
		10% or less		11-25%		26-50%		51-75%		Over 75%		Group Total	
Grade	Ethnic Category	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
3	Nat Am	51	3	117	7	383	23	546	33	562	34	1659	100
3	Asian	906	39	486	21	500	21	293	13	150	6	2335	100
3	Afr Am	490	5	754	8	1793	19	3066	32	3372	36	9475	100
3	Hispanic	631	6	917	8	2592	23	3440	30	3880	34	11460	100
3	Euro Am	10833	17	17555	28	22611	36	9392	15	2354	4	62745	100
3	Unknown	418	9	1395	30	1197	26	1174	25	470	10	4654	100
3	Multi Eth	33	4	103	12	320	38	219	26	164	20	839	100
3		**13362**	**14**	**21327**	**23**	**29396**	**32**	**18130**	**19**	**10952**	**12**	**93167**	**100**
4	Nat Am	40	3	116	7	423	26	516	32	503	31	1598	100
4	Asian	765	35	539	25	445	20	327	15	121	6	2197	100
4	Afr Am	514	5	835	8	1875	18	3181	31	3739	37	10144	100
4	Hispanic	552	5	968	8	2723	24	3267	28	4060	35	11570	100
4	Euro Am	10432	17	17414	28	22504	36	9043	15	2307	4	61700	100
4	Unknown	405	9	1173	26	1258	28	1226	27	489	11	4551	100
4	Multi Eth	38	5	101	13	311	40	182	23	151	19	783	100
4		**12746**	**14**	**21146**	**23**	**29539**	**32**	**17742**	**19**	**11370**	**12**	**92543**	**100**
5	Nat Am	45	2	155	8	473	25	585	31	604	32	1862	100
5	Asian	723	34	478	22	500	23	302	14	132	6	2135	100
5	Afr Am	525	5	819	8	2031	20	3246	31	3690	36	10311	100
5	Hispanic	557	5	947	8	2686	23	3336	29	4002	35	11528	100
5	Euro Am	10017	16	17983	29	23358	37	9099	14	2378	4	62835	100
5	Unknown	426	9	1085	24	1536	34	962	21	486	11	4495	100
5	Multi Eth	21	3	106	14	311	41	194	25	133	17	765	100
5		**12314**	**13**	**21573**	**23**	**30895**	**33**	**17724**	**19**	**11425**	**12**	**93931**	**100**
6	Nat Am	41	2	135	8	588	34	563	32	413	24	1740	100
6	Asian	507	27	625	33	496	26	207	11	70	4	1905	100
6	Afr Am	719	7	672	7	2566	25	3200	31	3113	30	10270	100
6	Hispanic	392	4	1038	10	3062	29	3475	33	2606	25	10573	100
6	Euro Am	8331	13	19485	31	26325	41	7631	12	1726	3	63498	100
6	Unknown	1330	26	1120	21	1617	31	1029	20	114	2	5210	100
6	Multi Eth	17	2	99	14	352	50	142	20	93	13	703	100
6		**11337**	**12**	**23174**	**25**	**35006**	**37**	**16247**	**17**	**8135**	**9**	**93899**	**100**
7	Nat Am	33	2	219	13	554	32	526	31	380	22	1712	100
7	Asian	446	24	653	35	412	22	243	13	90	5	1844	100
7	Afr Am	722	7	610	6	2492	25	3118	32	2876	29	9818	100

		10% or less		11-25%		26-50%		51-75%		Over 75%		Group Total	
Grade	Ethnic Category	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
7	Hispanic	421	4	1026	10	3012	31	3240	33	2120	22	9819	100
7	Euro Am	8031	13	20330	34	24038	40	6463	11	1408	2	60270	100
7	Unknown	1205	25	1082	22	1342	28	1221	25	20	0	4870	100
7	Multi Eth	14	2	77	13	339	58	87	15	72	12	589	100
7		**10872**	**12**	**23997**	**27**	**32189**	**36**	**14898**	**17**	**6966**	**8**	**88922**	**100**
8	Nat Am	21	1	242	16	457	29	437	28	397	26	1554	100
8	Asian	293	21	412	29	408	29	207	15	87	6	1407	100
8	Afr Am	632	7	447	5	2552	27	2928	31	2817	30	9376	100
8	Hispanic	194	2	975	11	2942	32	3006	33	2063	22	9180	100
8	Euro Am	5334	10	17747	33	23455	43	6149	11	1349	2	54034	100
8	Unknown	285	8	720	21	1278	37	1130	33	16	0	3429	100
8	Multi Eth	11	2	85	14	340	55	97	16	82	13	615	100
8		**6770**	**9**	**20628**	**26**	**31432**	**39**	**13954**	**18**	**6811**	**9**	**79595**	**100**
Totals		**67401**	**12**	**131845**	**24**	**188457**	**35**	**98695**	**18**	**55659**	**10**	**542057**	**100**

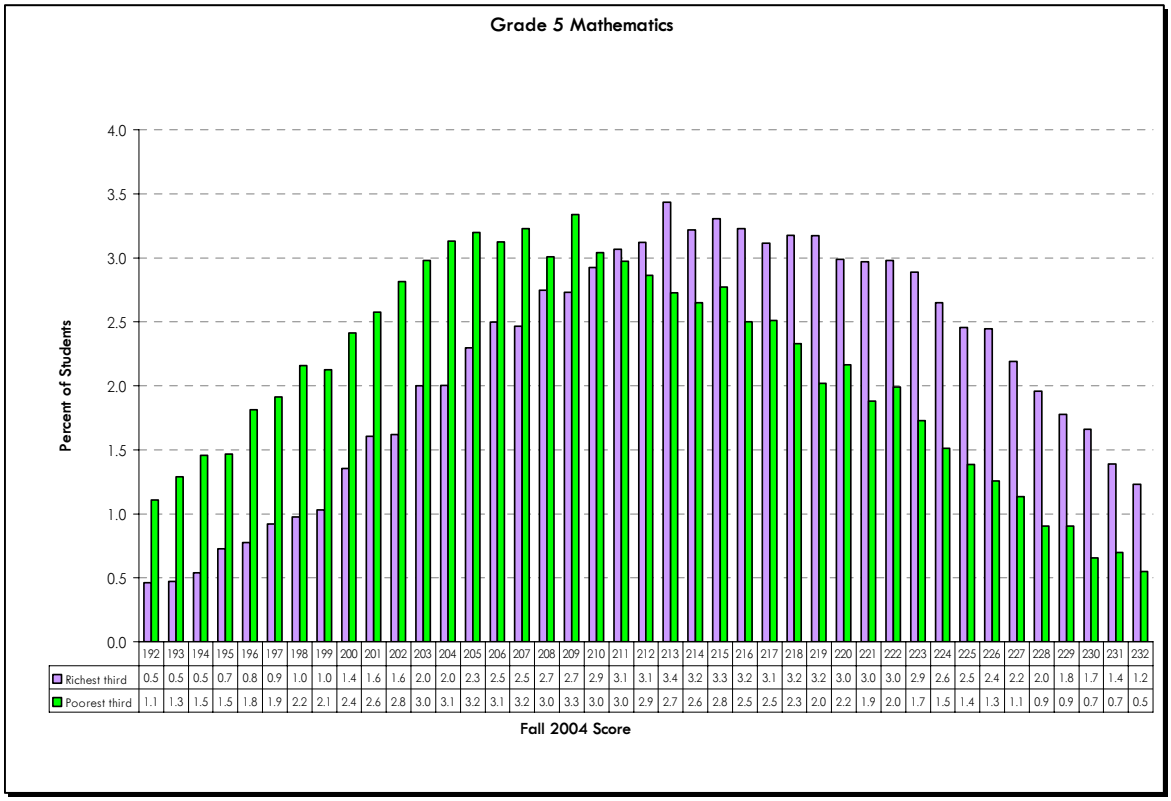
Appendix C: Frequency Distribution for Poverty Categories by Score and Grade—Mathematics



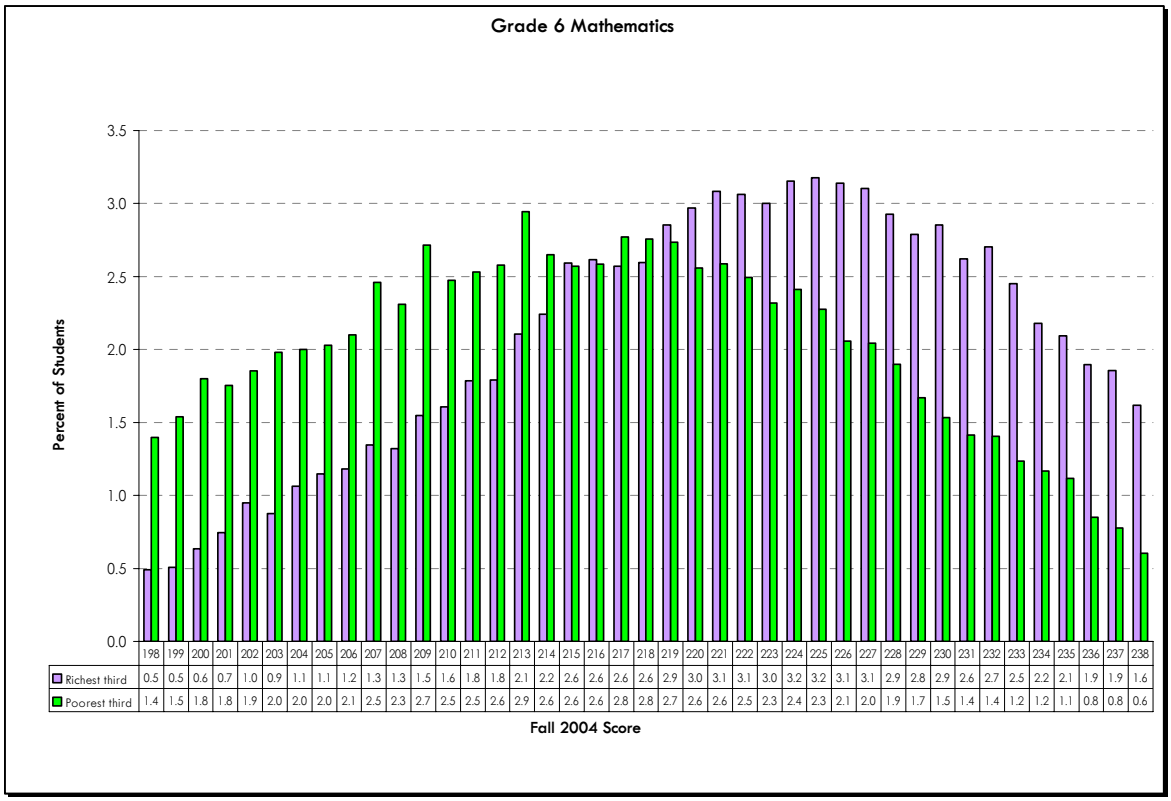
	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
Richest third	0.4	0.4	0.5	0.5	0.6	0.8	0.8	1.2	1.1	1.4	1.4	1.4	1.7	1.8	2.0	2.2	2.2	2.4	2.5	2.9	3.0	3.1	3.2	3.7	3.9	3.8	4.1	4.0	3.9	4.0	3.6	3.7	3.3	3.0	2.7	2.5	2.1	1.8	1.7	1.4	1.1
Poorest third	1.1	1.2	1.3	1.6	1.8	1.8	2.0	2.2	2.5	2.6	2.7	2.8	3.0	3.0	3.0	3.2	3.2	3.0	3.2	3.3	3.3	3.2	3.4	3.5	3.2	3.0	2.9	2.8	2.5	2.3	2.2	1.9	1.7	1.4	1.4	1.2	1.0	0.7	0.7	0.6	0.5



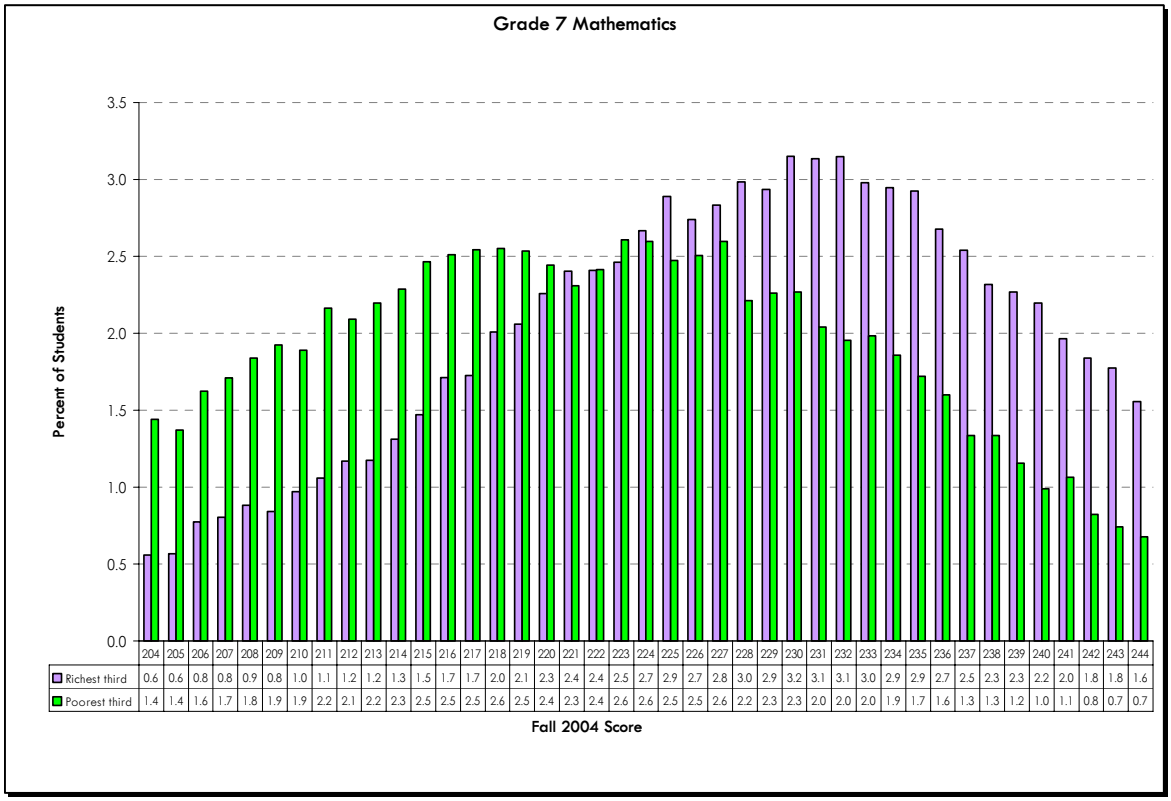
	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
Richest third	0.5	0.5	0.5	0.6	0.8	0.8	0.9	1.1	1.2	1.3	1.5	1.5	1.9	2.0	2.4	2.7	2.9	3.3	3.6	3.6	3.7	3.8	3.9	3.8	3.8	3.8	3.6	3.5	3.4	3.0	2.8	2.7	2.5	2.4	2.1	1.9	1.7	1.5	1.4	1.4	0.9
Poorest third	1.1	1.3	1.4	1.7	1.5	1.8	2.0	2.1	2.2	2.5	2.6	2.9	2.9	3.1	3.2	3.6	3.5	3.6	3.8	3.4	3.6	3.3	3.4	3.2	3.0	2.9	2.6	2.5	2.2	1.7	1.7	1.3	1.3	1.2	0.9	0.8	0.8	0.6	0.5	0.5	0.4

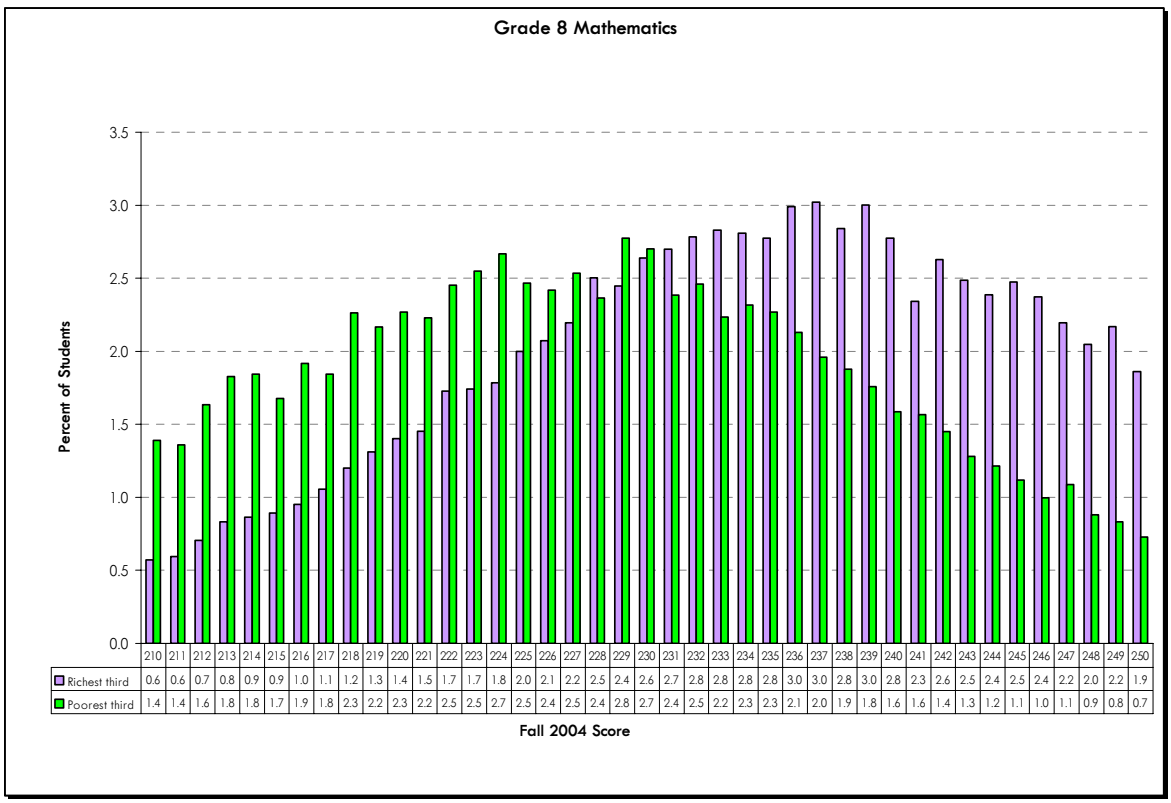


	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232
Richest third	0.5	0.5	0.5	0.7	0.8	0.9	1.0	1.0	1.4	1.6	1.6	2.0	2.0	2.3	2.5	2.5	2.7	2.7	2.9	3.1	3.1	3.4	3.2	3.3	3.2	3.1	3.2	3.2	3.0	3.0	3.0	2.9	2.6	2.5	2.4	2.2	2.0	1.8	1.7	1.4	1.2
Poorest third	1.1	1.3	1.5	1.5	1.8	1.9	2.2	2.1	2.4	2.6	2.8	3.0	3.1	3.2	3.1	3.2	3.0	3.3	3.0	3.0	2.9	2.7	2.6	2.8	2.5	2.5	2.3	2.0	2.2	1.9	2.0	1.7	1.5	1.4	1.3	1.1	0.9	0.9	0.7	0.7	0.5

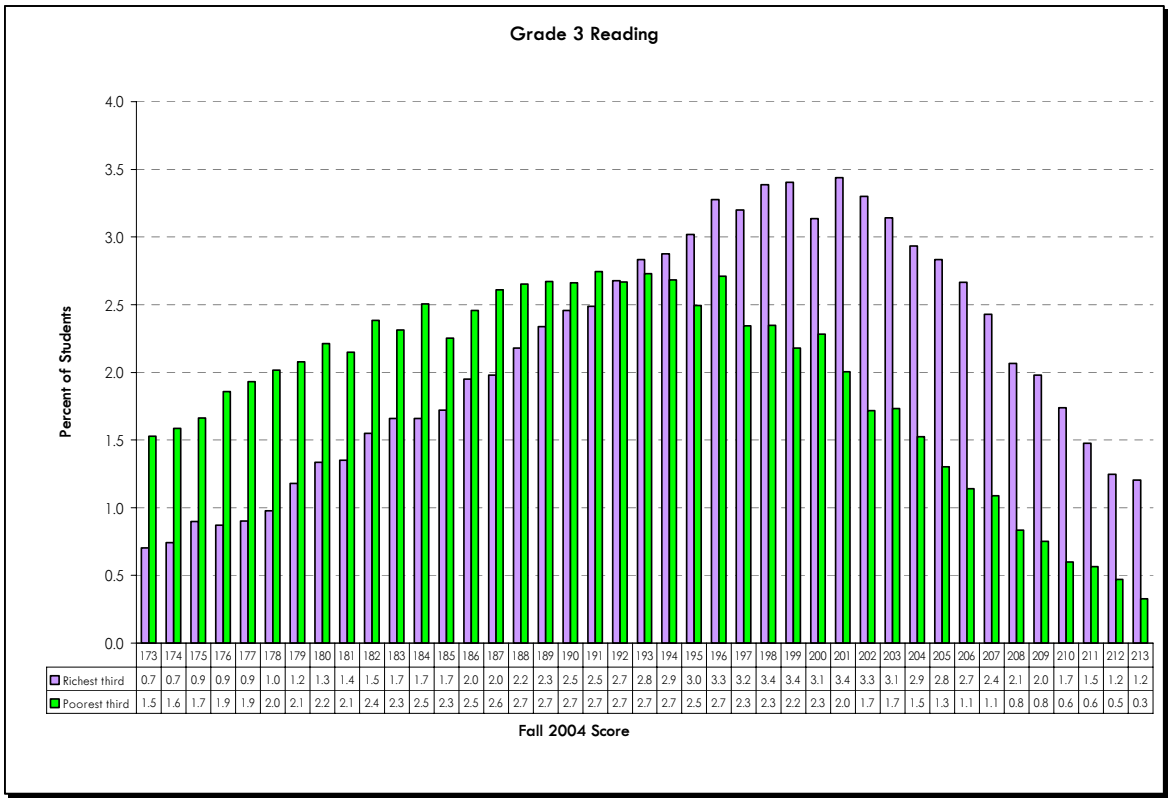


	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238
Richest third	0.5	0.5	0.6	0.7	1.0	0.9	1.1	1.1	1.2	1.3	1.3	1.5	1.6	1.8	1.8	2.1	2.2	2.6	2.6	2.6	2.6	2.9	3.0	3.1	3.1	3.0	3.2	3.2	3.1	3.1	2.9	2.8	2.9	2.6	2.7	2.5	2.2	2.1	1.9	1.9	1.6
Poorest third	1.4	1.5	1.8	1.8	1.9	2.0	2.0	2.0	2.1	2.5	2.3	2.7	2.5	2.5	2.6	2.9	2.6	2.6	2.6	2.8	2.8	2.7	2.6	2.6	2.5	2.3	2.4	2.3	2.1	2.0	1.9	1.7	1.5	1.4	1.4	1.2	1.2	1.1	0.8	0.8	0.6

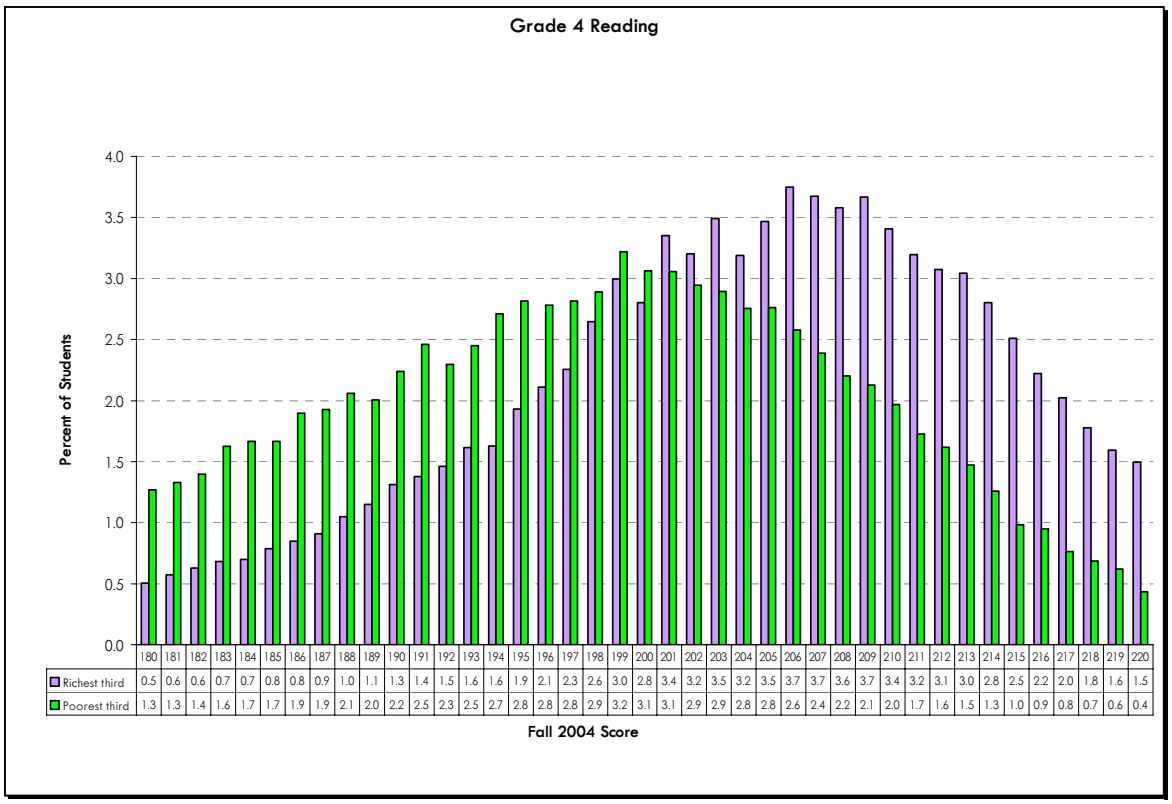

Grade 7 Mathematics
Percent of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244
Richest third 0.6 0.6 0.8 0.8 0.9 0.8 1.0 1.1 1.2 1.2 1.3 1.5 1.7 1.7 2.0 2.1 2.3 2.4 2.4 2.5 2.7 2.9 2.7 2.8 3.0 2.9 3.2 3.1 3.1 3.0 2.9 2.9 2.7 2.5 2.3 2.3 2.2 2.0 1.8 1.8 1.6
Poorest third 1.4 1.4 1.6 1.7 1.8 1.9 1.9 2.2 2.1 2.2 2.3 2.5 2.5 2.5 2.6 2.5 2.4 2.3 2.4 2.6 2.6 2.5 2.5 2.6 2.2 2.3 2.3 2.0 2.0 2.0 1.9 1.7 1.6 1.3 1.3 1.2 1.0 1.1 0.8 0.7 0.7
Fall 2004 Score


Grade 8 Mathematics
Percent of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250
Richest third 0.6 0.6 0.7 0.8 0.9 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.7 1.7 1.8 2.0 2.1 2.2 2.5 2.4 2.6 2.7 2.8 2.8 2.8 2.8 3.0 3.0 2.8 3.0 2.8 2.3 2.6 2.5 2.4 2.5 2.4 2.2 2.0 2.2 1.9
Poorest third 1.4 1.4 1.6 1.8 1.8 1.7 1.9 1.8 2.3 2.2 2.3 2.2 2.5 2.5 2.7 2.5 2.4 2.5 2.4 2.8 2.7 2.4 2.5 2.2 2.3 2.3 2.1 2.0 1.9 1.8 1.6 1.6 1.4 1.3 1.2 1.1 1.0 1.1 0.9 0.8 0.7
Fall 2004 Score

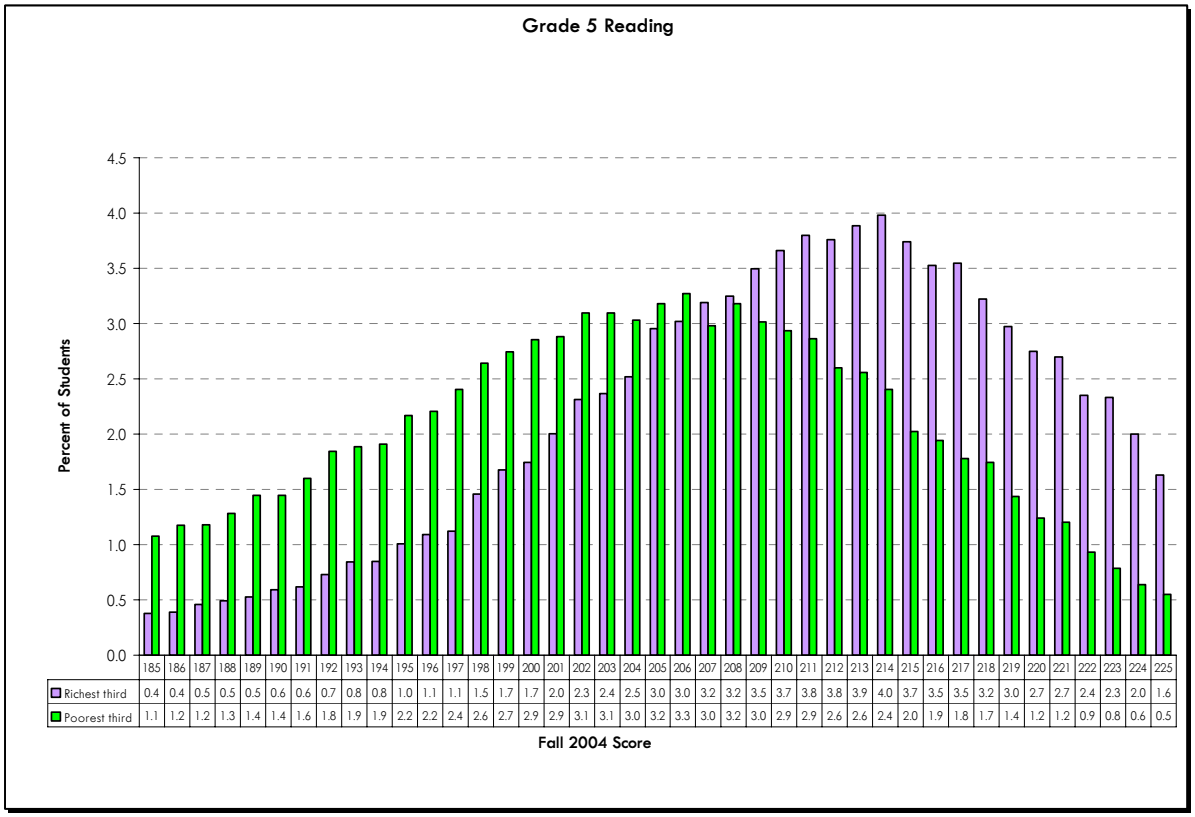
Appendix D: Frequency Distribution for Poverty Categories by Score and Grade—Reading

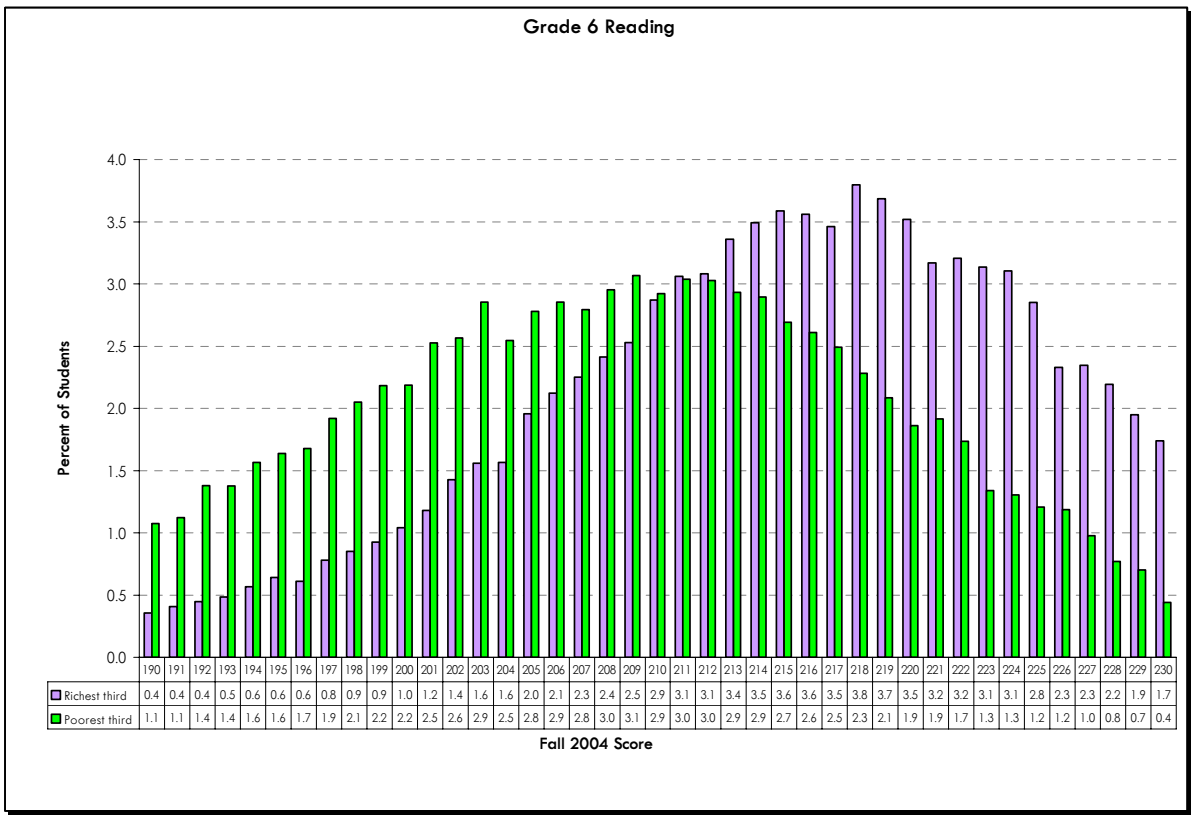


	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213
Richest third	0.7	0.7	0.9	0.9	0.9	1.0	1.2	1.3	1.4	1.5	1.7	1.7	1.7	2.0	2.0	2.2	2.3	2.5	2.5	2.7	2.8	2.9	3.0	3.3	3.2	3.4	3.4	3.1	3.4	3.3	3.1	2.9	2.8	2.7	2.4	2.1	2.0	1.7	1.5	1.2	1.2
Poorest third	1.5	1.6	1.7	1.9	1.9	2.0	2.1	2.2	2.1	2.4	2.3	2.5	2.3	2.5	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.5	2.7	2.3	2.3	2.2	2.3	2.0	1.7	1.7	1.5	1.3	1.1	1.1	0.8	0.8	0.6	0.6	0.5	0.3

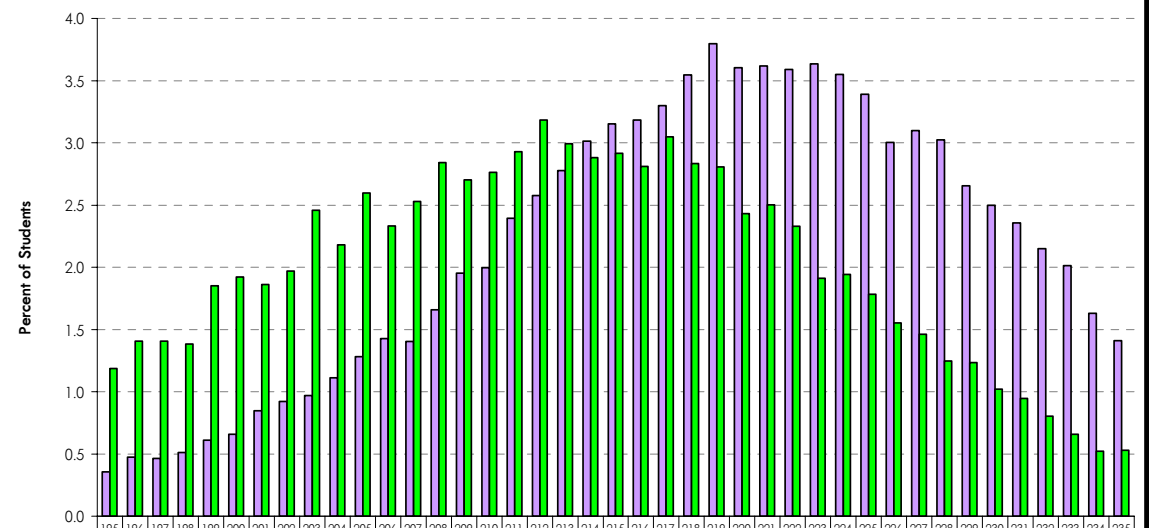


	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Richest third	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.6	1.6	1.9	2.1	2.3	2.6	3.0	2.8	3.4	3.2	3.5	3.2	3.5	3.7	3.7	3.6	3.7	3.4	3.2	3.1	3.0	2.8	2.5	2.2	2.0	1.8	1.6	1.5
Poorest third	1.3	1.3	1.4	1.6	1.7	1.7	1.9	1.9	2.1	2.0	2.2	2.5	2.3	2.5	2.7	2.8	2.8	2.8	2.9	3.2	3.1	3.1	2.9	2.9	2.8	2.8	2.6	2.4	2.2	2.1	2.0	1.7	1.6	1.5	1.3	1.0	0.9	0.8	0.7	0.6	0.4


Grade 5 Reading
Percent of Students
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225
Richest third 0.4 0.4 0.5 0.5 0.5 0.6 0.6 0.7 0.8 0.8 1.0 1.1 1.1 1.5 1.7 1.7 2.0 2.3 2.4 2.5 3.0 3.0 3.2 3.2 3.5 3.7 3.8 3.8 3.9 4.0 3.7 3.5 3.5 3.2 3.0 2.7 2.7 2.4 2.3 2.0 1.6
Poorest third 1.1 1.2 1.2 1.3 1.4 1.4 1.6 1.8 1.9 1.9 2.2 2.2 2.4 2.6 2.7 2.9 2.9 3.1 3.1 3.0 3.2 3.3 3.0 3.2 3.0 2.9 2.9 2.6 2.6 2.4 2.0 1.9 1.8 1.7 1.4 1.2 1.2 0.9 0.8 0.6 0.5
Fall 2004 Score


Grade 6 Reading
Percent of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230
Richest third 0.4 0.4 0.4 0.5 0.6 0.6 0.6 0.8 0.9 0.9 1.0 1.2 1.4 1.6 1.6 2.0 2.1 2.3 2.4 2.5 2.9 3.1 3.1 3.4 3.5 3.6 3.6 3.5 3.8 3.7 3.5 3.2 3.2 3.1 3.1 2.8 2.3 2.3 2.2 1.9 1.7
Poorest third 1.1 1.1 1.4 1.4 1.6 1.6 1.7 1.9 2.1 2.2 2.2 2.5 2.6 2.9 2.5 2.8 2.9 2.8 3.0 3.1 2.9 3.0 3.0 2.9 2.9 2.7 2.6 2.5 2.3 2.1 1.9 1.9 1.7 1.3 1.3 1.2 1.2 1.0 0.8 0.7 0.4
Fall 2004 Score

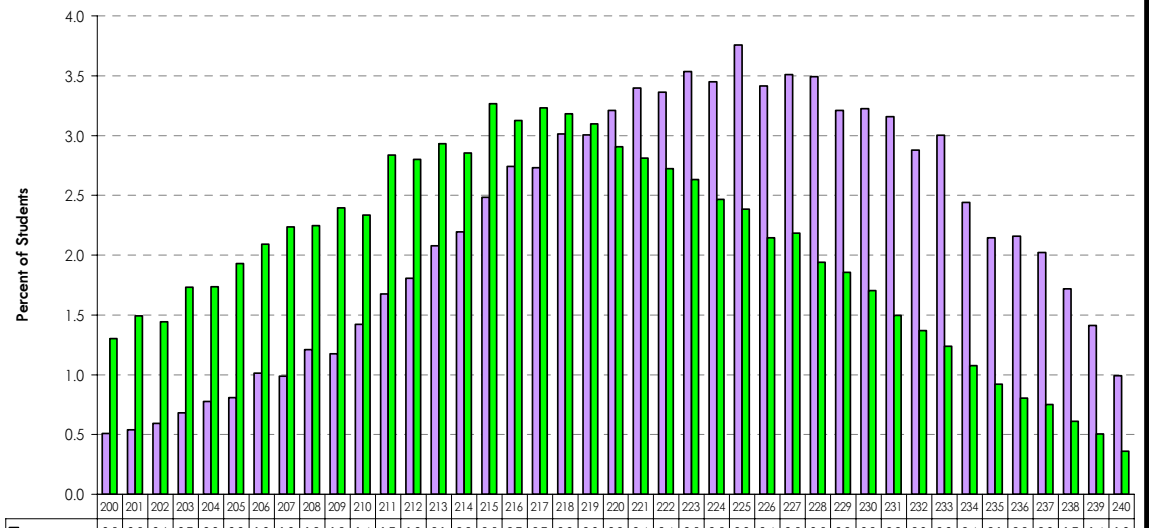
Grade 7 Reading



	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Richest third	0.4	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.4	1.4	1.7	2.0	2.0	2.4	2.6	2.8	3.0	3.2	3.2	3.3	3.5	3.8	3.6	3.6	3.6	3.6	3.5	3.4	3.0	3.1	3.0	2.7	2.5	2.4	2.2	2.0	1.6	1.4
Poorest third	1.2	1.4	1.4	1.4	1.9	1.9	1.9	2.0	2.5	2.2	2.6	2.3	2.5	2.8	2.7	2.8	2.9	3.2	3.0	2.9	2.9	2.8	3.0	2.8	2.8	2.4	2.5	2.3	1.9	1.9	1.8	1.6	1.5	1.2	1.2	1.0	0.9	0.8	0.7	0.5	0.5

Fall 2004 Score

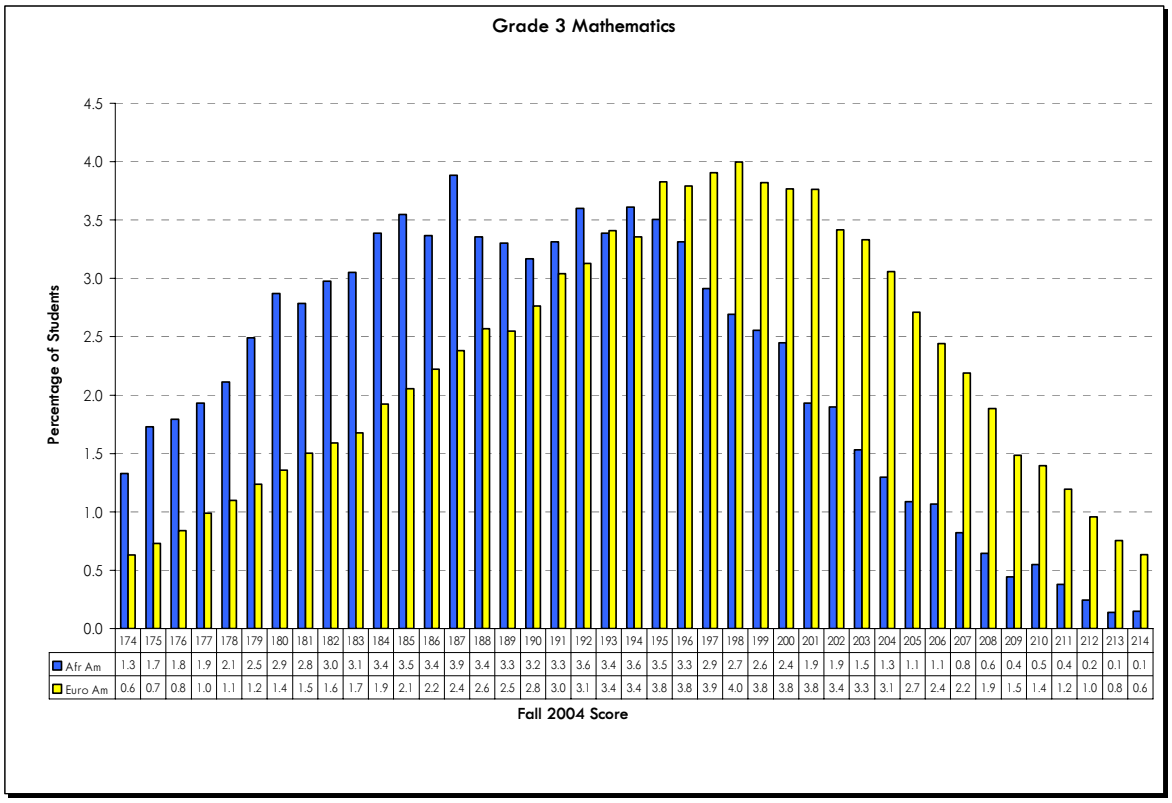
Grade 8 Reading



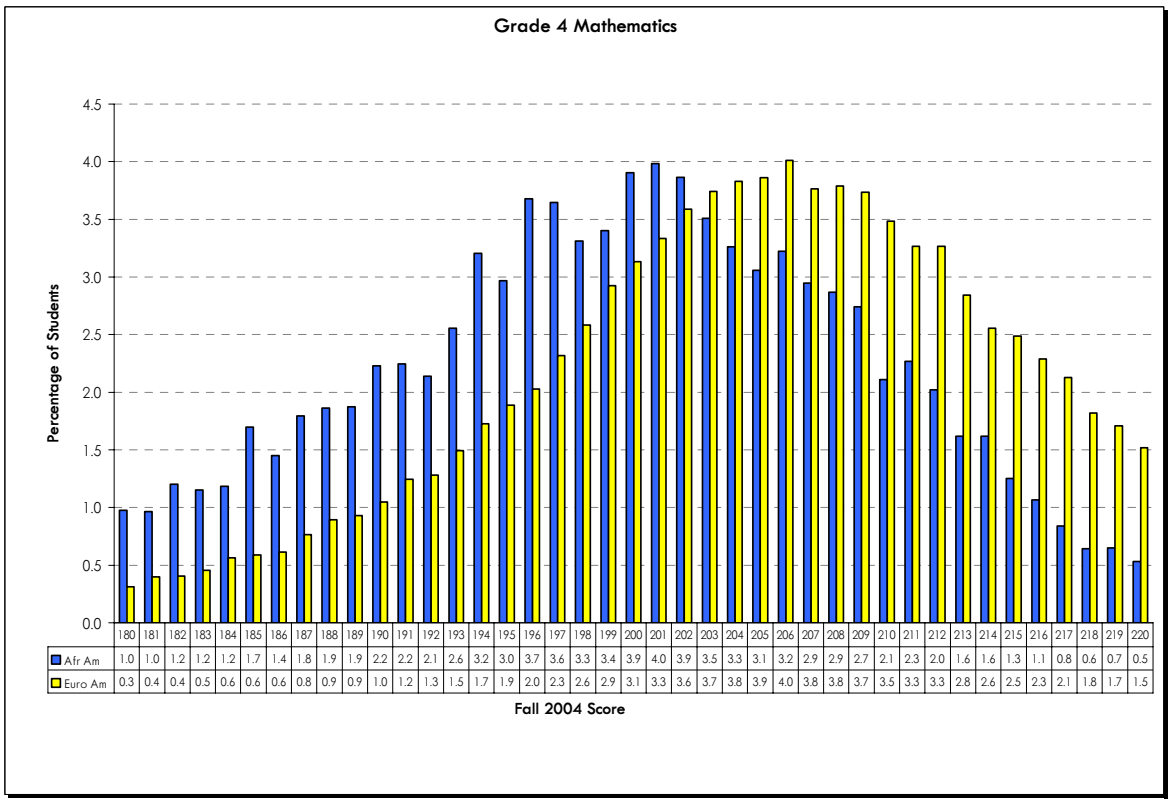
	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
Richest third	0.5	0.5	0.6	0.7	0.8	0.8	1.0	1.0	1.2	1.2	1.4	1.7	1.8	2.1	2.2	2.5	2.7	2.7	3.0	3.0	3.2	3.4	3.4	3.5	3.5	3.8	3.4	3.5	3.5	3.2	3.2	3.2	2.9	3.0	2.4	2.1	2.2	2.0	1.7	1.4	1.0
Poorest third	1.3	1.5	1.4	1.7	1.7	1.9	2.1	2.2	2.2	2.4	2.3	2.8	2.8	2.9	2.9	3.3	3.1	3.2	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.1	2.2	1.9	1.9	1.7	1.5	1.4	1.2	1.1	0.9	0.8	0.8	0.6	0.5	0.4

Fall 2004 Score

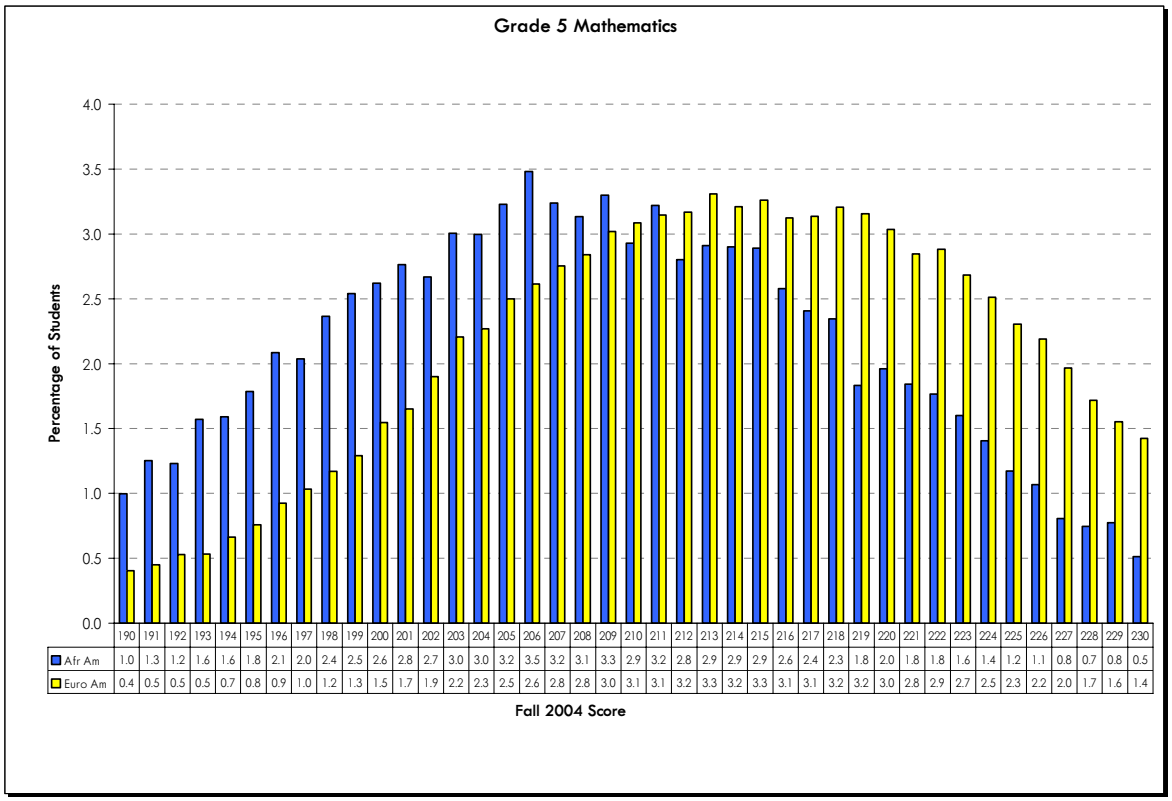
Appendix E: Frequency Distribution for African-Americans by Score and Grade—Mathematics

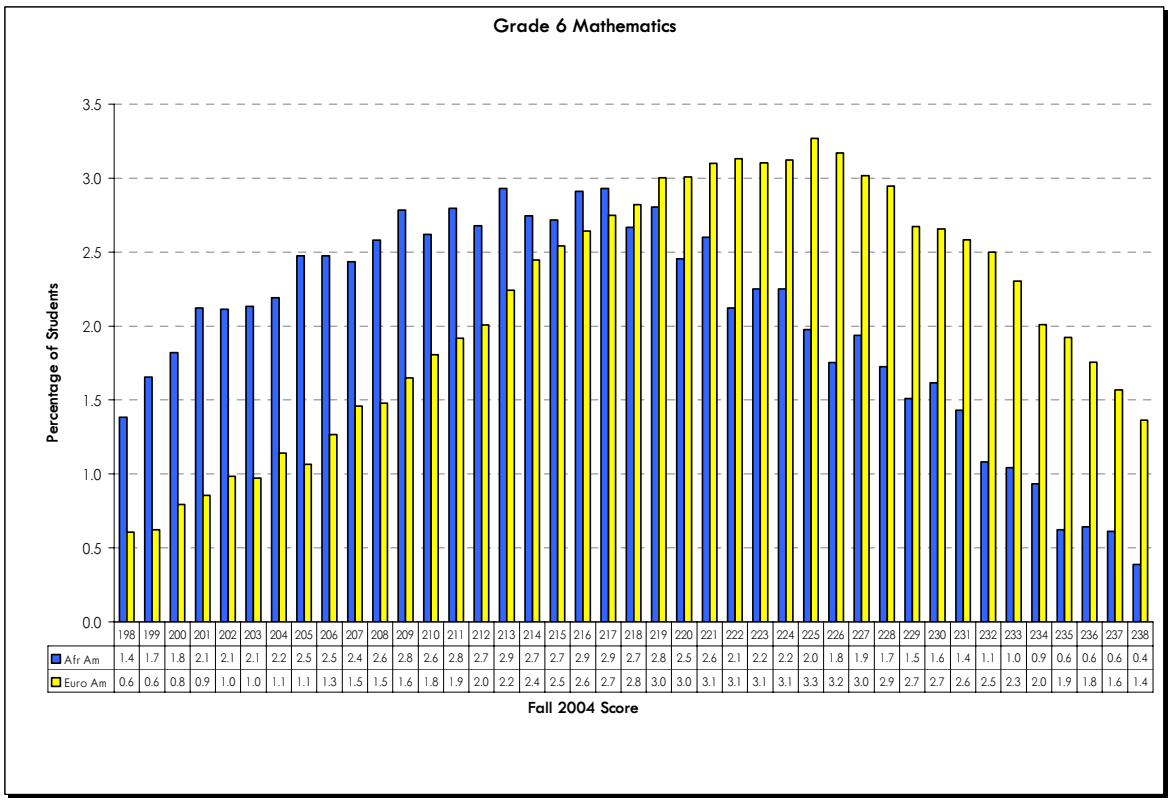


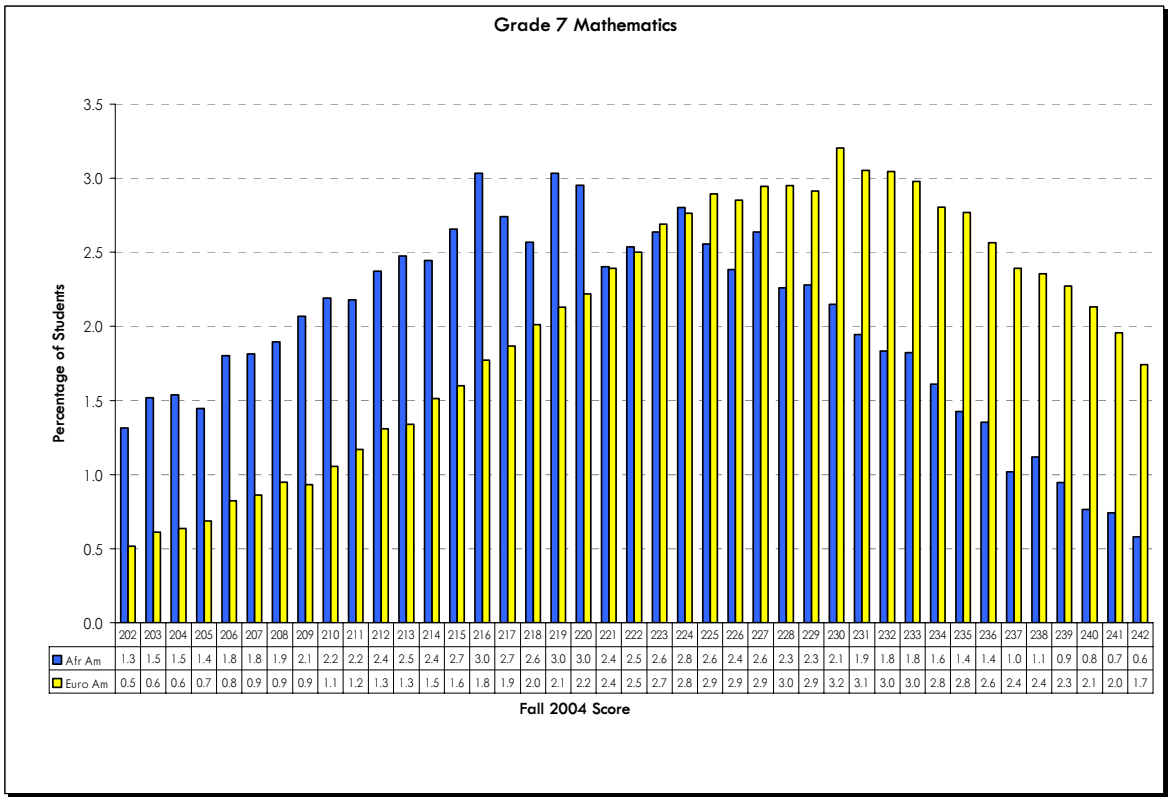
	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214
Afr Am	1.3	1.7	1.8	1.9	2.1	2.5	2.9	2.8	3.0	3.1	3.4	3.5	3.4	3.9	3.4	3.3	3.2	3.3	3.6	3.4	3.6	3.5	3.3	2.9	2.7	2.6	2.4	1.9	1.9	1.5	1.3	1.1	1.1	0.8	0.6	0.4	0.5	0.4	0.2	0.1	0.1
Euro Am	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.5	2.8	3.0	3.1	3.4	3.4	3.8	3.8	3.9	4.0	3.8	3.8	3.8	3.4	3.3	3.1	2.7	2.4	2.2	1.9	1.5	1.4	1.2	1.0	0.8	0.6



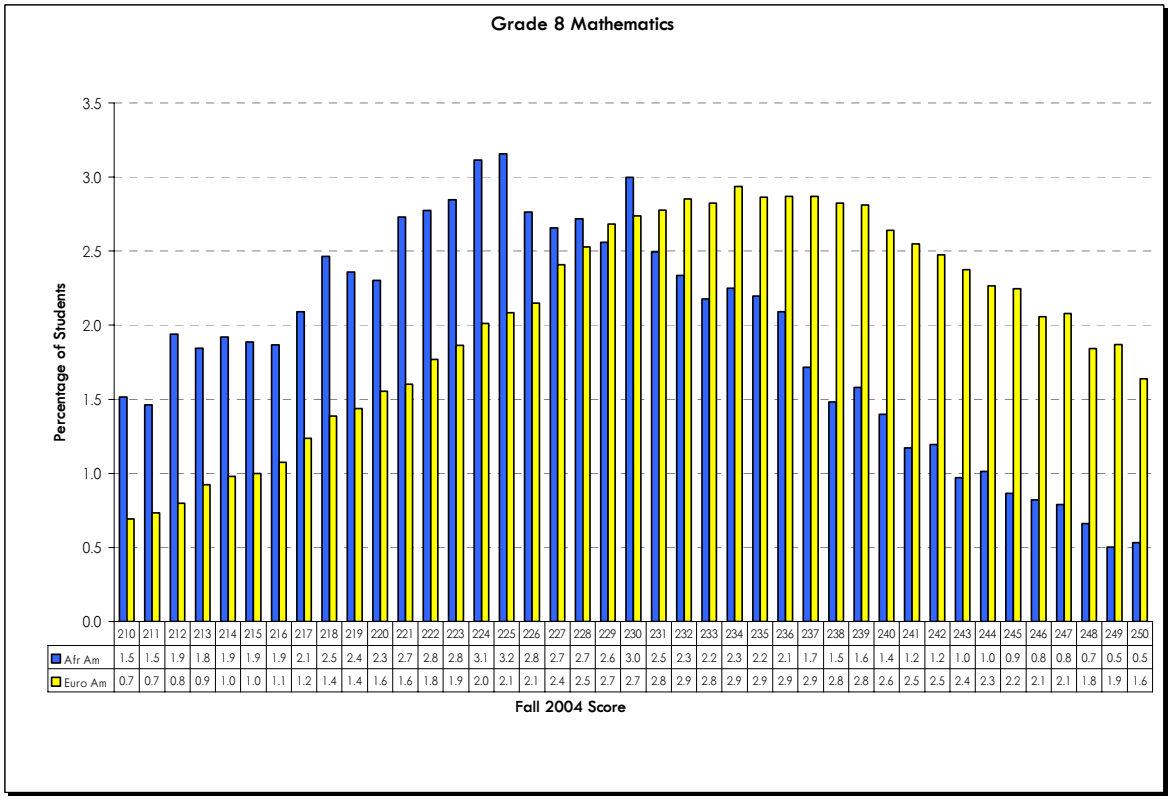
	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Afr Am	1.0	1.0	1.2	1.2	1.2	1.7	1.4	1.8	1.9	1.9	2.2	2.2	2.1	2.6	3.2	3.0	3.7	3.6	3.3	3.4	3.9	4.0	3.9	3.5	3.3	3.1	3.2	2.9	2.9	2.7	2.1	2.3	2.0	1.6	1.6	1.3	1.1	0.8	0.6	0.7	0.5
Euro Am	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.8	0.9	0.9	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.3	2.6	2.9	3.1	3.3	3.6	3.7	3.8	3.9	4.0	3.8	3.8	3.7	3.5	3.3	3.3	2.8	2.6	2.5	2.3	2.1	1.8	1.7	1.5


Grade 5 Mathematics
Percentage of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230
Afr Am 1.0 1.3 1.2 1.6 1.6 1.8 2.1 2.0 2.4 2.5 2.6 2.8 2.7 3.0 3.0 3.2 3.5 3.2 3.1 3.3 2.9 3.2 2.8 2.9 2.9 2.9 2.6 2.4 2.3 1.8 2.0 1.8 1.8 1.6 1.4 1.2 1.1 0.8 0.7 0.8 0.5
Euro Am 0.4 0.5 0.5 0.5 0.7 0.8 0.9 1.0 1.2 1.3 1.5 1.7 1.9 2.2 2.3 2.5 2.6 2.8 2.8 3.0 3.1 3.1 3.2 3.3 3.2 3.3 3.1 3.1 3.2 3.2 3.0 2.8 2.9 2.7 2.5 2.3 2.2 2.0 1.7 1.6 1.4
Fall 2004 Score


Grade 6 Mathematics
Percentage of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238
Afr Am 1.4 1.7 1.8 2.1 2.1 2.1 2.2 2.5 2.5 2.4 2.6 2.8 2.6 2.8 2.7 2.9 2.7 2.7 2.9 2.9 2.7 2.8 2.5 2.6 2.1 2.2 2.2 2.0 1.8 1.9 1.7 1.5 1.6 1.4 1.1 1.0 0.9 0.6 0.6 0.6 0.4
Euro Am 0.6 0.6 0.8 0.9 1.0 1.0 1.1 1.1 1.3 1.5 1.5 1.6 1.8 1.9 2.0 2.2 2.4 2.5 2.6 2.7 2.8 3.0 3.0 3.1 3.1 3.1 3.1 3.3 3.2 3.0 2.9 2.7 2.7 2.6 2.5 2.3 2.0 1.9 1.8 1.6 1.4
Fall 2004 Score

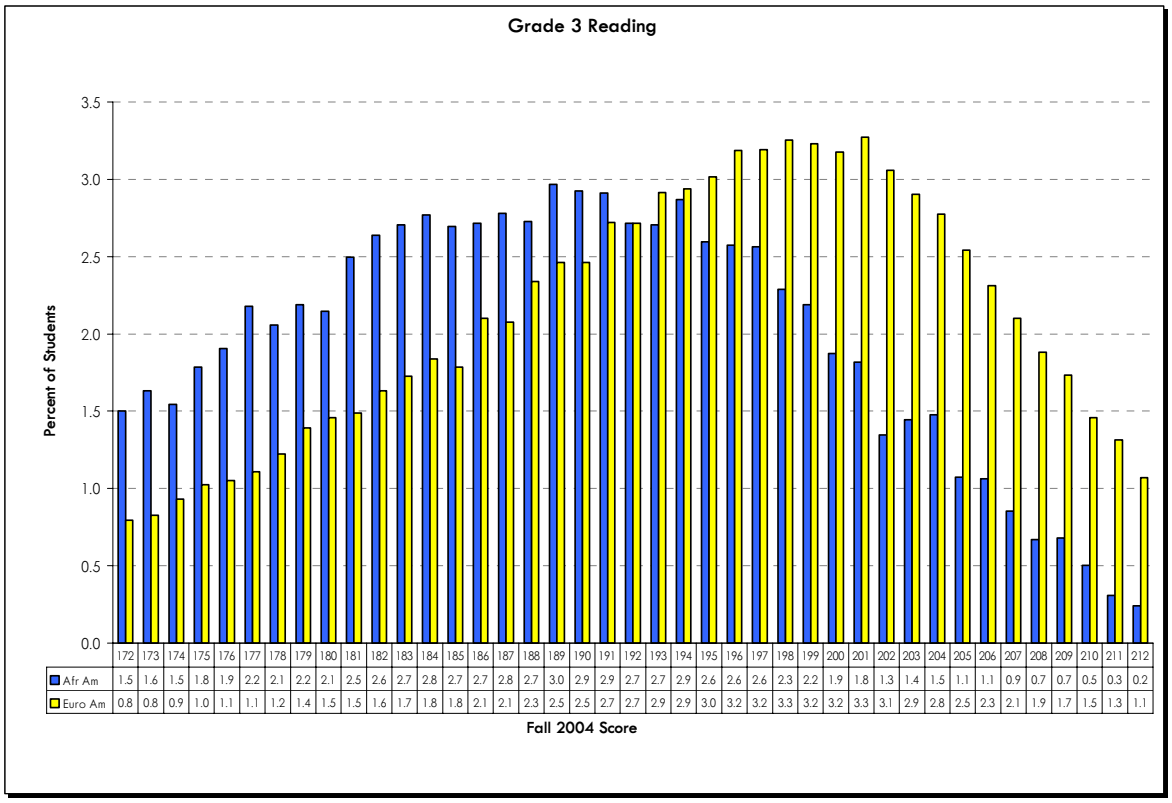


	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
Afr Am	1.3	1.5	1.5	1.4	1.8	1.8	1.9	2.1	2.2	2.2	2.4	2.5	2.4	2.7	3.0	2.7	2.6	3.0	3.0	2.4	2.5	2.6	2.8	2.6	2.4	2.6	2.3	2.3	2.1	1.9	1.8	1.8	1.6	1.4	1.4	1.0	1.1	0.9	0.8	0.7	0.6
Euro Am	0.5	0.6	0.6	0.7	0.8	0.9	0.9	0.9	1.1	1.2	1.3	1.3	1.5	1.6	1.8	1.9	2.0	2.1	2.2	2.4	2.5	2.7	2.8	2.9	2.9	2.9	3.0	2.9	3.2	3.1	3.0	3.0	2.8	2.8	2.6	2.4	2.4	2.3	2.1	2.0	1.7

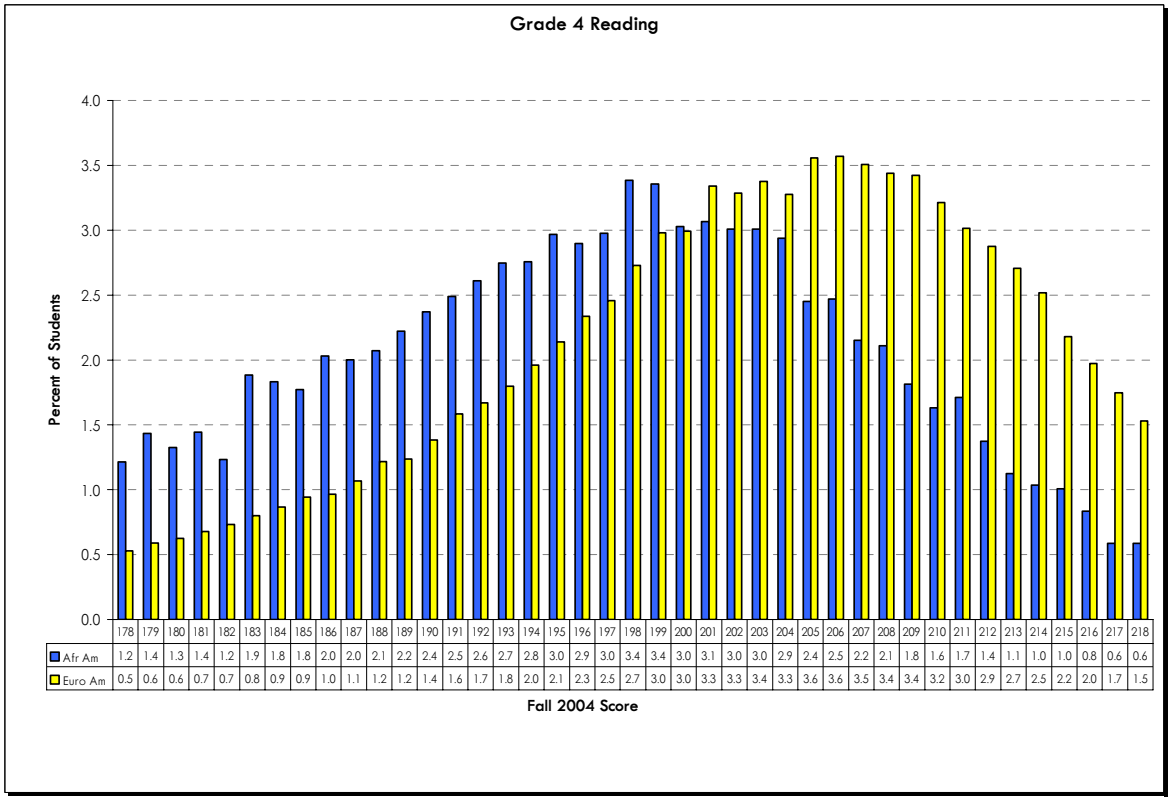


	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
Afr Am	1.5	1.5	1.9	1.8	1.9	1.9	1.9	2.1	2.5	2.4	2.3	2.7	2.8	2.8	3.1	3.2	2.8	2.7	2.7	2.6	3.0	2.5	2.3	2.2	2.3	2.2	2.1	1.7	1.5	1.6	1.4	1.2	1.2	1.0	1.0	0.9	0.8	0.8	0.7	0.5	0.5
Euro Am	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.4	1.4	1.6	1.6	1.8	1.9	2.0	2.1	2.1	2.4	2.5	2.7	2.7	2.8	2.9	2.8	2.9	2.9	2.9	2.9	2.8	2.8	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.1	1.8	1.9	1.6

Appendix F: Frequency Distribution for African-Americans by Score and Grade—Reading

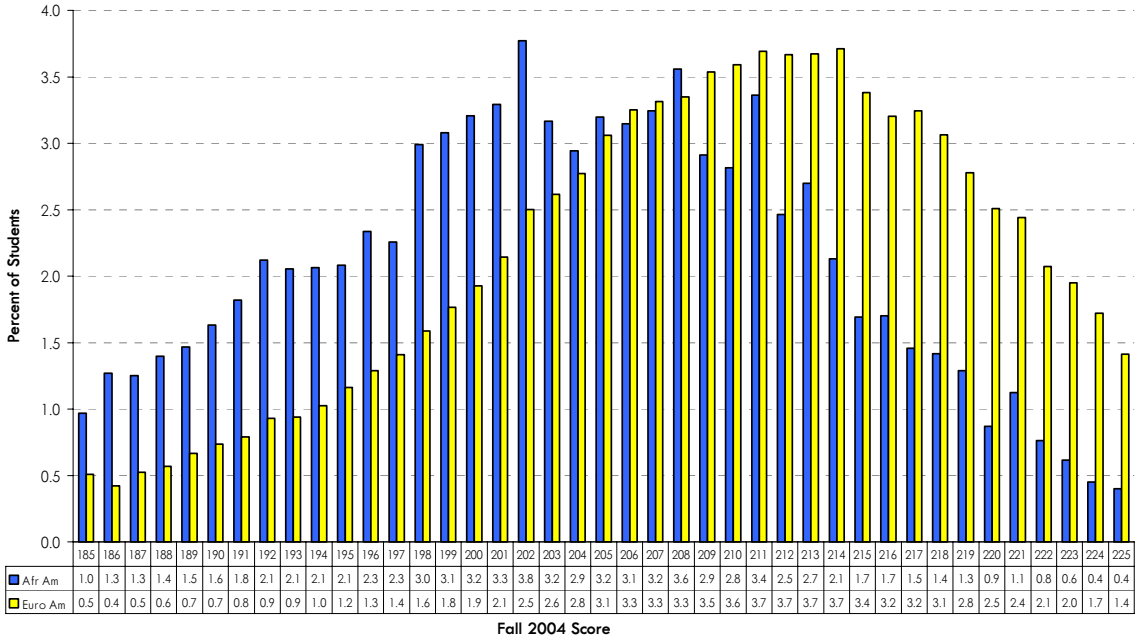


	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
Afr Am	1.5	1.6	1.5	1.8	1.9	2.2	2.1	2.2	2.1	2.5	2.6	2.7	2.8	2.7	2.7	2.8	2.7	3.0	2.9	2.9	2.7	2.7	2.9	2.6	2.6	2.6	2.3	2.2	1.9	1.8	1.3	1.4	1.5	1.1	1.1	0.9	0.7	0.7	0.5	0.3	0.2
Euro Am	0.8	0.8	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.5	1.6	1.7	1.8	1.8	2.1	2.1	2.3	2.5	2.5	2.7	2.7	2.9	2.9	3.0	3.2	3.2	3.3	3.2	3.2	3.3	3.1	2.9	2.8	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1



	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218
Afr Am	1.2	1.4	1.3	1.4	1.2	1.9	1.8	1.8	2.0	2.0	2.1	2.2	2.4	2.5	2.6	2.7	2.8	3.0	2.9	3.0	3.4	3.4	3.0	3.1	3.0	3.0	2.9	2.4	2.5	2.2	2.1	1.8	1.6	1.7	1.4	1.1	1.0	1.0	0.8	0.6	0.6
Euro Am	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.4	1.6	1.7	1.8	2.0	2.1	2.3	2.5	2.7	3.0	3.0	3.3	3.3	3.4	3.3	3.6	3.6	3.5	3.4	3.4	3.2	3.0	2.9	2.7	2.5	2.2	2.0	1.7	1.5

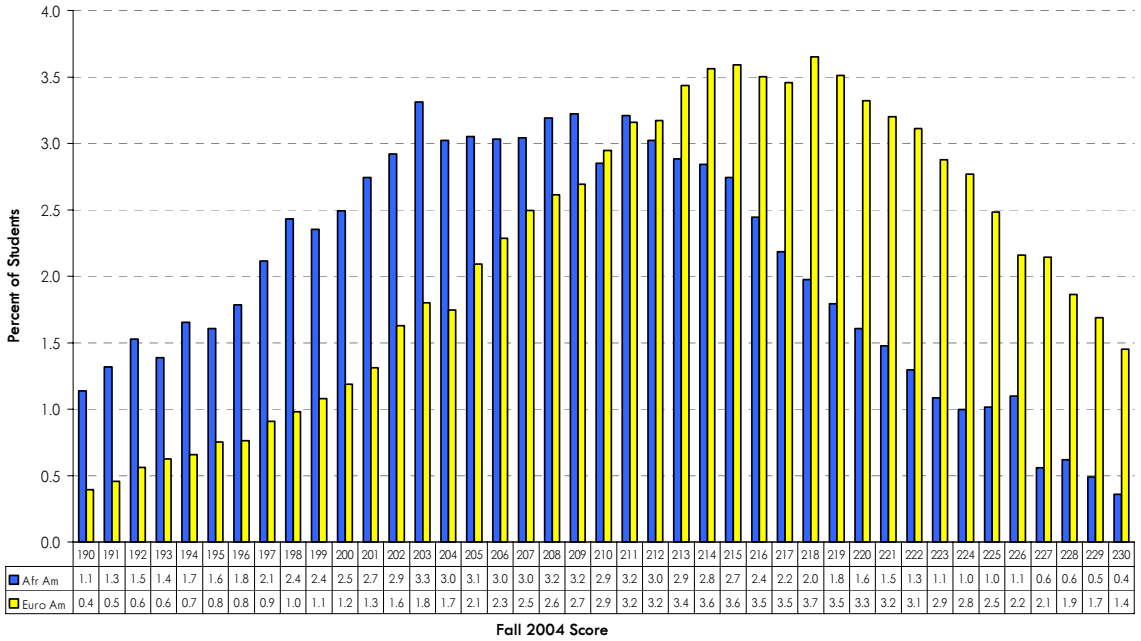
Grade 5 Reading



	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Afr Am	1.0	1.3	1.3	1.4	1.5	1.6	1.8	2.1	2.1	2.1	2.1	2.3	2.3	3.0	3.1	3.2	3.3	3.8	3.2	2.9	3.2	3.1	3.2	3.6	2.9	2.8	3.4	2.5	2.7	2.1	1.7	1.7	1.5	1.4	1.3	0.9	1.1	0.8	0.6	0.4	0.4
Euro Am	0.5	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.2	1.3	1.4	1.6	1.8	1.9	2.1	2.5	2.6	2.8	3.1	3.3	3.3	3.3	3.5	3.6	3.7	3.7	3.7	3.7	3.4	3.2	3.2	3.1	2.8	2.5	2.4	2.1	2.0	1.7	1.4

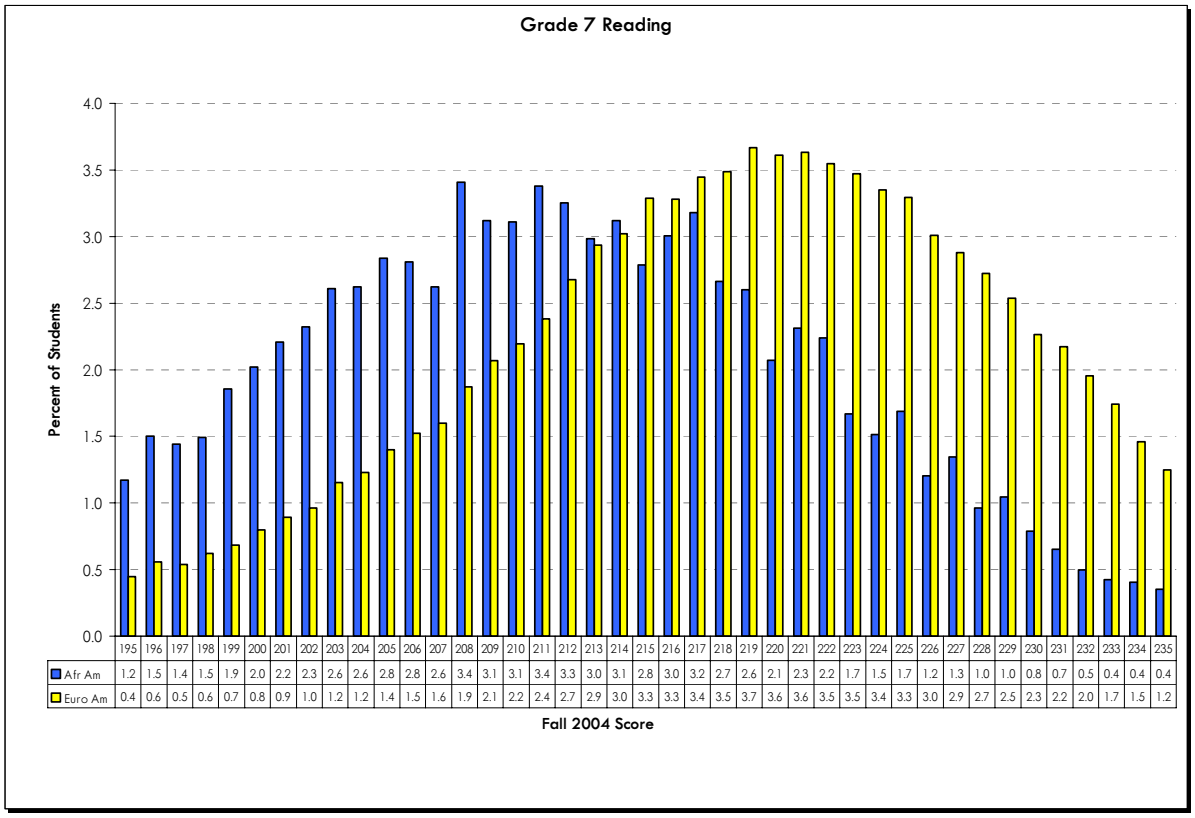
Fall 2004 Score

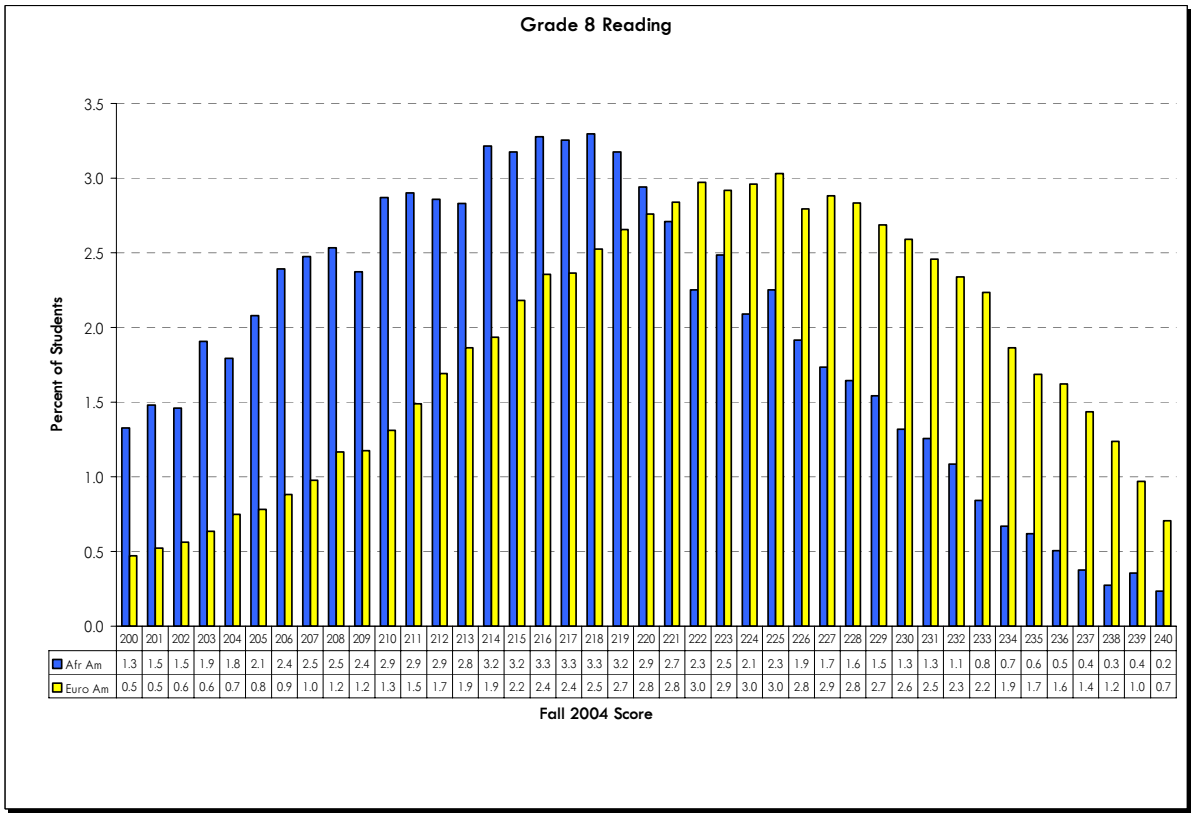
Grade 6 Reading



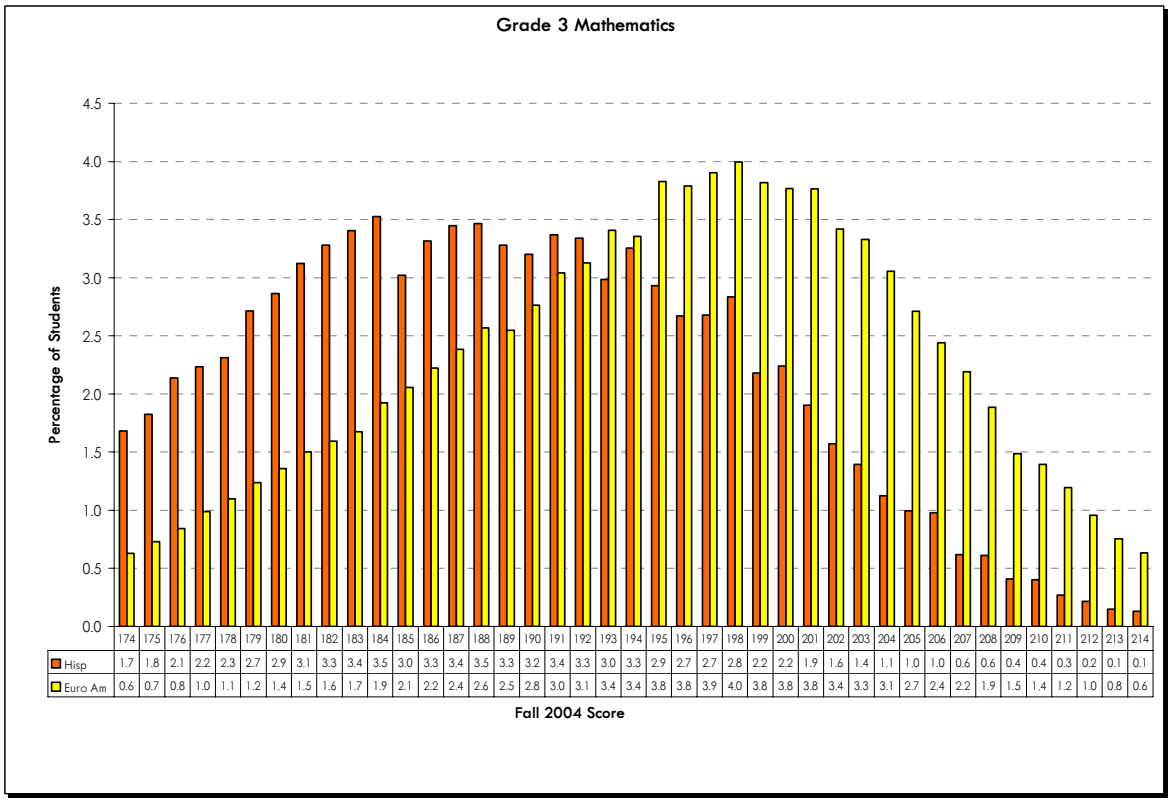
	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Afr Am	1.1	1.3	1.5	1.4	1.7	1.6	1.8	2.1	2.4	2.4	2.5	2.7	2.9	3.3	3.0	3.1	3.0	3.0	3.2	3.2	2.9	3.2	3.0	2.9	2.8	2.7	2.4	2.2	2.0	1.8	1.6	1.5	1.3	1.1	1.0	1.0	1.1	0.6	0.6	0.5	0.4
Euro Am	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.6	1.8	1.7	2.1	2.3	2.5	2.6	2.7	2.9	3.2	3.2	3.4	3.6	3.6	3.5	3.5	3.7	3.5	3.3	3.2	3.1	2.9	2.8	2.5	2.2	2.1	1.9	1.7	1.4

Fall 2004 Score

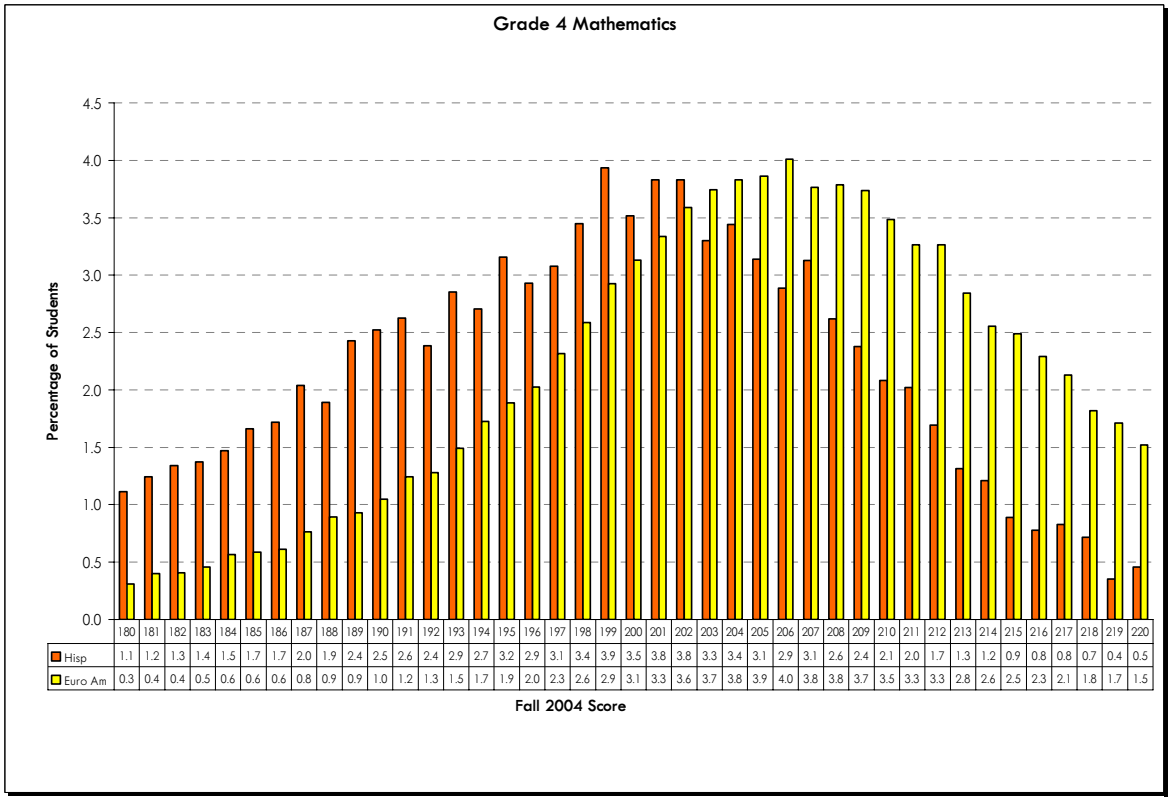

Grade 7 Reading
Percent of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235
Afr Am 1.2 1.5 1.4 1.5 1.9 2.0 2.2 2.3 2.6 2.6 2.8 2.8 2.6 3.4 3.1 3.1 3.4 3.3 3.0 3.1 2.8 3.0 3.2 2.7 2.6 2.1 2.3 2.2 1.7 1.5 1.7 1.2 1.3 1.0 1.0 0.8 0.7 0.5 0.4 0.4 0.4
Euro Am 0.4 0.6 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.2 1.4 1.5 1.6 1.9 2.1 2.2 2.4 2.7 2.9 3.0 3.3 3.3 3.4 3.5 3.7 3.6 3.6 3.5 3.5 3.4 3.3 3.0 2.9 2.7 2.5 2.3 2.2 2.0 1.7 1.5 1.2
Fall 2004 Score


Grade 8 Reading
Percent of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240
Afr Am 1.3 1.5 1.5 1.9 1.8 2.1 2.4 2.5 2.5 2.4 2.9 2.9 2.9 2.8 3.2 3.2 3.3 3.3 3.3 3.2 2.9 2.7 2.3 2.5 2.1 2.3 1.9 1.7 1.6 1.5 1.3 1.3 1.1 0.8 0.7 0.6 0.5 0.4 0.3 0.4 0.2
Euro Am 0.5 0.5 0.6 0.6 0.7 0.8 0.9 1.0 1.2 1.2 1.3 1.5 1.7 1.9 1.9 2.2 2.4 2.4 2.5 2.7 2.8 2.8 3.0 2.9 3.0 3.0 2.8 2.9 2.8 2.7 2.6 2.5 2.3 2.2 1.9 1.7 1.6 1.4 1.2 1.0 0.7
Fall 2004 Score

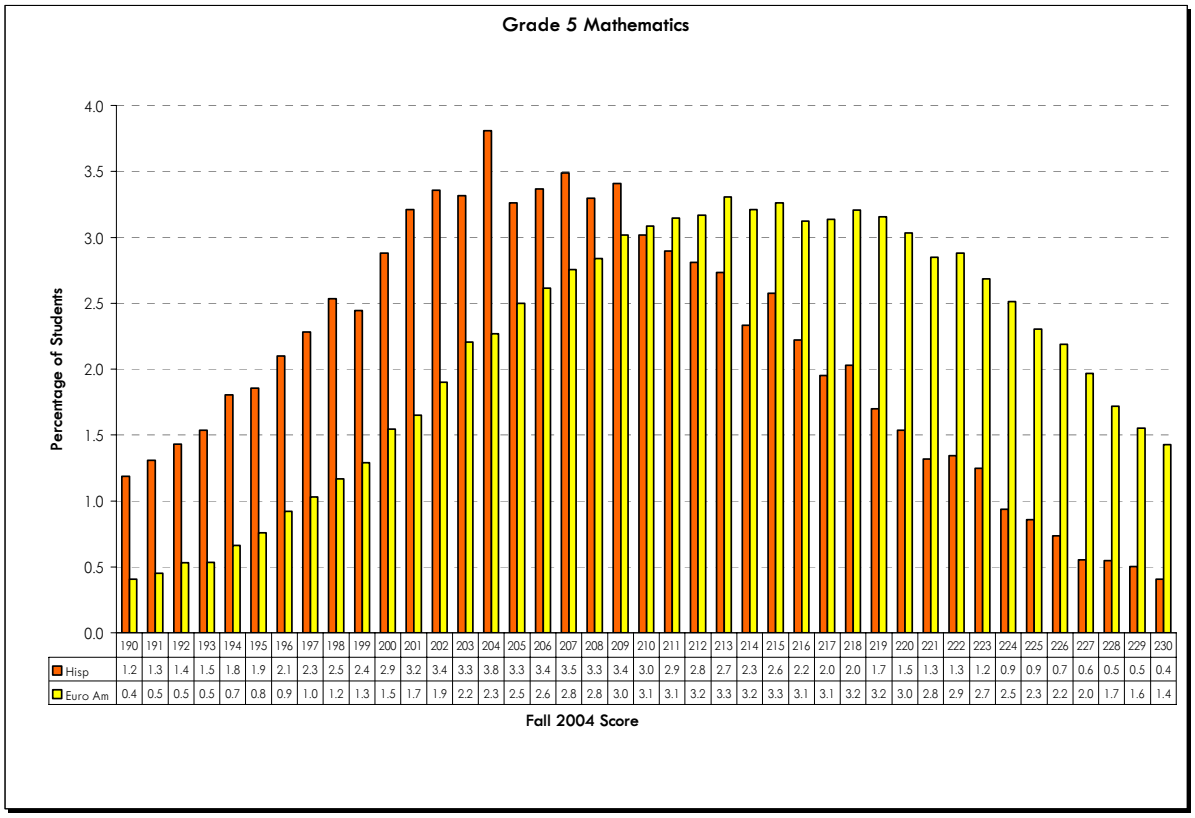
Appendix G: Frequency Distribution for Hispanics by Score and Grade—Mathematics

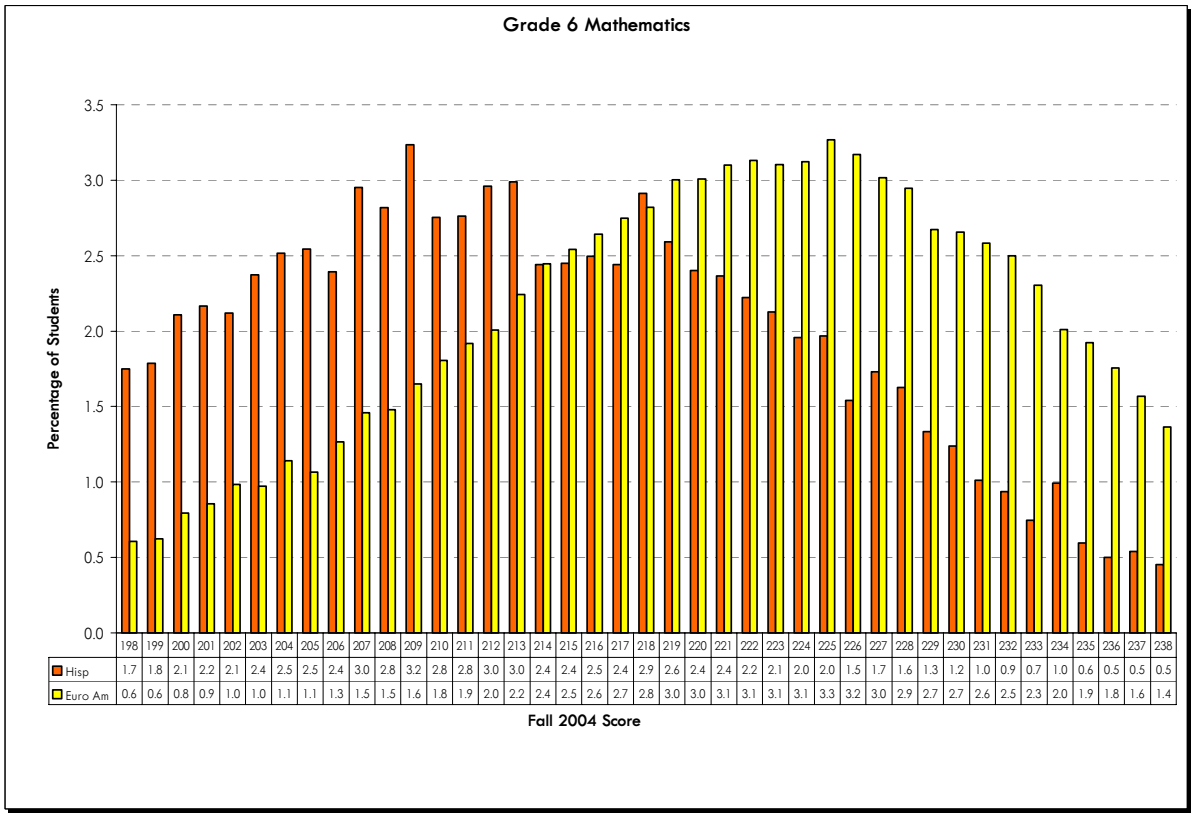


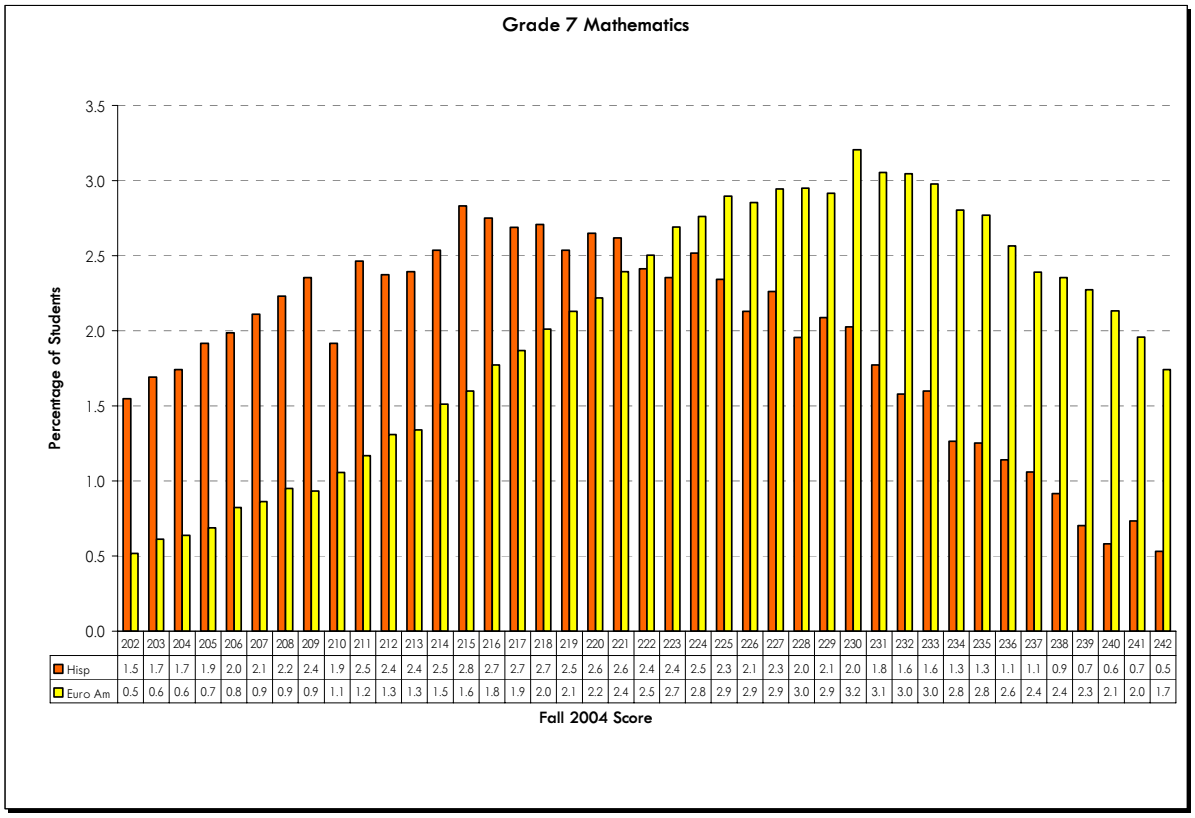
	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214
Hisp	1.7	1.8	2.1	2.2	2.3	2.7	2.9	3.1	3.3	3.4	3.5	3.0	3.3	3.4	3.5	3.3	3.2	3.4	3.3	3.0	3.3	2.9	2.7	2.7	2.8	2.2	2.2	1.9	1.6	1.4	1.1	1.0	1.0	0.6	0.6	0.4	0.4	0.3	0.2	0.1	0.1
Euro Am	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.5	2.8	3.0	3.1	3.4	3.4	3.8	3.8	3.9	4.0	3.8	3.8	3.8	3.4	3.3	3.1	2.7	2.4	2.2	1.9	1.5	1.4	1.2	1.0	0.8	0.6

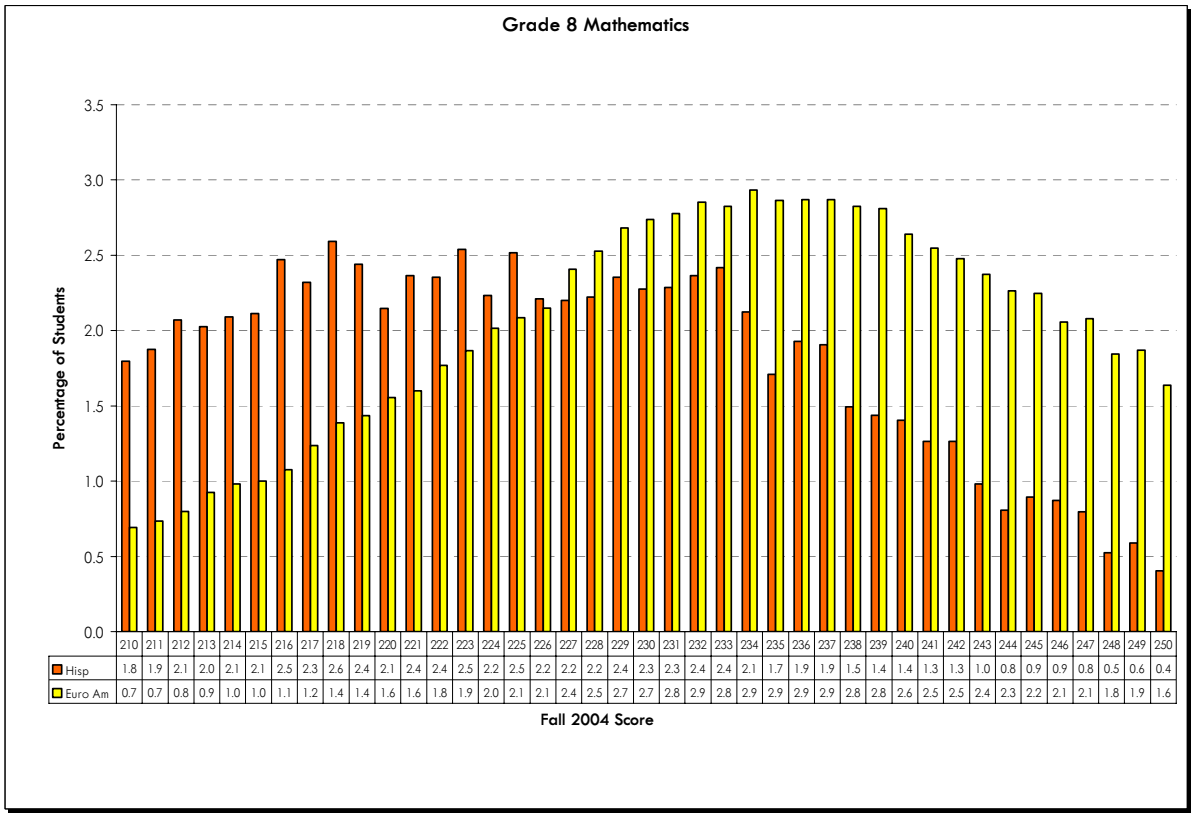


	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Hisp	1.1	1.2	1.3	1.4	1.5	1.7	1.7	2.0	1.9	2.4	2.5	2.6	2.4	2.9	2.7	3.2	2.9	3.1	3.4	3.9	3.5	3.8	3.8	3.3	3.4	3.1	2.9	3.1	2.6	2.4	2.1	2.0	1.7	1.3	1.2	0.9	0.8	0.8	0.7	0.4	0.5
Euro Am	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.8	0.9	0.9	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.3	2.6	2.9	3.1	3.3	3.6	3.7	3.8	3.9	4.0	3.8	3.8	3.7	3.5	3.3	3.3	2.8	2.6	2.5	2.3	2.1	1.8	1.7	1.5

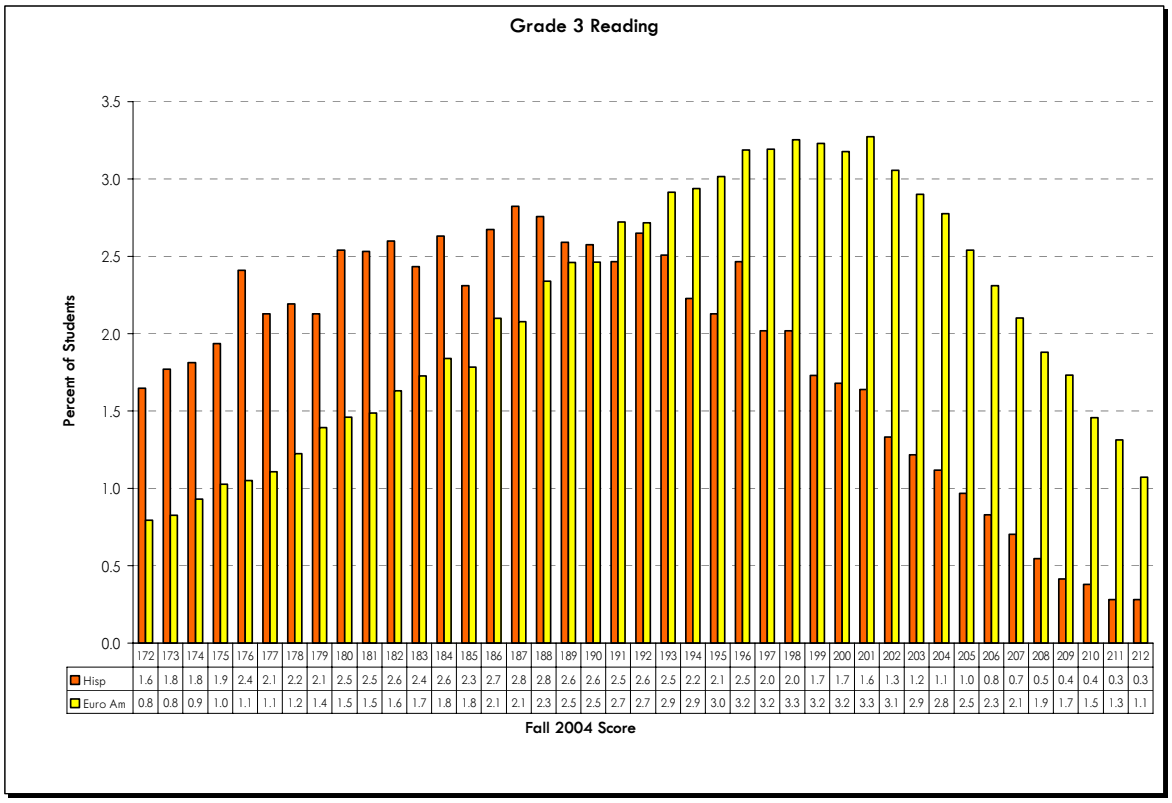

Grade 5 Mathematics
Percentage of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230
Hisp 1.2 1.3 1.4 1.5 1.8 1.9 2.1 2.3 2.5 2.4 2.9 3.2 3.4 3.3 3.8 3.3 3.4 3.5 3.3 3.4 3.0 2.9 2.8 2.7 2.3 2.6 2.2 2.0 2.0 1.7 1.5 1.3 1.3 1.2 0.9 0.9 0.7 0.6 0.5 0.5 0.4
Euro Am 0.4 0.5 0.5 0.5 0.7 0.8 0.9 1.0 1.2 1.3 1.5 1.7 1.9 2.2 2.3 2.5 2.6 2.8 2.8 3.0 3.1 3.1 3.2 3.3 3.2 3.3 3.1 3.1 3.2 3.2 3.0 2.8 2.9 2.7 2.5 2.3 2.2 2.0 1.7 1.6 1.4
Fall 2004 Score


Grade 6 Mathematics
Percentage of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238
Hisp 1.7 1.8 2.1 2.2 2.1 2.4 2.5 2.5 2.4 3.0 2.8 3.2 2.8 2.8 3.0 3.0 2.4 2.4 2.5 2.4 2.9 2.6 2.4 2.4 2.2 2.1 2.0 2.0 1.5 1.7 1.6 1.3 1.2 1.0 0.9 0.7 1.0 0.6 0.5 0.5 0.5
Euro Am 0.6 0.6 0.8 0.9 1.0 1.0 1.1 1.1 1.3 1.5 1.5 1.6 1.8 1.9 2.0 2.2 2.4 2.5 2.6 2.7 2.8 3.0 3.0 3.1 3.1 3.1 3.1 3.3 3.2 3.0 2.9 2.7 2.7 2.6 2.5 2.3 2.0 1.9 1.8 1.6 1.4
Fall 2004 Score

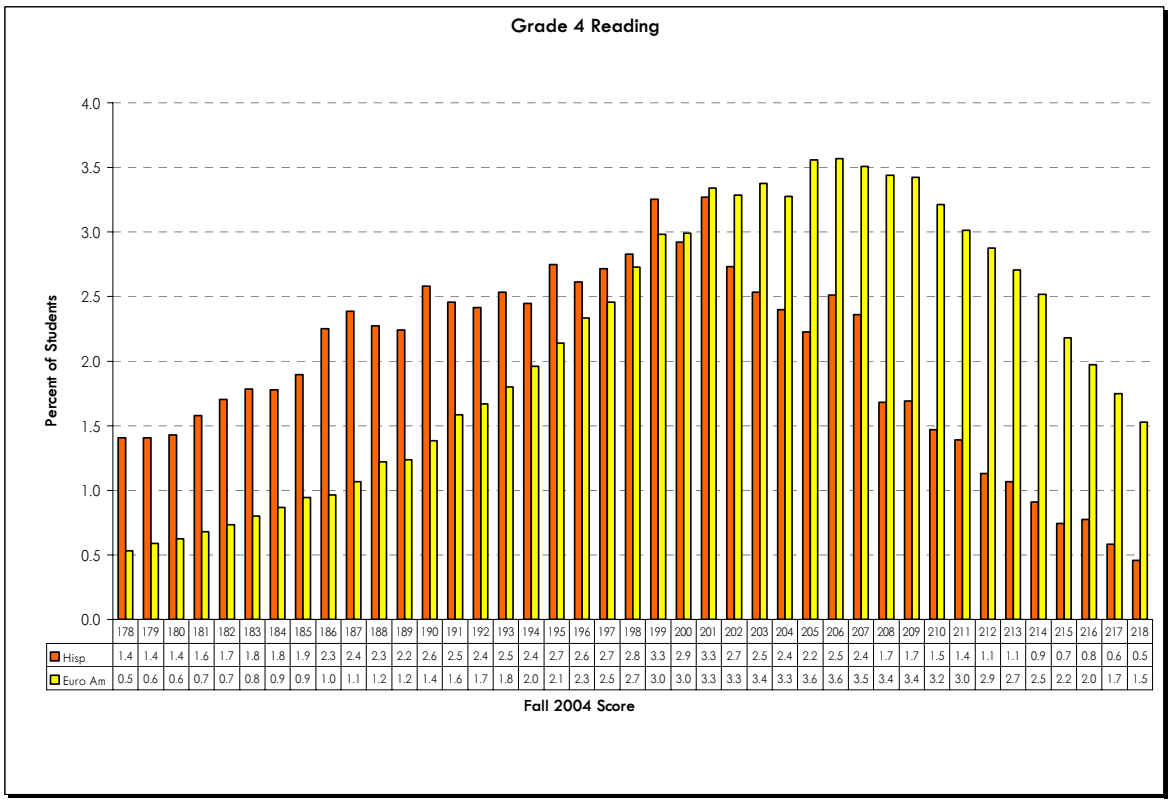

Grade 7 Mathematics
Percentage of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242
Hisp 1.5 1.7 1.7 1.9 2.0 2.1 2.2 2.4 1.9 2.5 2.4 2.4 2.5 2.8 2.7 2.7 2.7 2.5 2.6 2.6 2.4 2.4 2.5 2.3 2.1 2.3 2.0 2.1 2.0 1.8 1.6 1.6 1.3 1.3 1.1 1.1 0.9 0.7 0.6 0.7 0.5
Euro Am 0.5 0.6 0.6 0.7 0.8 0.9 0.9 0.9 1.1 1.2 1.3 1.3 1.5 1.6 1.8 1.9 2.0 2.1 2.2 2.4 2.5 2.7 2.8 2.9 2.9 2.9 3.0 2.9 3.2 3.1 3.0 3.0 2.8 2.8 2.6 2.4 2.4 2.3 2.1 2.0 1.7
Fall 2004 Score


Grade 8 Mathematics
Percentage of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250
Hisp 1.8 1.9 2.1 2.0 2.1 2.1 2.5 2.3 2.6 2.4 2.1 2.4 2.4 2.5 2.2 2.5 2.2 2.2 2.2 2.4 2.3 2.3 2.4 2.4 2.1 1.7 1.9 1.9 1.5 1.4 1.4 1.3 1.3 1.0 0.8 0.9 0.9 0.8 0.5 0.6 0.4
Euro Am 0.7 0.7 0.8 0.9 1.0 1.0 1.1 1.2 1.4 1.4 1.6 1.6 1.8 1.9 2.0 2.1 2.1 2.4 2.5 2.7 2.7 2.8 2.9 2.8 2.9 2.9 2.9 2.9 2.8 2.8 2.6 2.5 2.5 2.4 2.3 2.2 2.1 2.1 1.8 1.9 1.6
Fall 2004 Score

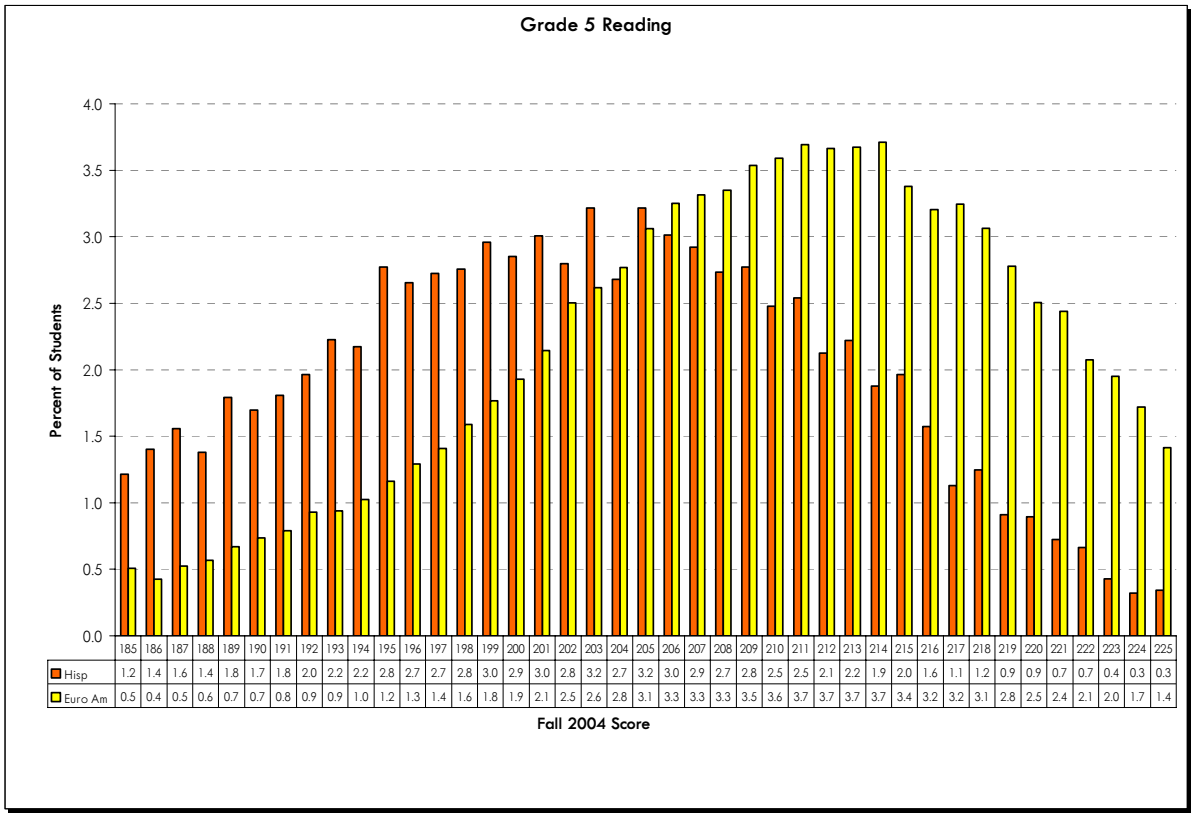
Appendix H: Frequency Distribution for Hispanics by Score and Grade—Reading

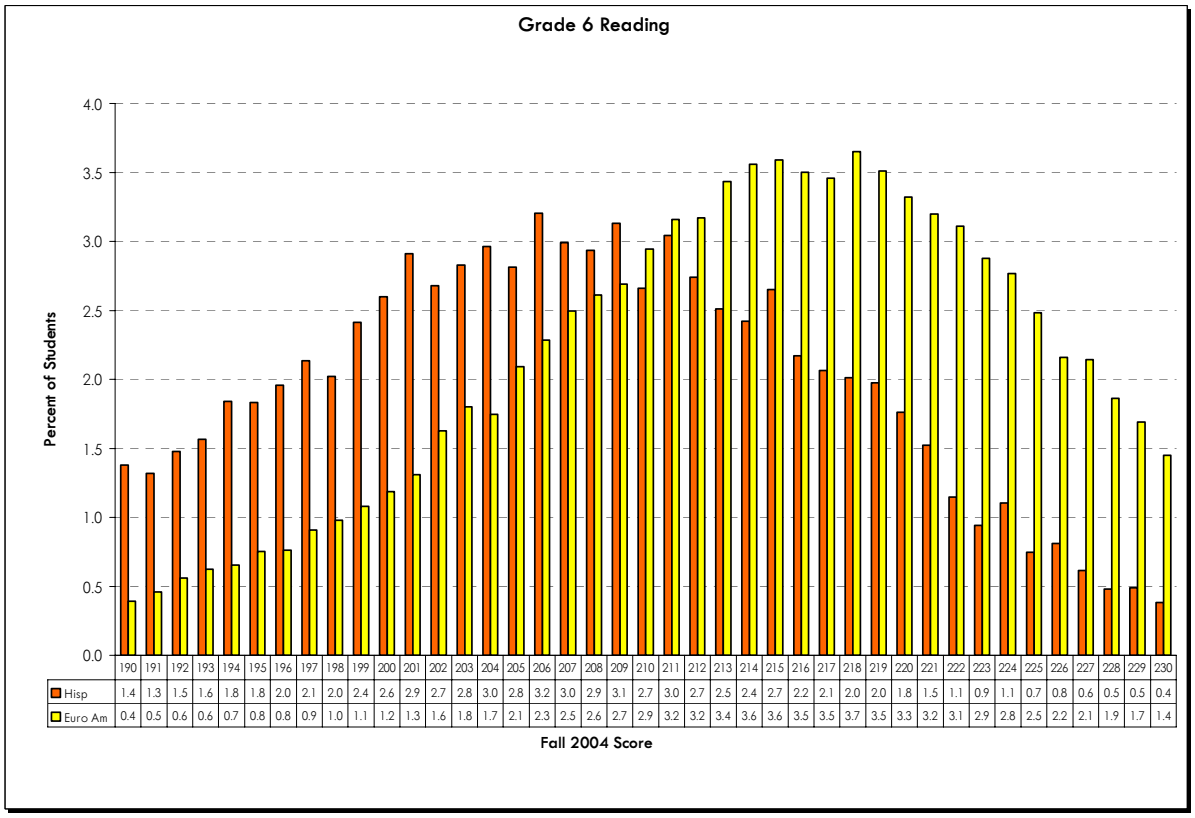


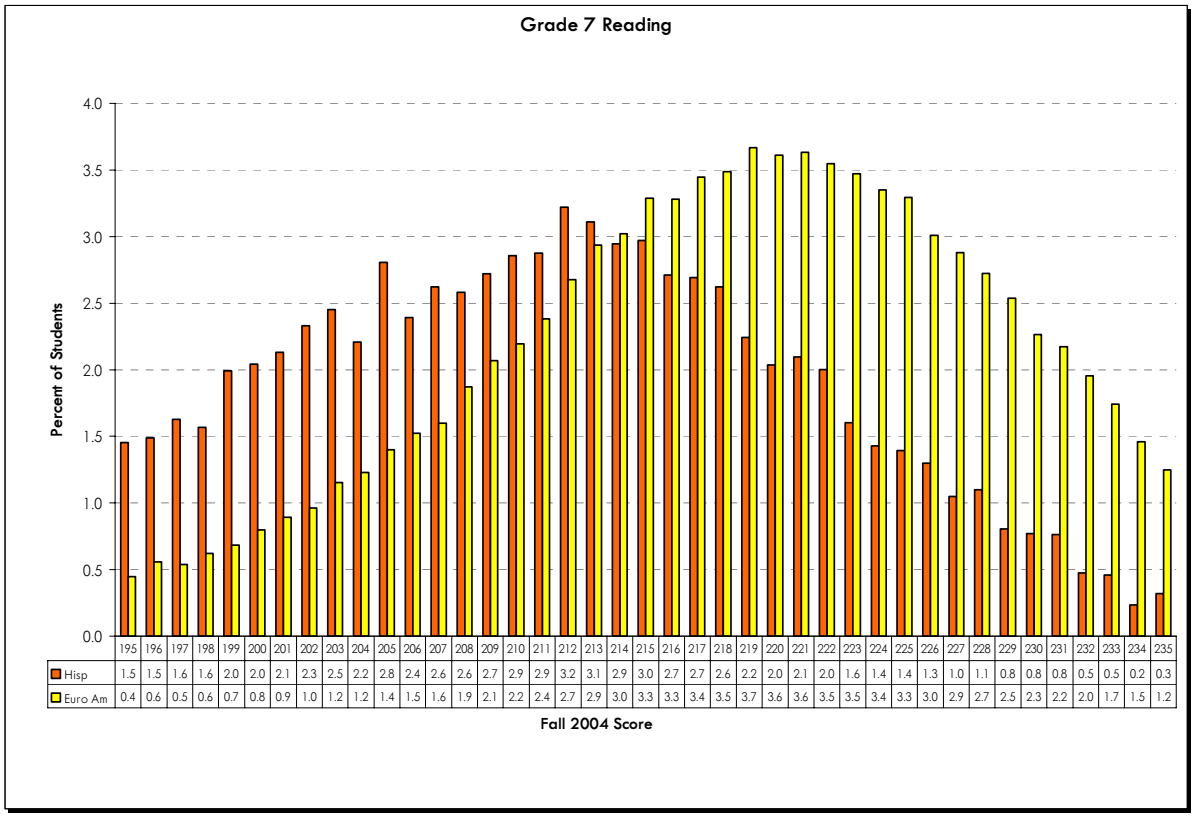
	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
Hisp	1.6	1.8	1.8	1.9	2.4	2.1	2.2	2.1	2.5	2.5	2.6	2.4	2.6	2.3	2.7	2.8	2.8	2.6	2.6	2.5	2.6	2.5	2.2	2.1	2.5	2.0	2.0	1.7	1.7	1.6	1.3	1.2	1.1	1.0	0.8	0.7	0.5	0.4	0.4	0.3	0.3
Euro Am	0.8	0.8	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.5	1.6	1.7	1.8	1.8	2.1	2.1	2.3	2.5	2.5	2.7	2.7	2.9	2.9	3.0	3.2	3.2	3.3	3.2	3.2	3.3	3.1	2.9	2.8	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1

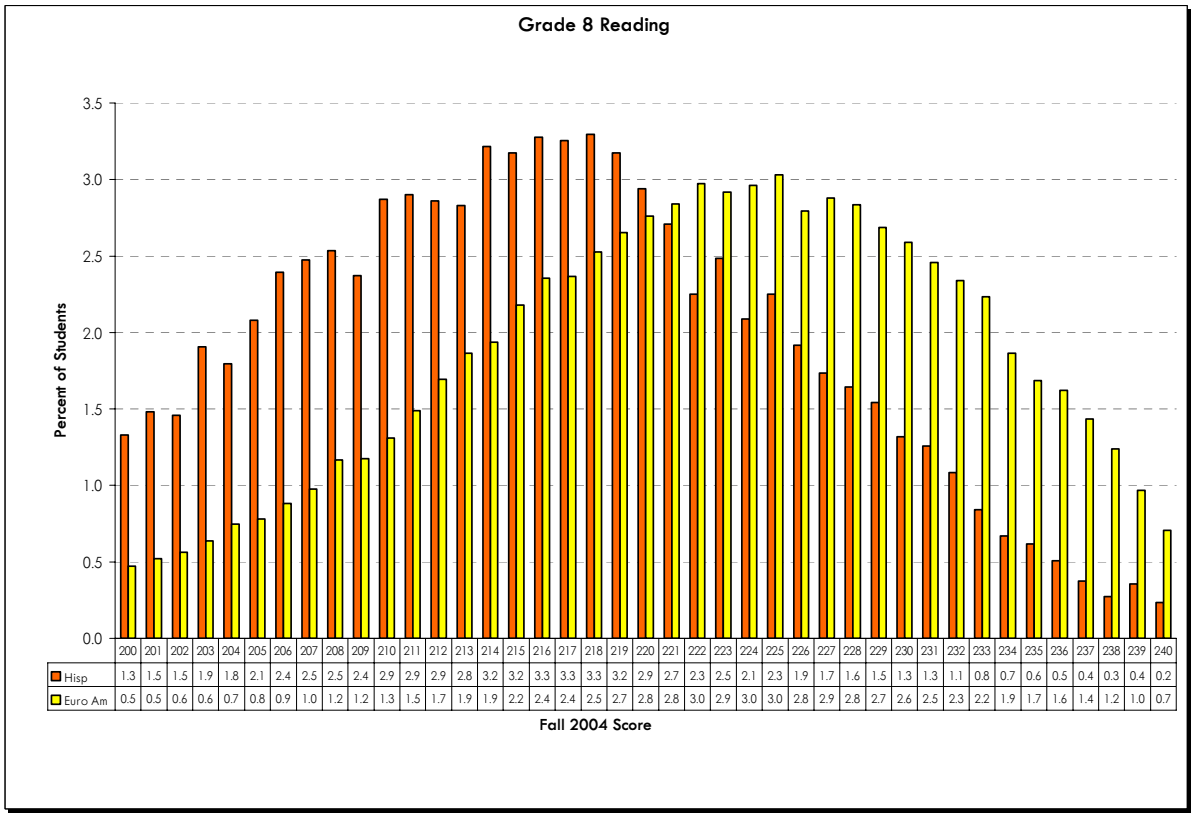


	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218
Hisp	1.4	1.4	1.4	1.6	1.7	1.8	1.8	1.9	2.3	2.4	2.3	2.2	2.6	2.5	2.4	2.5	2.4	2.7	2.6	2.7	2.8	3.3	2.9	3.3	2.7	2.5	2.4	2.2	2.5	2.4	1.7	1.7	1.5	1.4	1.1	1.1	0.9	0.7	0.8	0.6	0.5
Euro Am	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.4	1.6	1.7	1.8	2.0	2.1	2.3	2.5	2.7	3.0	3.0	3.3	3.3	3.4	3.3	3.6	3.6	3.5	3.4	3.4	3.2	3.0	2.9	2.7	2.5	2.2	2.0	1.7	1.5

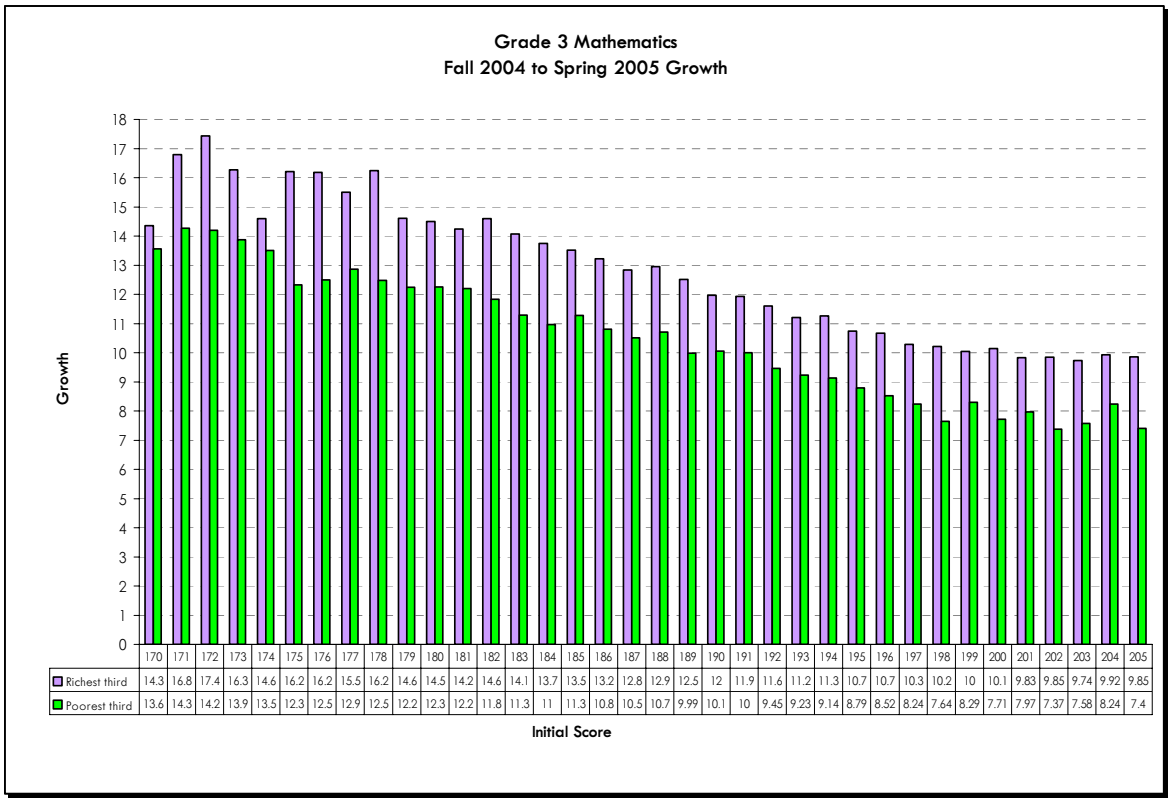

Grade 5 Reading
Percent of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225
Hisp 1.2 1.4 1.6 1.4 1.8 1.7 1.8 2.0 2.2 2.2 2.8 2.7 2.7 2.8 3.0 2.9 3.0 2.8 3.2 2.7 3.2 3.0 2.9 2.7 2.8 2.5 2.5 2.1 2.2 1.9 2.0 1.6 1.1 1.2 0.9 0.9 0.7 0.7 0.4 0.3 0.3
Euro Am 0.5 0.4 0.5 0.6 0.7 0.7 0.8 0.9 0.9 1.0 1.2 1.3 1.4 1.6 1.8 1.9 2.1 2.5 2.6 2.8 3.1 3.3 3.3 3.3 3.5 3.6 3.7 3.7 3.7 3.7 3.4 3.2 3.2 3.1 2.8 2.5 2.4 2.1 2.0 1.7 1.4
Fall 2004 Score


Grade 6 Reading
Percent of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230
Hisp 1.4 1.3 1.5 1.6 1.8 1.8 2.0 2.1 2.0 2.4 2.6 2.9 2.7 2.8 3.0 2.8 3.2 3.0 2.9 3.1 2.7 3.0 2.7 2.5 2.4 2.7 2.2 2.1 2.0 2.0 1.8 1.5 1.1 0.9 1.1 0.7 0.8 0.6 0.5 0.5 0.4
Euro Am 0.4 0.5 0.6 0.6 0.7 0.8 0.8 0.9 1.0 1.1 1.2 1.3 1.6 1.8 1.7 2.1 2.3 2.5 2.6 2.7 2.9 3.2 3.2 3.4 3.6 3.6 3.5 3.5 3.7 3.5 3.3 3.2 3.1 2.9 2.8 2.5 2.2 2.1 1.9 1.7 1.4
Fall 2004 Score

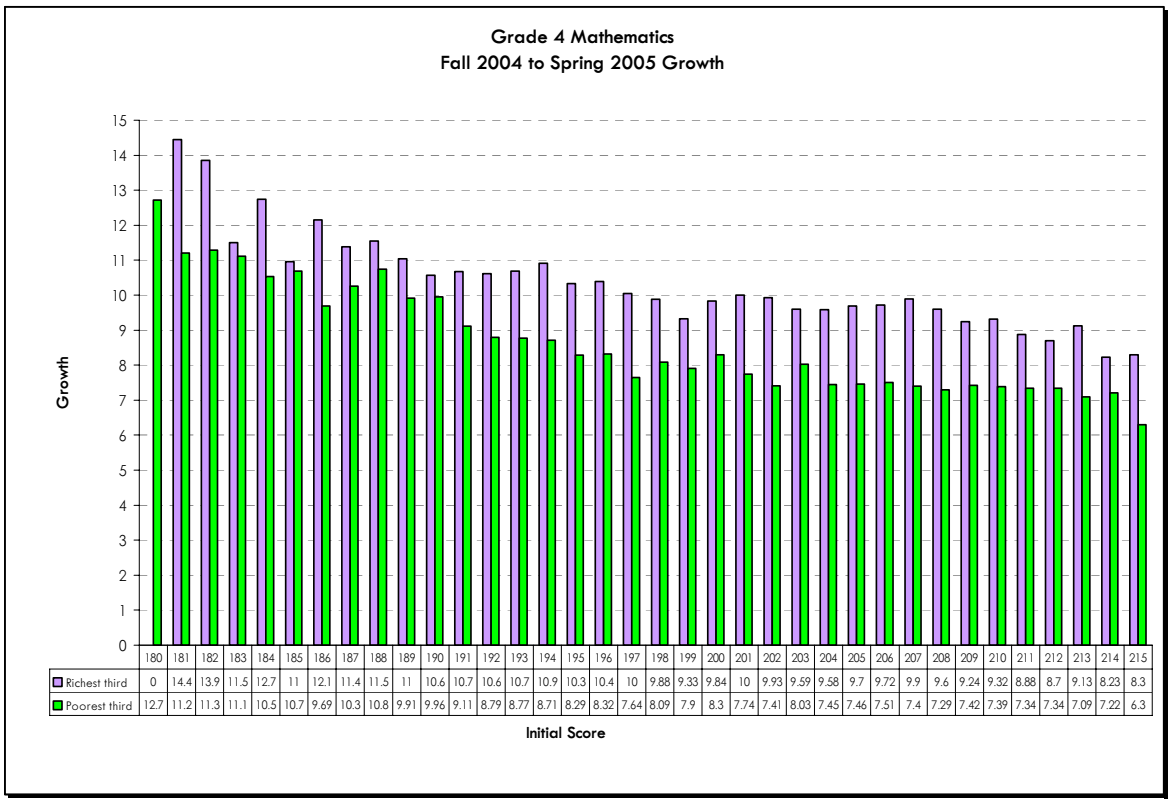

Grade 7 Reading
Percent of Students
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235
Hisp 1.5 1.5 1.6 1.6 2.0 2.0 2.1 2.3 2.5 2.2 2.8 2.4 2.6 2.6 2.7 2.9 2.9 3.2 3.1 2.9 3.0 2.7 2.7 2.6 2.2 2.0 2.1 2.0 1.6 1.4 1.4 1.3 1.0 1.1 0.8 0.8 0.8 0.5 0.5 0.2 0.3
Euro Am 0.4 0.6 0.5 0.6 0.7 0.8 0.9 1.0 1.2 1.2 1.4 1.5 1.6 1.9 2.1 2.2 2.4 2.7 2.9 3.0 3.3 3.3 3.4 3.5 3.7 3.6 3.6 3.5 3.5 3.4 3.3 3.0 2.9 2.7 2.5 2.3 2.2 2.0 1.7 1.5 1.2
Fall 2004 Score


Grade 8 Reading
Percent of Students
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240
Hisp 1.3 1.5 1.5 1.9 1.8 2.1 2.4 2.5 2.5 2.4 2.9 2.9 2.9 2.8 3.2 3.2 3.3 3.3 3.3 3.2 2.9 2.7 2.3 2.5 2.1 2.3 1.9 1.7 1.6 1.5 1.3 1.3 1.1 0.8 0.7 0.6 0.5 0.4 0.3 0.4 0.2
Euro Am 0.5 0.5 0.6 0.6 0.7 0.8 0.9 1.0 1.2 1.2 1.3 1.5 1.7 1.9 1.9 2.2 2.4 2.4 2.5 2.7 2.8 2.8 3.0 2.9 3.0 3.0 2.8 2.9 2.8 2.7 2.6 2.5 2.3 2.2 1.9 1.7 1.6 1.4 1.2 1.0 0.7
Fall 2004 Score

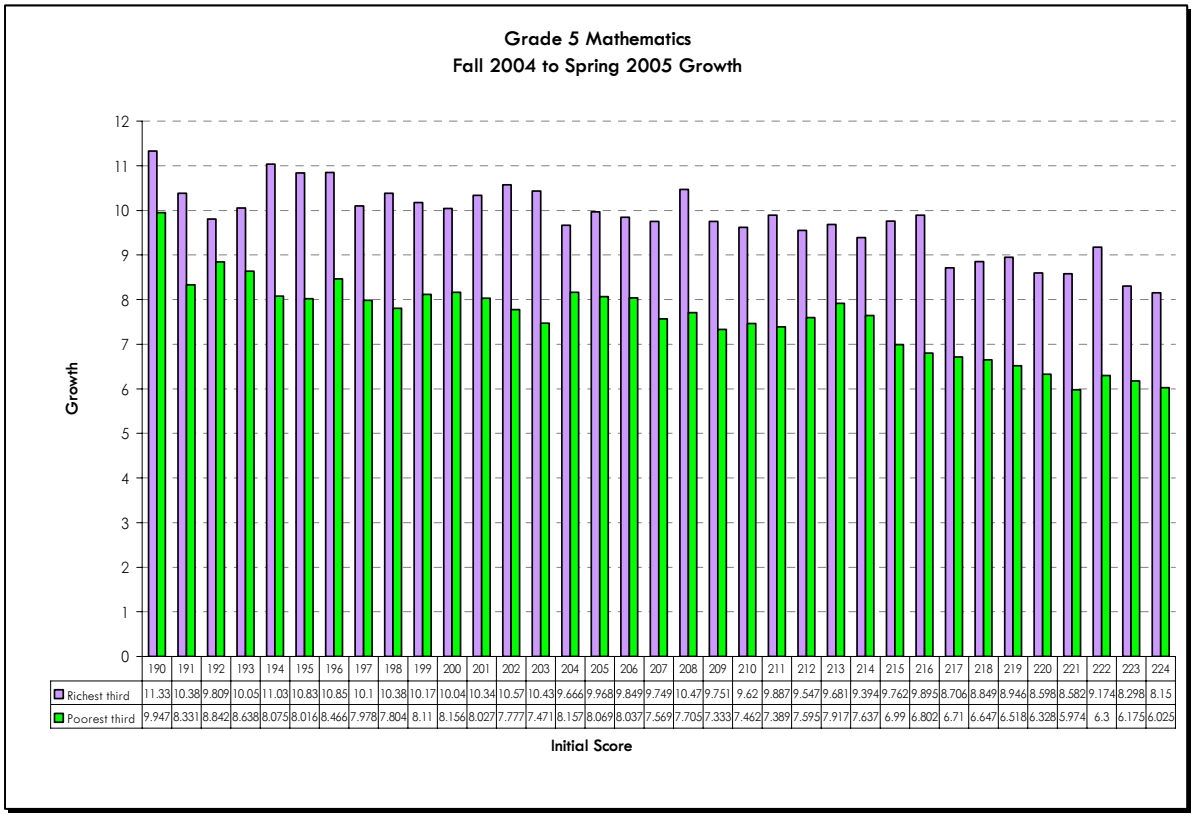
Appendix I: Fall 2004 to Spring 2005 Growth by Poverty Category—Mathematics



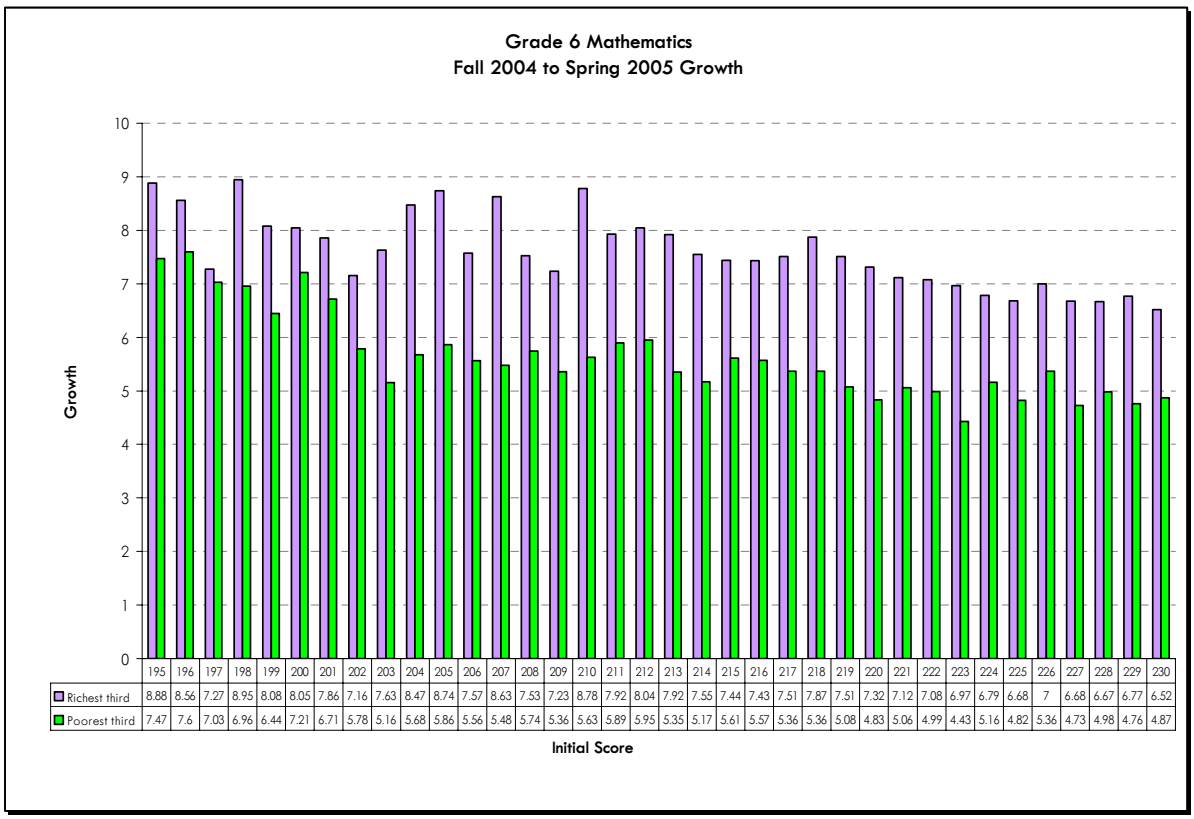
	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Richest third	14.3	16.8	17.4	16.3	14.6	16.2	16.2	15.5	16.2	14.6	14.5	14.2	14.6	14.1	13.7	13.5	13.2	12.8	12.9	12.5	12	11.9	11.6	11.2	11.3	10.7	10.7	10.3	10.2	10	10.1	9.83	9.85	9.74	9.92	9.85
Poorest third	13.6	14.3	14.2	13.9	13.5	12.3	12.5	12.9	12.5	12.2	12.3	12.2	11.8	11.3	11	11.3	10.8	10.5	10.7	9.99	10.1	10	9.45	9.23	9.14	8.79	8.52	8.24	7.64	8.29	7.71	7.97	7.37	7.58	8.24	7.4



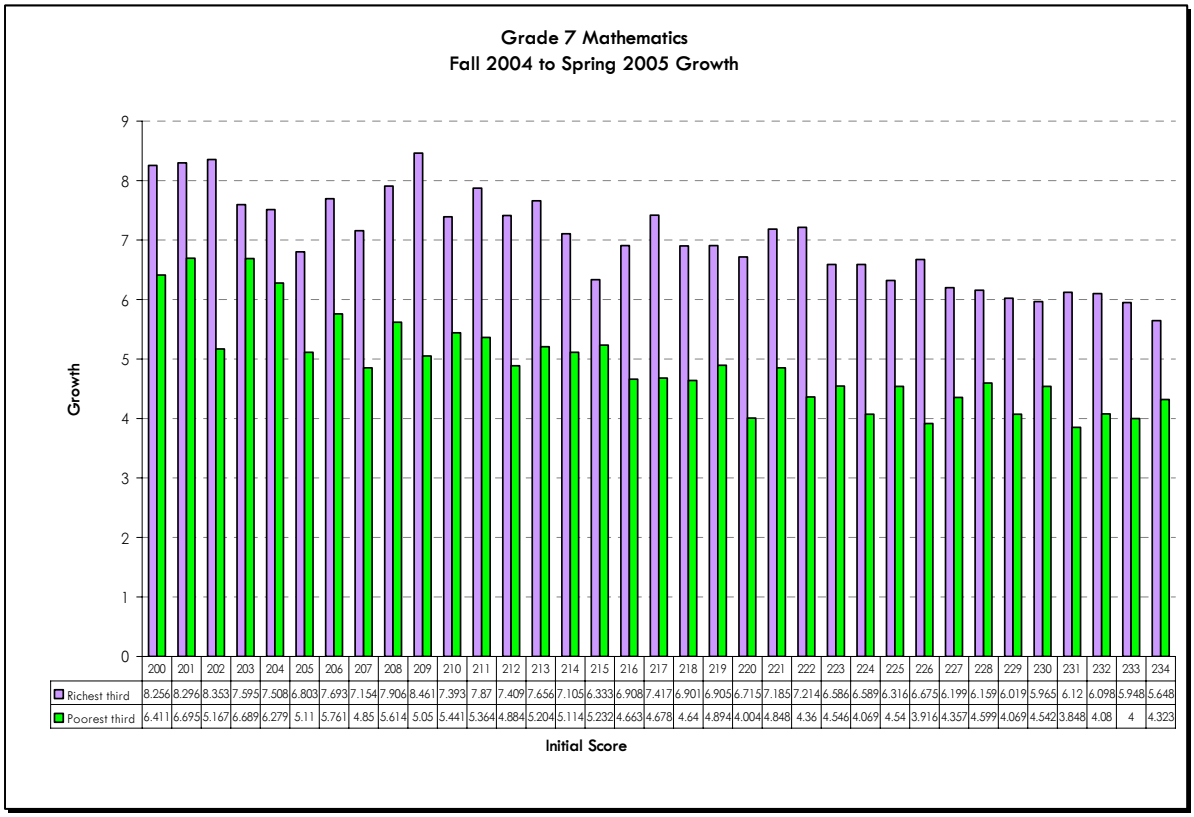
	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Richest third	0	14.4	13.9	11.5	12.7	11	12.1	11.4	11.5	11	10.6	10.7	10.6	10.7	10.9	10.3	10.4	10	9.88	9.33	9.84	10	9.93	9.59	9.58	9.7	9.72	9.9	9.6	9.24	9.32	8.88	8.7	9.13	8.23	8.3
Poorest third	12.7	11.2	11.3	11.1	10.5	10.7	9.69	10.3	10.8	9.91	9.96	9.11	8.79	8.77	8.71	8.29	8.32	7.64	8.09	7.9	8.3	7.74	7.41	8.03	7.45	7.46	7.51	7.4	7.29	7.42	7.39	7.34	7.34	7.09	7.22	6.3



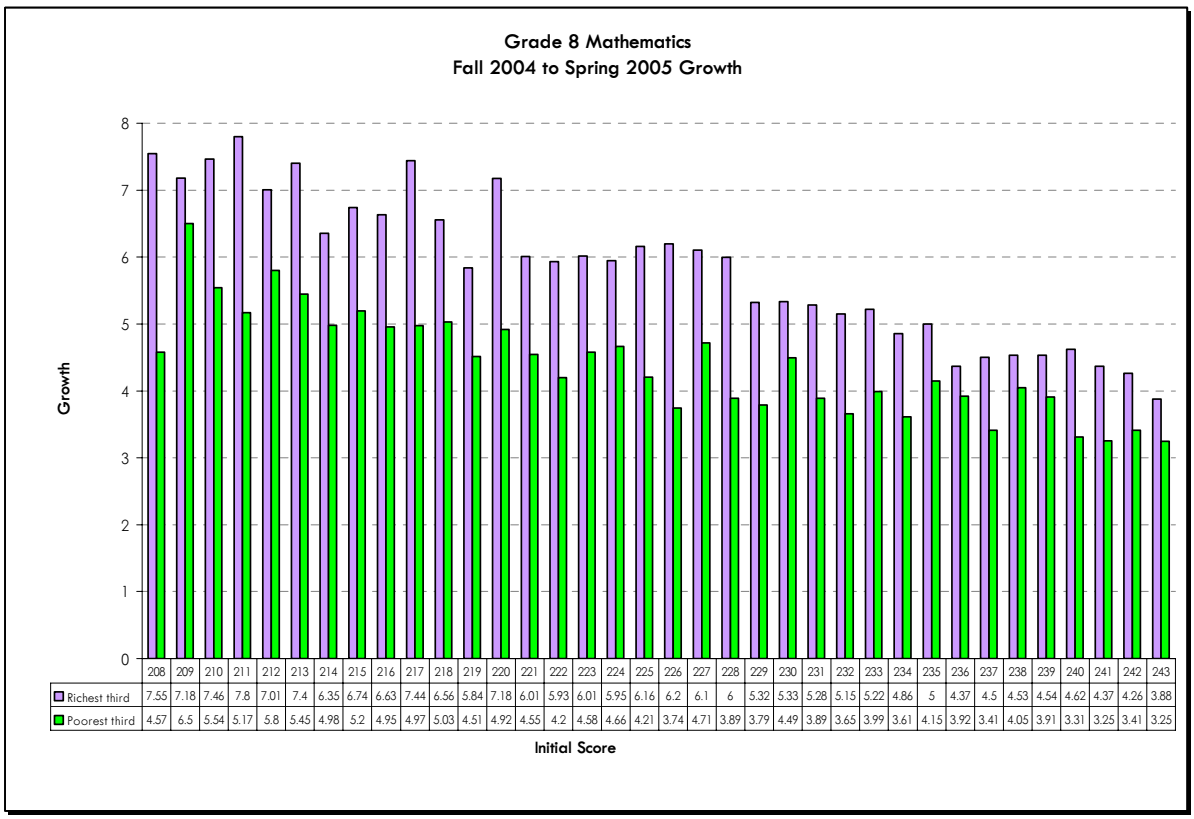
	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
Richest third	11.33	10.38	9.809	10.05	11.03	10.83	10.85	10.1	10.38	10.17	10.04	10.34	10.57	10.43	9.666	9.968	9.849	9.749	10.47	9.751	9.62	9.887	9.547	9.681	9.394	9.762	9.895	8.706	8.849	8.946	8.598	8.582	9.174	8.298	8.15
Poorest third	9.947	8.331	8.842	8.638	8.075	8.016	8.466	7.978	7.804	8.11	8.156	8.027	7.777	7.471	8.157	8.069	8.037	7.569	7.705	7.333	7.462	7.389	7.595	7.917	7.637	6.99	6.802	6.71	6.647	6.518	6.328	5.974	6.3	6.175	6.025



	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Richest third	8.88	8.56	7.27	8.95	8.08	8.05	7.86	7.16	7.63	8.47	8.74	7.57	8.63	7.53	7.23	8.78	7.92	8.04	7.92	7.55	7.44	7.43	7.51	7.87	7.51	7.32	7.12	7.08	6.97	6.79	6.68	7	6.68	6.67	6.77	6.52
Poorest third	7.47	7.6	7.03	6.96	6.44	7.21	6.71	5.78	5.16	5.68	5.86	5.56	5.48	5.74	5.36	5.63	5.89	5.95	5.35	5.17	5.61	5.57	5.36	5.36	5.08	4.83	5.06	4.99	4.43	5.16	4.82	5.36	4.73	4.98	4.76	4.87

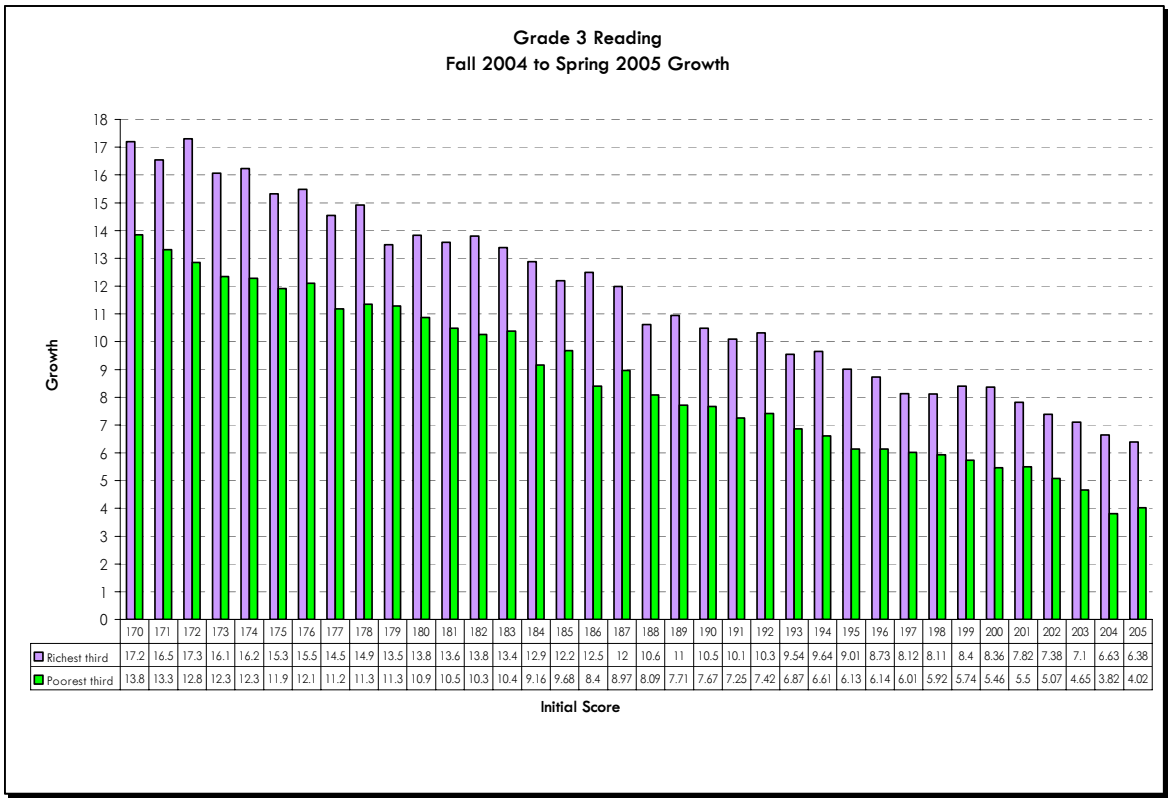


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
Richest third	8.256	8.296	8.353	7.595	7.508	6.803	7.693	7.154	7.906	8.461	7.393	7.87	7.409	7.656	7.105	6.333	6.908	7.417	6.901	6.905	6.715	7.185	7.214	6.586	6.589	6.316	6.675	6.199	6.159	6.019	5.965	6.12	6.098	5.948	5.648
Poorest third	6.411	6.695	5.167	6.689	6.279	5.11	5.761	4.85	5.614	5.05	5.441	5.364	4.884	5.204	5.114	5.232	4.663	4.678	4.64	4.894	4.004	4.848	4.36	4.546	4.069	4.54	3.916	4.357	4.599	4.069	4.542	3.848	4.08	4	4.323

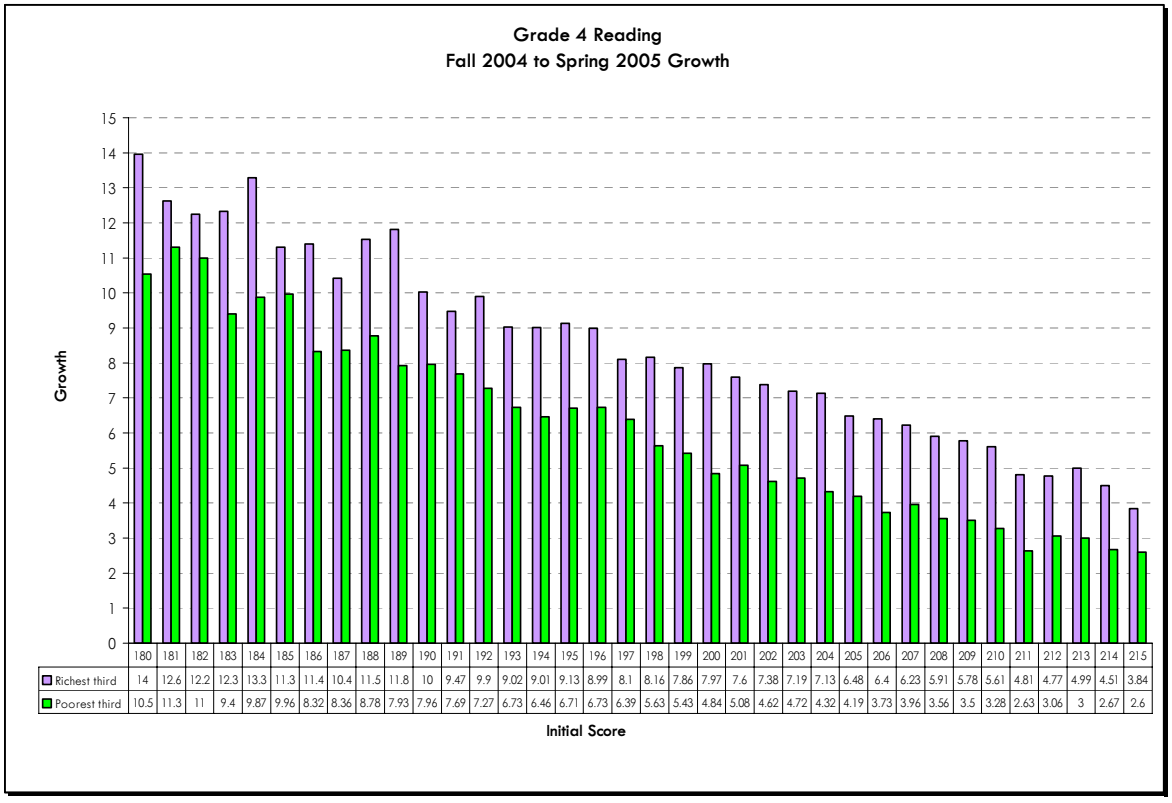


	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243
Richest third	7.55	7.18	7.46	7.8	7.01	7.4	6.35	6.74	6.63	7.44	6.56	5.84	7.18	6.01	5.93	6.01	5.95	6.16	6.2	6.1	6	5.32	5.33	5.28	5.15	5.22	4.86	5	4.37	4.5	4.53	4.54	4.62	4.37	4.26	3.88
Poorest third	4.57	6.5	5.54	5.17	5.8	5.45	4.98	5.2	4.95	4.97	5.03	4.51	4.92	4.55	4.2	4.58	4.66	4.21	3.74	4.71	3.89	3.79	4.49	3.89	3.65	3.99	3.61	4.15	3.92	3.41	4.05	3.91	3.31	3.25	3.41	3.25

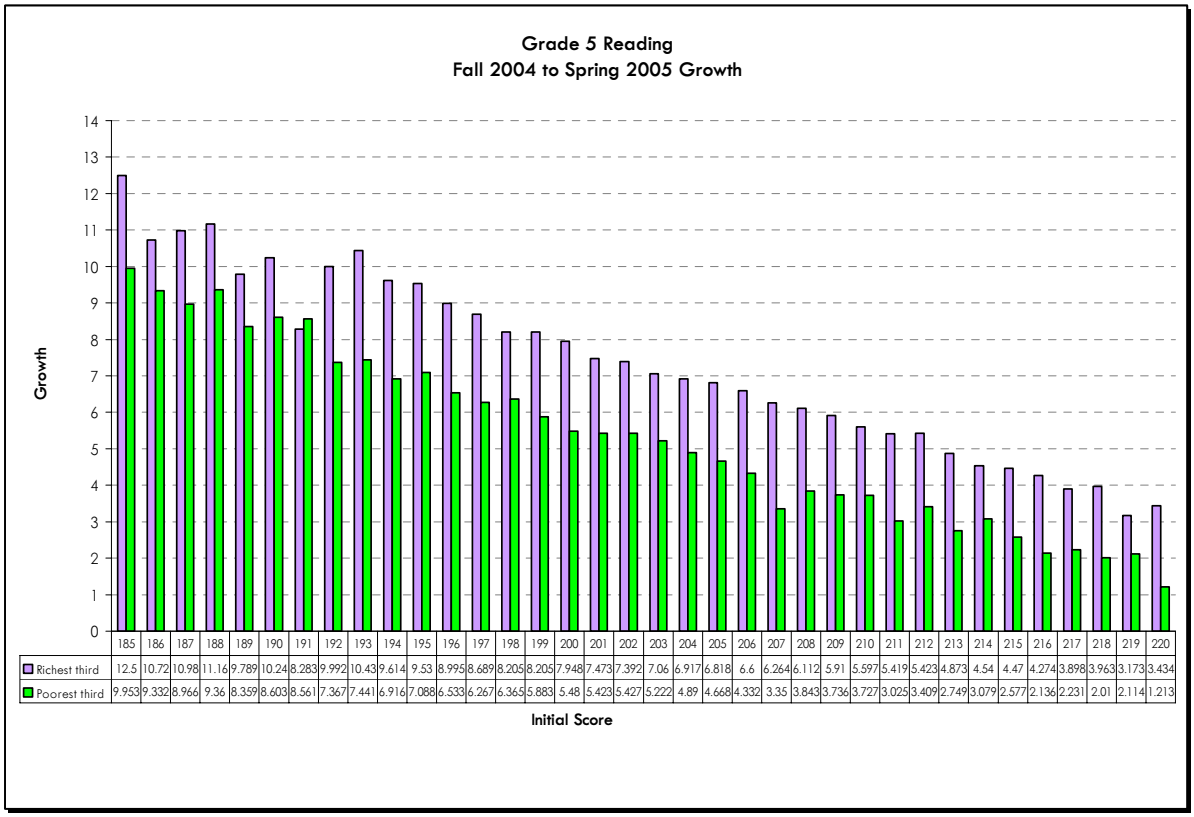
Appendix J: Fall 2004 to Spring 2005 Growth by Poverty Category—Reading



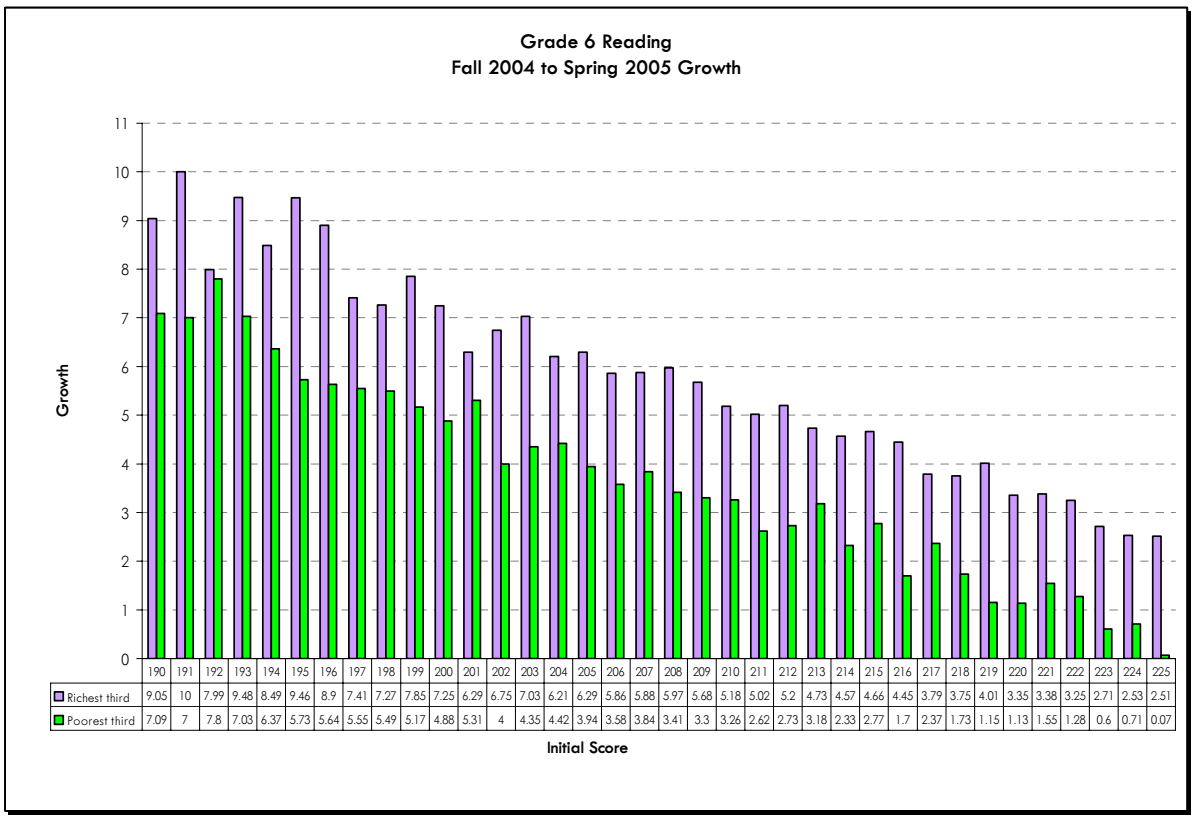
Initial Score	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Richest third	17.2	16.5	17.3	16.1	16.2	15.3	15.5	14.5	14.9	13.5	13.8	13.6	13.8	13.4	12.9	12.2	12.5	12	10.6	11	10.5	10.1	10.3	9.54	9.64	9.01	8.73	8.12	8.11	8.4	8.36	7.82	7.38	7.1	6.63	6.38
Poorest third	13.8	13.3	12.8	12.3	12.3	11.9	12.1	11.2	11.3	11.3	10.9	10.5	10.3	10.4	9.16	9.68	8.4	8.97	8.09	7.71	7.67	7.25	7.42	6.87	6.61	6.13	6.14	6.01	5.92	5.74	5.46	5.5	5.07	4.65	3.82	4.02



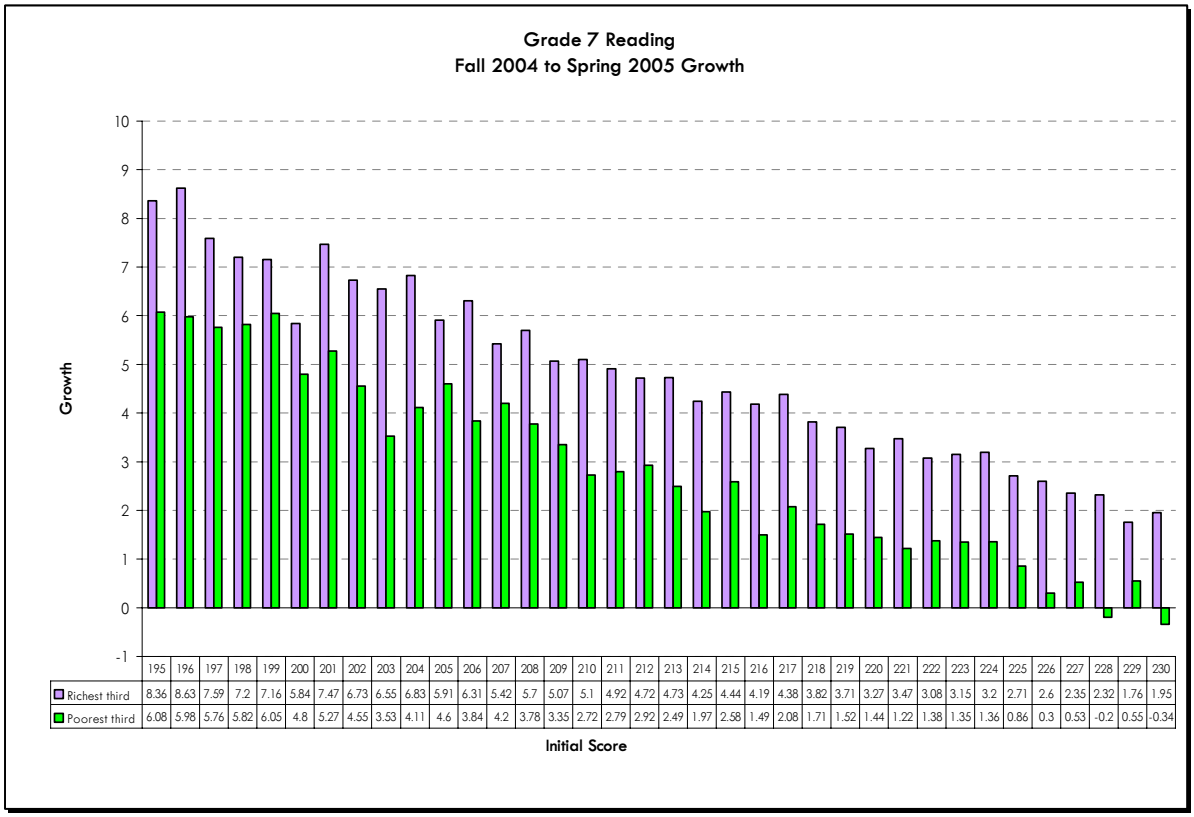
Initial Score	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Richest third	14	12.6	12.2	12.3	13.3	11.3	11.4	10.4	11.5	11.8	10	9.47	9.9	9.02	9.01	9.13	8.99	8.1	8.16	7.86	7.97	7.6	7.38	7.19	7.13	6.48	6.4	6.23	5.91	5.78	5.61	4.81	4.77	4.99	4.51	3.84
Poorest third	10.5	11.3	11	9.4	9.87	9.96	8.32	8.36	8.78	7.93	7.96	7.69	7.27	6.73	6.46	6.71	6.73	6.39	5.63	5.43	4.84	5.08	4.62	4.72	4.32	4.19	3.73	3.96	3.56	3.5	3.28	2.63	3.06	3	2.67	2.6



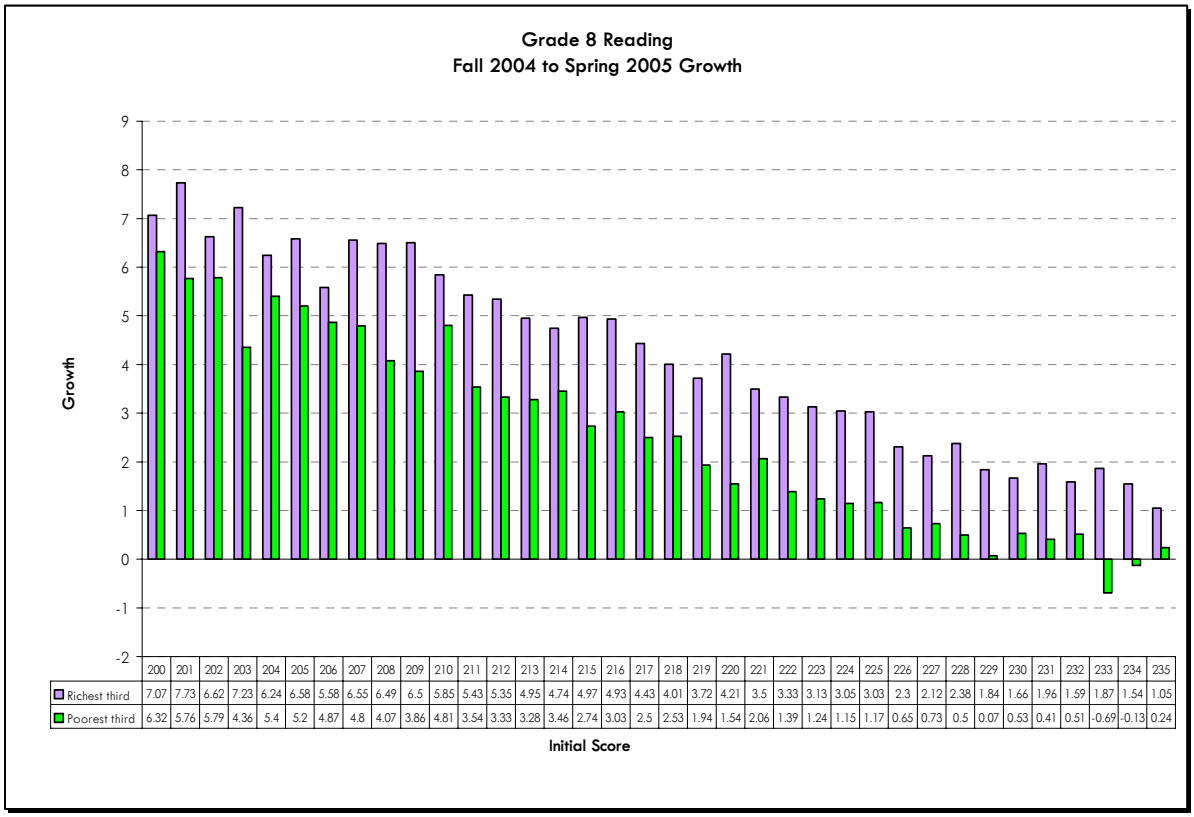
Initial Score	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Richest third	12.5	10.72	10.98	11.16	9.789	10.24	8.283	9.992	10.43	9.614	9.53	8.995	8.689	8.205	8.205	7.948	7.473	7.392	7.06	6.917	6.818	6.6	6.264	6.112	5.91	5.597	5.419	5.423	4.873	4.54	4.47	4.274	3.898	3.963	3.173	3.434
Poorest third	9.953	9.332	8.966	9.36	8.359	8.603	8.561	7.367	7.441	6.916	7.088	6.533	6.267	6.365	5.883	5.48	5.423	5.427	5.222	4.89	4.668	4.332	3.35	3.843	3.736	3.727	3.025	3.409	2.749	3.079	2.577	2.136	2.231	2.01	2.114	1.213



Initial Score	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Richest third	9.05	10	7.99	9.48	8.49	9.46	8.9	7.41	7.27	7.85	7.25	6.29	6.75	7.03	6.21	6.29	5.86	5.88	5.97	5.68	5.18	5.02	5.2	4.73	4.57	4.66	4.45	3.79	3.75	4.01	3.35	3.38	3.25	2.71	2.53	2.51
Poorest third	7.09	7	7.8	7.03	6.37	5.73	5.64	5.55	5.49	5.17	4.88	5.31	4	4.35	4.42	3.94	3.58	3.84	3.41	3.3	3.26	2.62	2.73	3.18	2.33	2.77	1.7	2.37	1.73	1.15	1.13	1.55	1.28	0.6	0.71	0.07

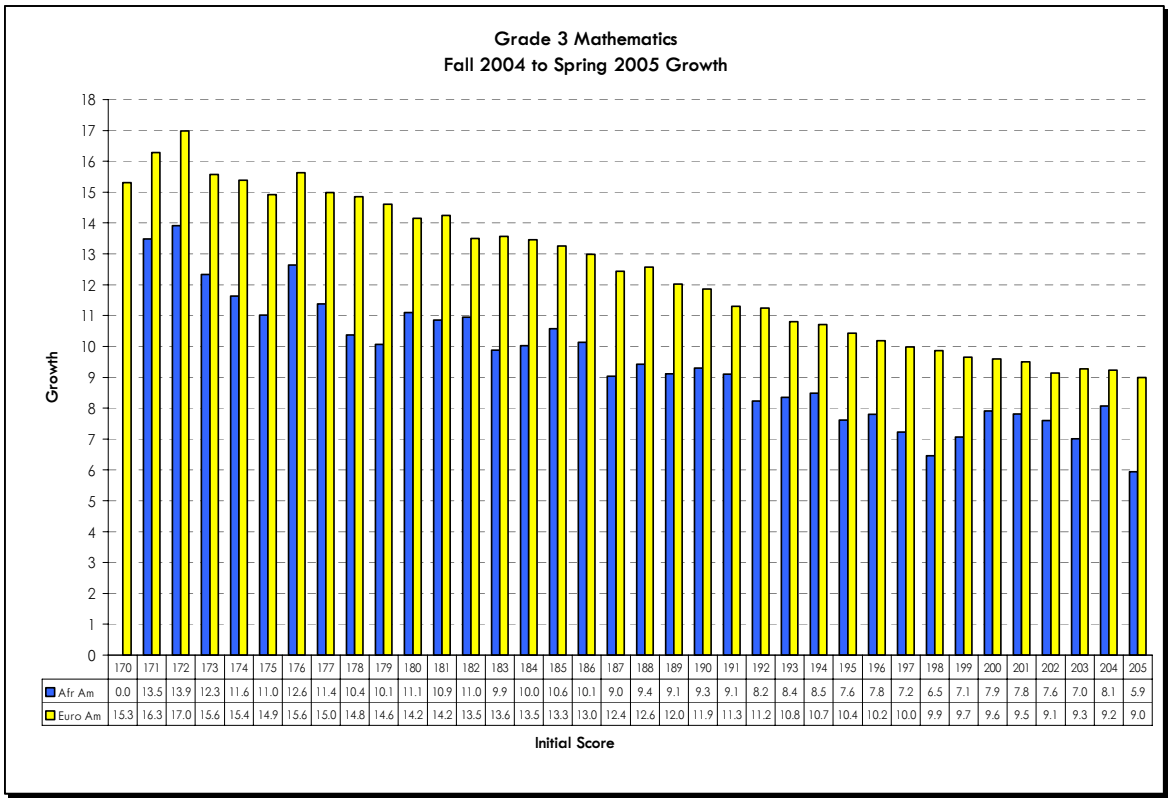


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Richest third	8.36	8.63	7.59	7.2	7.16	5.84	7.47	6.73	6.55	6.83	5.91	6.31	5.42	5.7	5.07	5.1	4.92	4.72	4.73	4.25	4.44	4.19	4.38	3.82	3.71	3.27	3.47	3.08	3.15	3.2	2.71	2.6	2.35	2.32	1.76	1.95
Poorest third	6.08	5.98	5.76	5.82	6.05	4.8	5.27	4.55	3.53	4.11	4.6	3.84	4.2	3.78	3.35	2.72	2.79	2.92	2.49	1.97	2.58	1.49	2.08	1.71	1.52	1.44	1.22	1.38	1.35	1.36	0.86	0.3	0.53	-0.2	0.55	-0.34

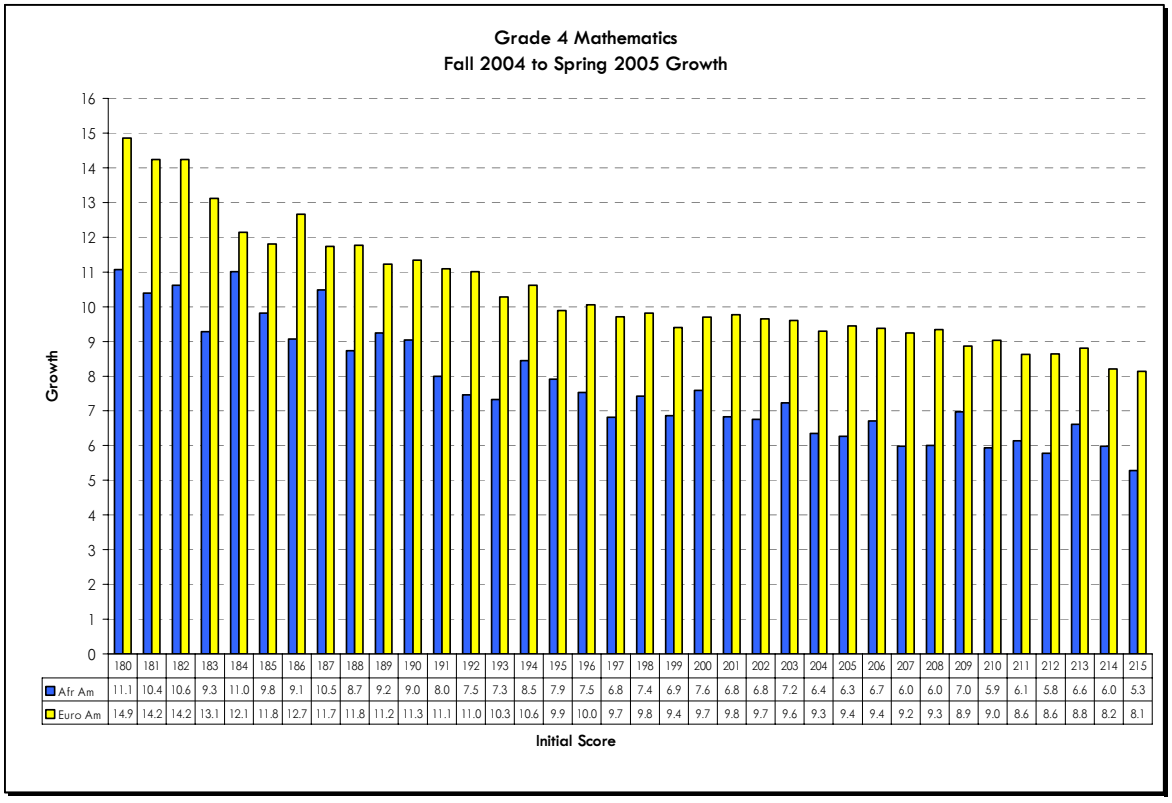


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Richest third	7.07	7.73	6.62	7.23	6.24	6.58	5.58	6.55	6.49	6.5	5.85	5.43	5.35	4.95	4.74	4.97	4.93	4.43	4.01	3.72	4.21	3.5	3.33	3.13	3.05	3.03	2.3	2.12	2.38	1.84	1.66	1.96	1.59	1.87	1.54	1.05
Poorest third	6.32	5.76	5.79	4.36	5.4	5.2	4.87	4.8	4.07	3.86	4.81	3.54	3.33	3.28	3.46	2.74	3.03	2.5	2.53	1.94	1.54	2.06	1.39	1.24	1.15	1.17	0.65	0.73	0.5	0.07	0.53	0.41	0.51	-0.69	-0.13	0.24

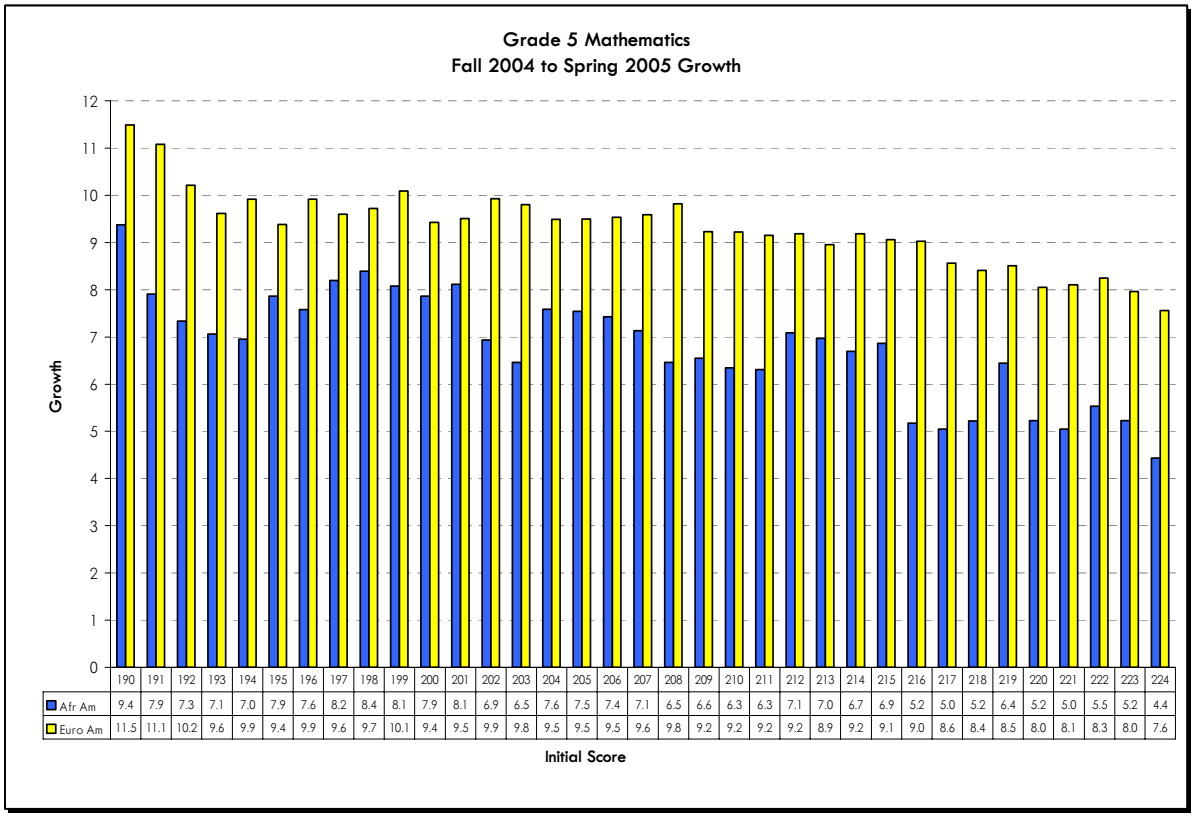
Appendix K: Fall 2004 to Spring 2005 Mathematics Growth by Ethnic Group—African-American



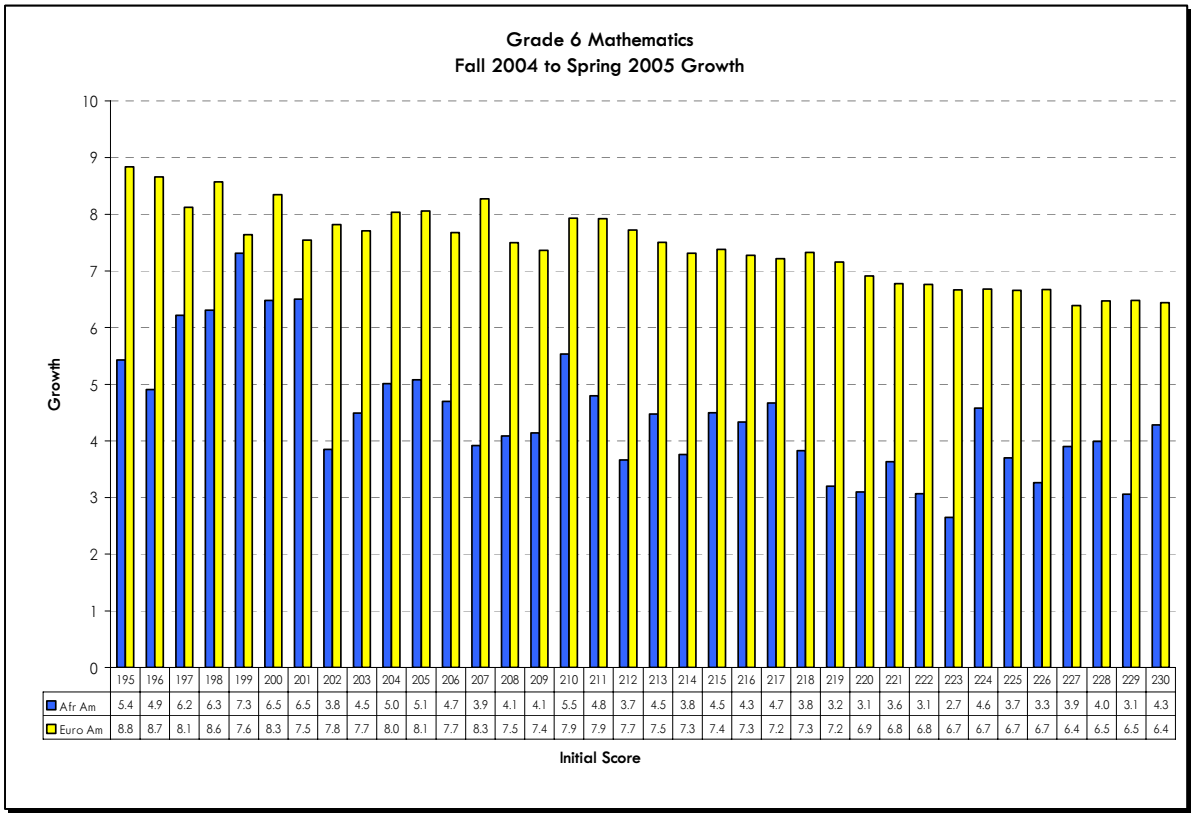
	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Afr Am	0.0	13.5	13.9	12.3	11.6	11.0	12.6	11.4	10.4	10.1	11.1	10.9	11.0	9.9	10.0	10.6	10.1	9.0	9.4	9.1	9.3	9.1	8.2	8.4	8.5	7.6	7.8	7.2	6.5	7.1	7.9	7.8	7.6	7.0	8.1	5.9
Euro Am	15.3	16.3	17.0	15.6	15.4	14.9	15.6	15.0	14.8	14.6	14.2	14.2	13.5	13.6	13.5	13.3	13.0	12.4	12.6	12.0	11.9	11.3	11.2	10.8	10.7	10.4	10.2	10.0	9.9	9.7	9.6	9.5	9.1	9.3	9.2	9.0



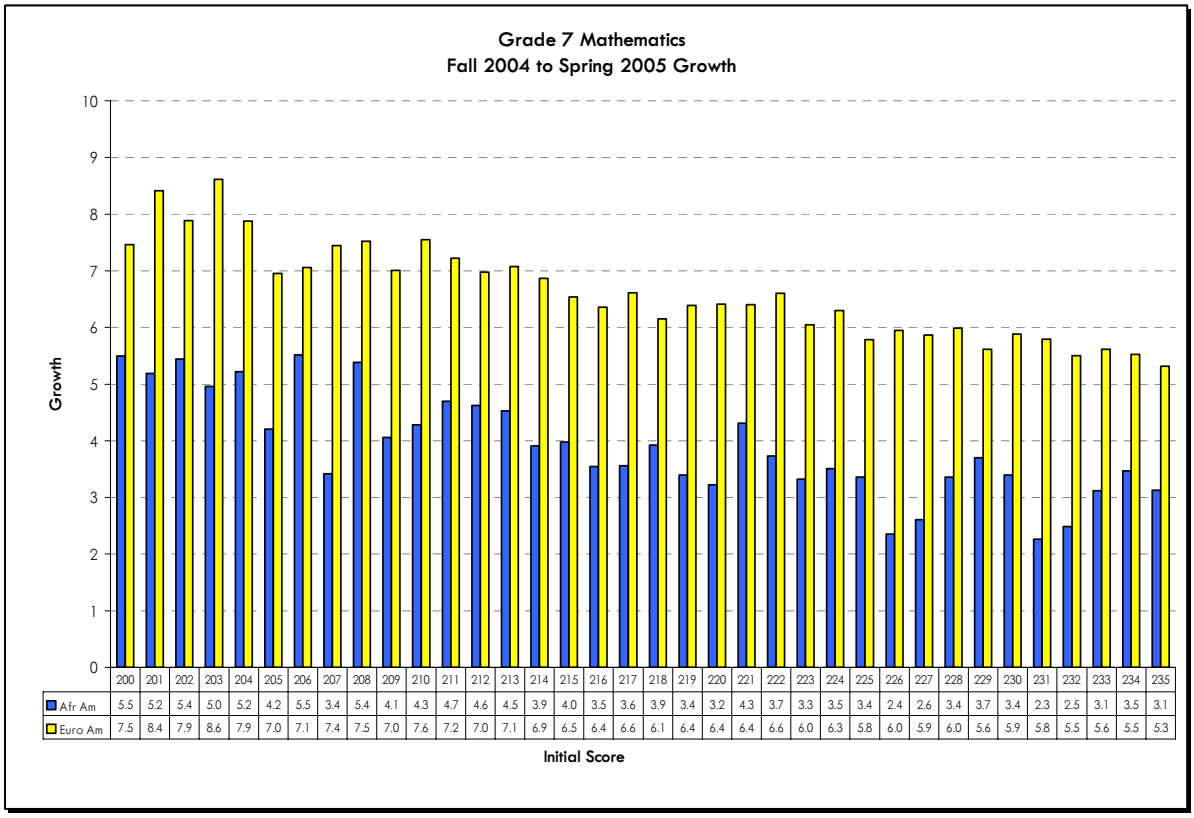
	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Afr Am	11.1	10.4	10.6	9.3	11.0	9.8	9.1	10.5	8.7	9.2	9.0	8.0	7.5	7.3	8.5	7.9	7.5	6.8	7.4	6.9	7.6	6.8	6.8	7.2	6.4	6.3	6.7	6.0	6.0	7.0	5.9	6.1	5.8	6.6	6.0	5.3
Euro Am	14.9	14.2	14.2	13.1	12.1	11.8	12.7	11.7	11.8	11.2	11.3	11.1	11.0	10.3	10.6	9.9	10.0	9.7	9.8	9.4	9.7	9.8	9.7	9.6	9.3	9.4	9.4	9.2	9.3	8.9	9.0	8.6	8.6	8.8	8.2	8.1



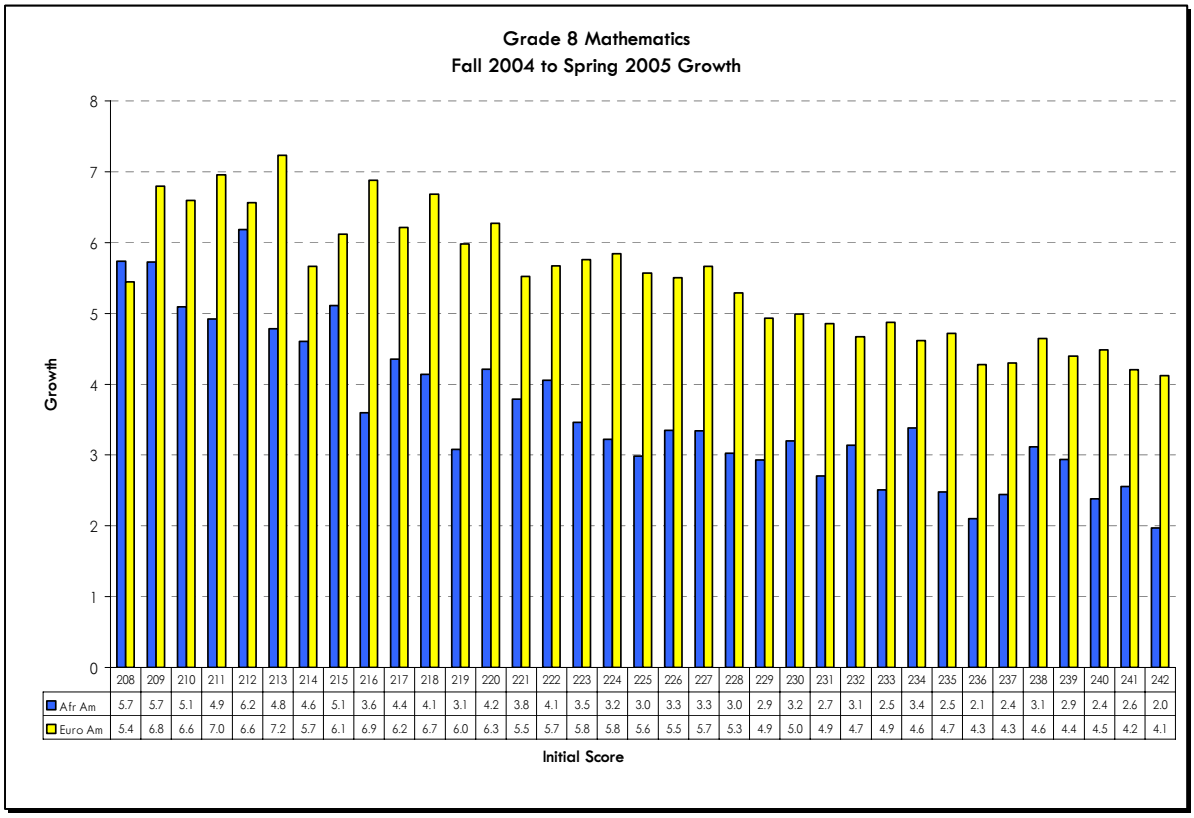
	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
Afr Am	9.4	7.9	7.3	7.1	7.0	7.9	7.6	8.2	8.4	8.1	7.9	8.1	6.9	6.5	7.6	7.5	7.4	7.1	6.5	6.6	6.3	6.3	7.1	7.0	6.7	6.9	5.2	5.0	5.2	6.4	5.2	5.0	5.5	5.2	4.4
Euro Am	11.5	11.1	10.2	9.6	9.9	9.4	9.9	9.6	9.7	10.1	9.4	9.5	9.9	9.8	9.5	9.5	9.5	9.6	9.8	9.2	9.2	9.2	9.2	8.9	9.2	9.1	9.0	8.6	8.4	8.5	8.0	8.1	8.3	8.0	7.6



	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Afr Am	5.4	4.9	6.2	6.3	7.3	6.5	6.5	3.8	4.5	5.0	5.1	4.7	3.9	4.1	4.1	5.5	4.8	3.7	4.5	3.8	4.5	4.3	4.7	3.8	3.2	3.1	3.6	3.1	2.7	4.6	3.7	3.3	3.9	4.0	3.1	4.3
Euro Am	8.8	8.7	8.1	8.6	7.6	8.3	7.5	7.8	7.7	8.0	8.1	7.7	8.3	7.5	7.4	7.9	7.9	7.7	7.5	7.3	7.4	7.3	7.2	7.3	7.2	6.9	6.8	6.8	6.7	6.7	6.7	6.7	6.4	6.5	6.5	6.4

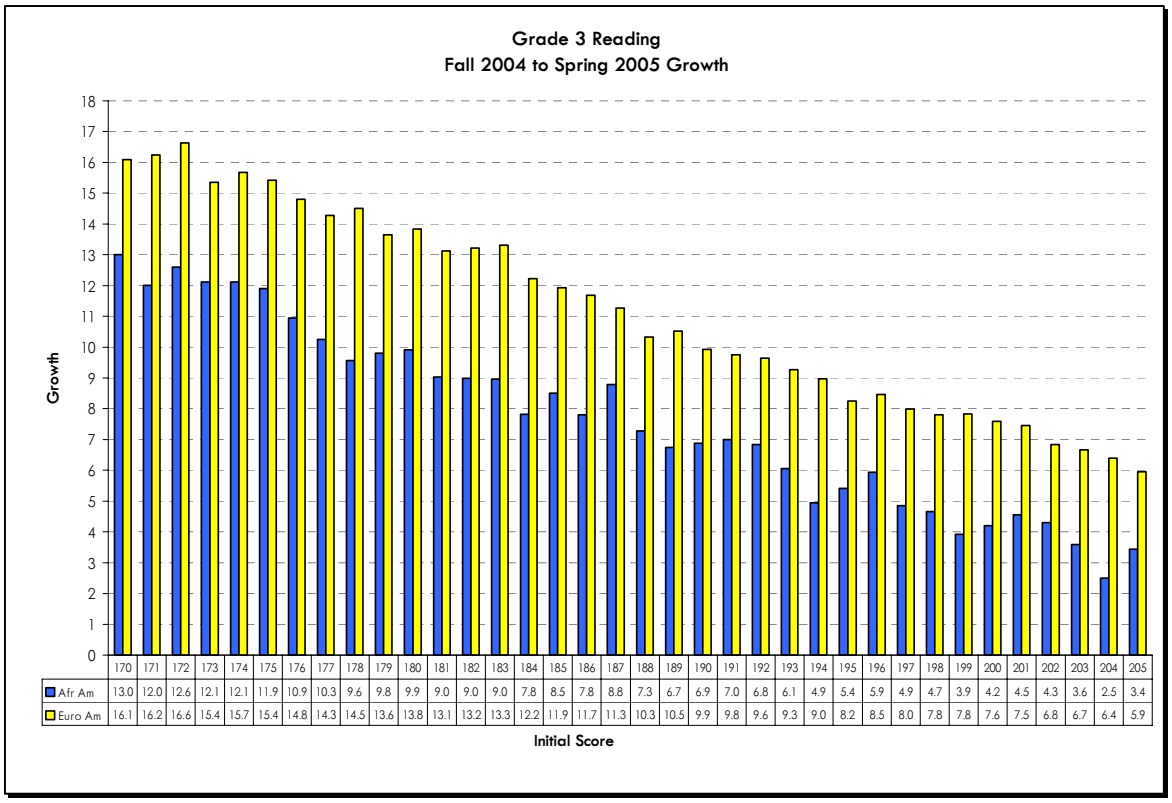


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Afr Am	5.5	5.2	5.4	5.0	5.2	4.2	5.5	3.4	5.4	4.1	4.3	4.7	4.6	4.5	3.9	4.0	3.5	3.6	3.9	3.4	3.2	4.3	3.7	3.3	3.5	3.4	2.4	2.6	3.4	3.7	3.4	2.3	2.5	3.1	3.5	3.1
Euro Am	7.5	8.4	7.9	8.6	7.9	7.0	7.1	7.4	7.5	7.0	7.6	7.2	7.0	7.1	6.9	6.5	6.4	6.6	6.1	6.4	6.4	6.4	6.6	6.0	6.3	5.8	6.0	5.9	6.0	5.6	5.9	5.8	5.5	5.6	5.5	5.3

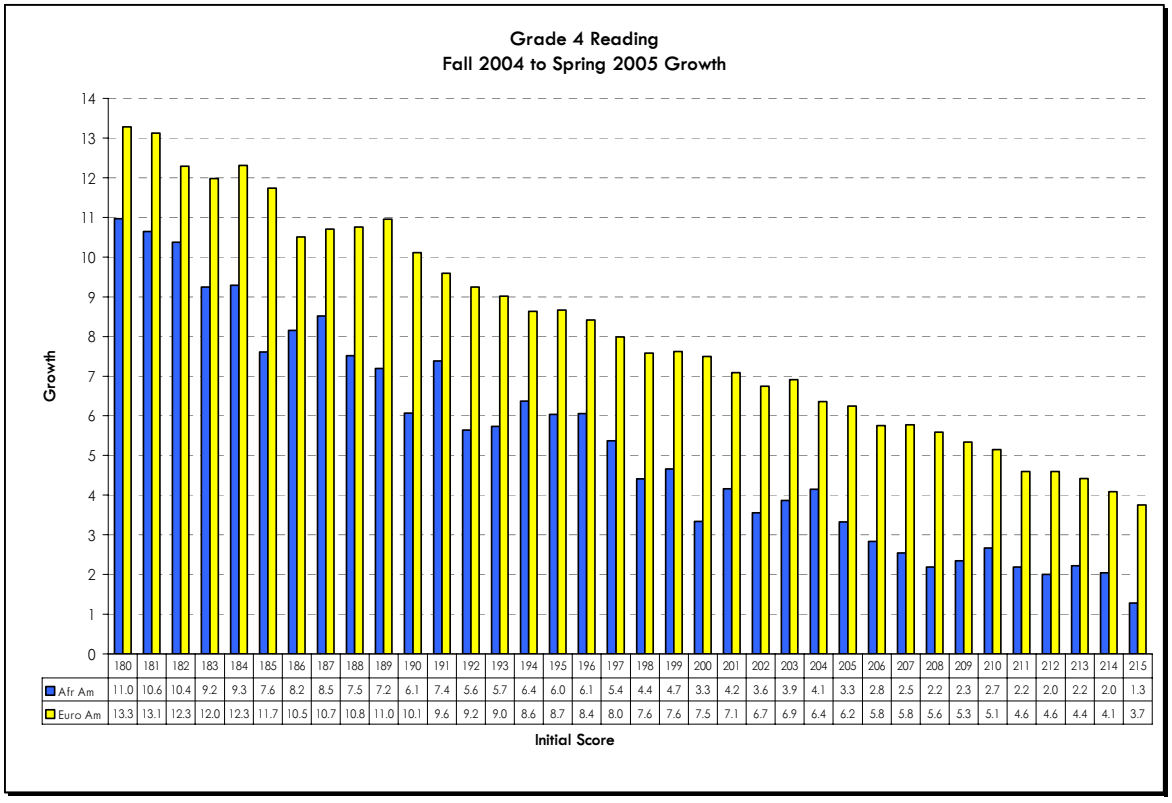


	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
Afr Am	5.7	5.7	5.1	4.9	6.2	4.8	4.6	5.1	3.6	4.4	4.1	3.1	4.2	3.8	4.1	3.5	3.2	3.0	3.3	3.3	3.0	2.9	3.2	2.7	3.1	2.5	3.4	2.5	2.1	2.4	3.1	2.9	2.4	2.6	2.0
Euro Am	5.4	6.8	6.6	7.0	6.6	7.2	5.7	6.1	6.9	6.2	6.7	6.0	6.3	5.5	5.7	5.8	5.8	5.6	5.5	5.7	5.3	4.9	5.0	4.9	4.7	4.9	4.6	4.7	4.3	4.3	4.6	4.4	4.5	4.2	4.1

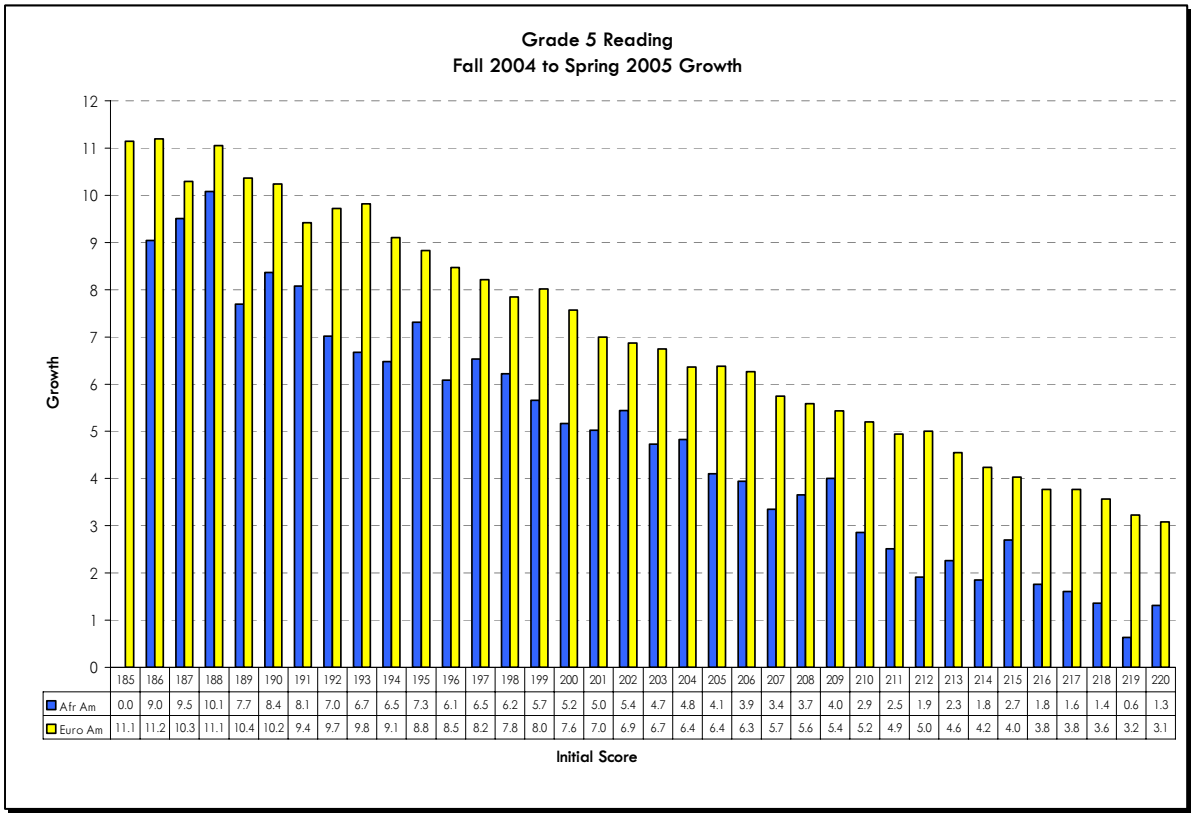
Appendix L: Fall 2004 to Spring 2005 Reading Growth by Ethnic Group—African-American



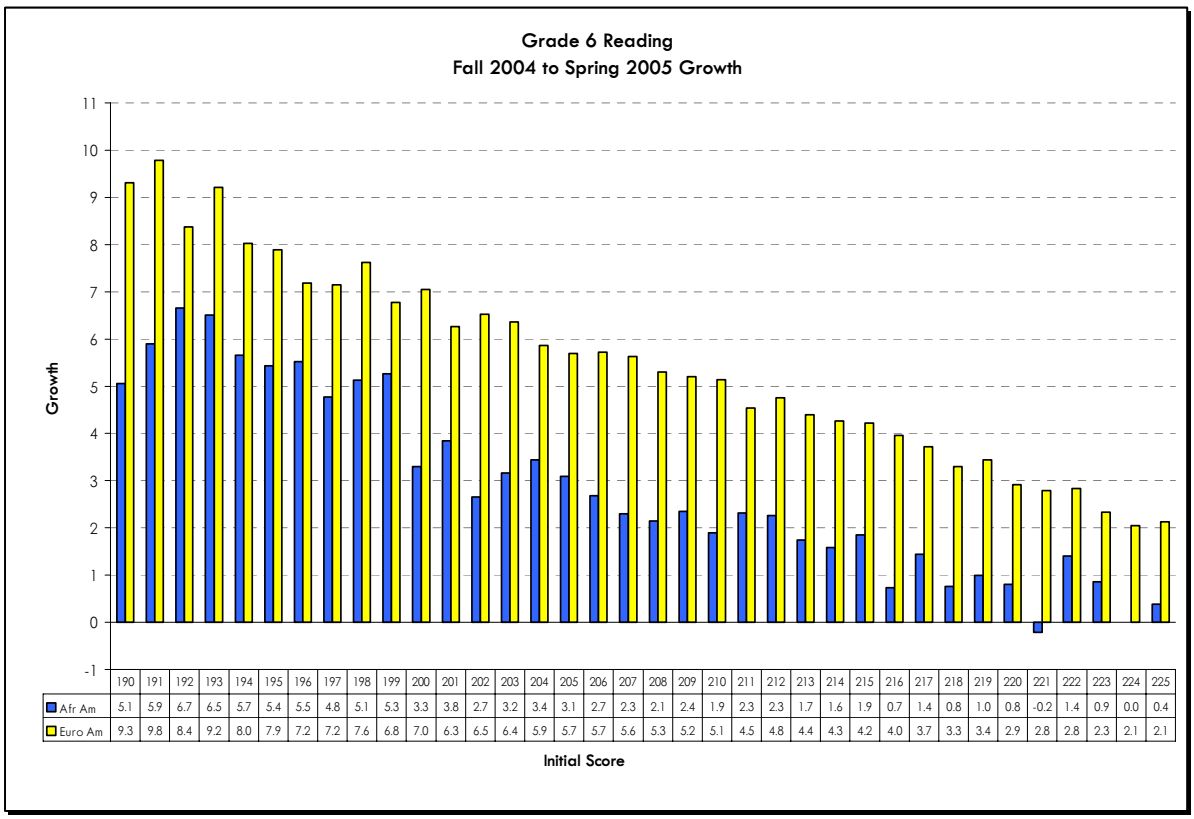
Initial Score	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Afr Am	13.0	12.0	12.6	12.1	12.1	11.9	10.9	10.3	9.6	9.8	9.9	9.0	9.0	9.0	7.8	8.5	7.8	8.8	7.3	6.7	6.9	7.0	6.8	6.1	4.9	5.4	5.9	4.9	4.7	3.9	4.2	4.5	4.3	3.6	2.5	3.4
Euro Am	16.1	16.2	16.6	15.4	15.7	15.4	14.8	14.3	14.5	13.6	13.8	13.1	13.2	13.3	12.2	11.9	11.7	11.3	10.3	10.5	9.9	9.8	9.6	9.3	9.0	8.2	8.5	8.0	7.8	7.8	7.6	7.5	6.8	6.7	6.4	5.9



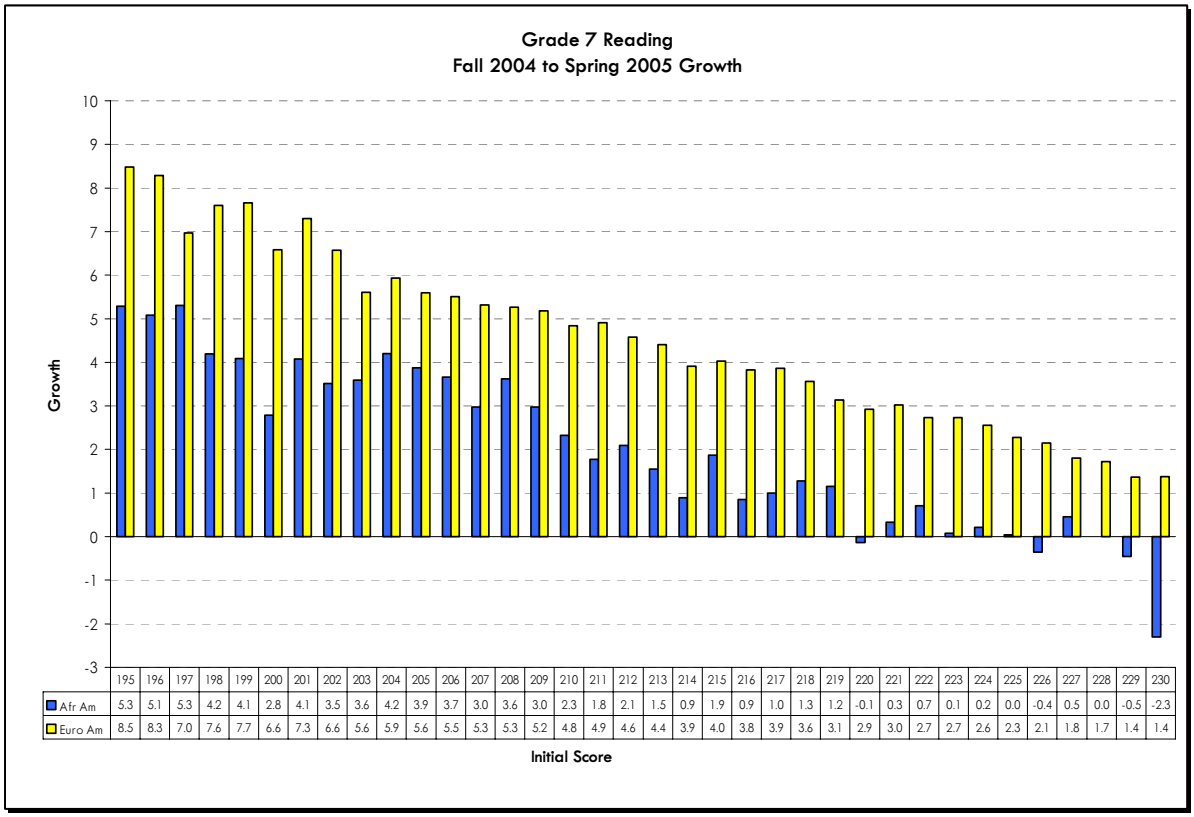
Initial Score	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Afr Am	11.0	10.6	10.4	9.2	9.3	7.6	8.2	8.5	7.5	7.2	6.1	7.4	5.6	5.7	6.4	6.0	6.1	5.4	4.4	4.7	3.3	4.2	3.6	3.9	4.1	3.3	2.8	2.5	2.2	2.3	2.7	2.2	2.0	2.2	2.0	1.3
Euro Am	13.3	13.1	12.3	12.0	12.3	11.7	10.5	10.7	10.8	11.0	10.1	9.6	9.2	9.0	8.6	8.7	8.4	8.0	7.6	7.6	7.5	7.1	6.7	6.9	6.4	6.2	5.8	5.8	5.6	5.3	5.1	4.6	4.6	4.4	4.1	3.7

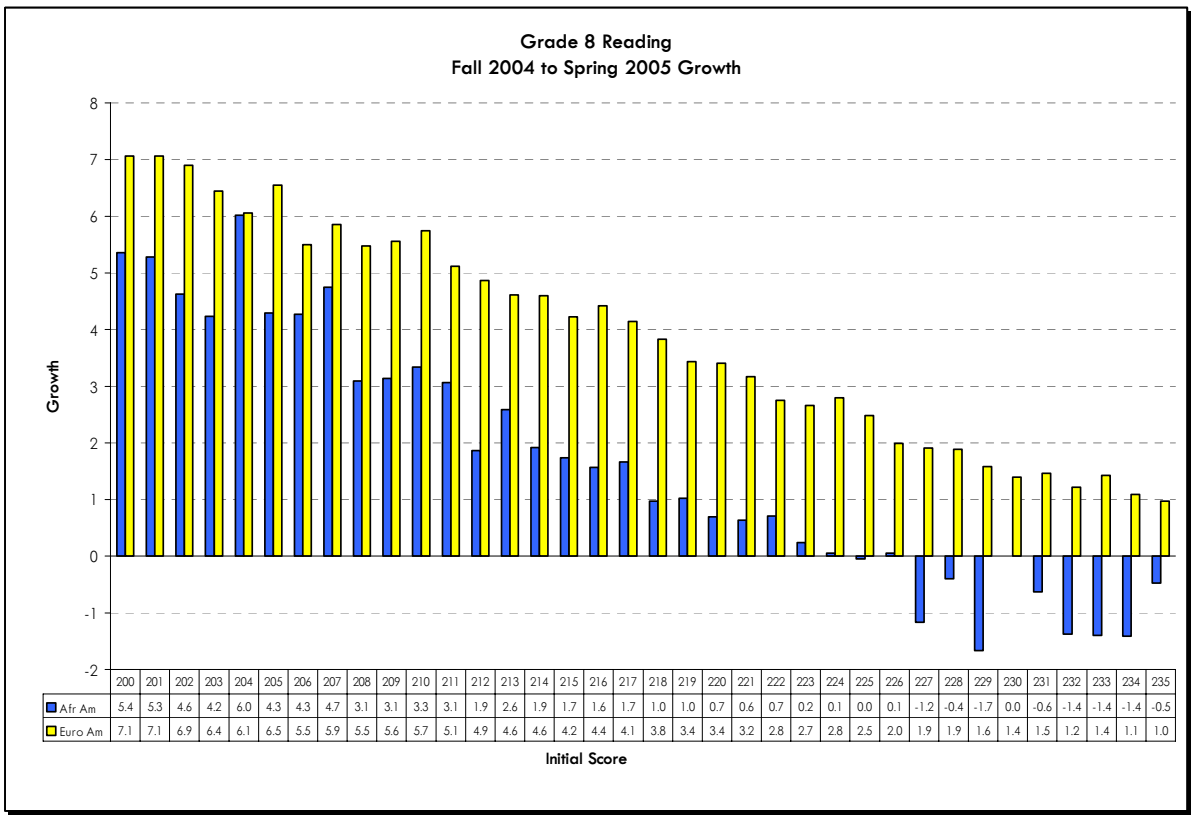


	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Afr Am	0.0	9.0	9.5	10.1	7.7	8.4	8.1	7.0	6.7	6.5	7.3	6.1	6.5	6.2	5.7	5.2	5.0	5.4	4.7	4.8	4.1	3.9	3.4	3.7	4.0	2.9	2.5	1.9	2.3	1.8	2.7	1.8	1.6	1.4	0.6	1.3
Euro Am	11.1	11.2	10.3	11.1	10.4	10.2	9.4	9.7	9.8	9.1	8.8	8.5	8.2	7.8	8.0	7.6	7.0	6.9	6.7	6.4	6.4	6.3	5.7	5.6	5.4	5.2	4.9	5.0	4.6	4.2	4.0	3.8	3.8	3.6	3.2	3.1

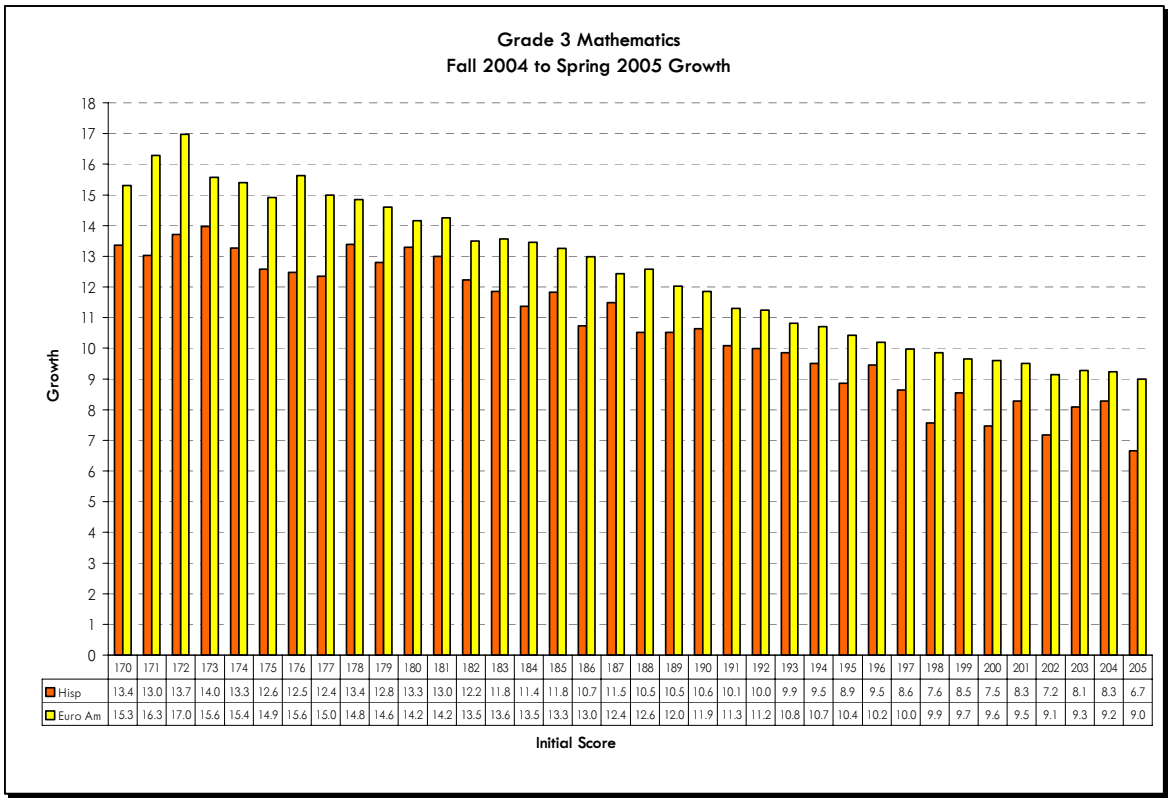


	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Afr Am	5.1	5.9	6.7	6.5	5.7	5.4	5.5	4.8	5.1	5.3	3.3	3.8	2.7	3.2	3.4	3.1	2.7	2.3	2.1	2.4	1.9	2.3	2.3	1.7	1.6	1.9	0.7	1.4	0.8	1.0	0.8	-0.2	1.4	0.9	0.0	0.4
Euro Am	9.3	9.8	8.4	9.2	8.0	7.9	7.2	7.2	7.6	6.8	7.0	6.3	6.5	6.4	5.9	5.7	5.7	5.6	5.3	5.2	5.1	4.5	4.8	4.4	4.3	4.2	4.0	3.7	3.3	3.4	2.9	2.8	2.8	2.3	2.1	2.1

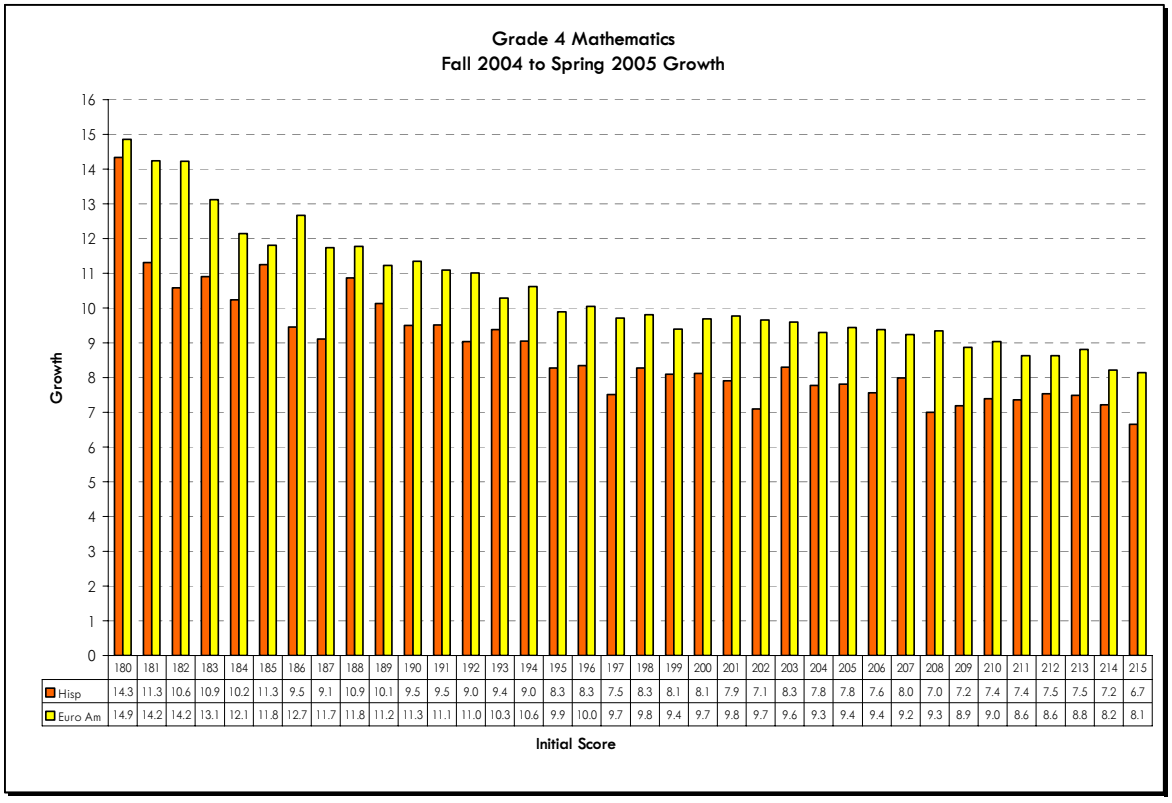

Grade 7 Reading
Fall 2004 to Spring 2005 Growth
Growth
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230
Afr Am 5.3 5.1 5.3 4.2 4.1 2.8 4.1 3.5 3.6 4.2 3.9 3.7 3.0 3.6 3.0 2.3 1.8 2.1 1.5 0.9 1.9 0.9 1.0 1.3 1.2 -0.1 0.3 0.7 0.1 0.2 0.0 -0.4 0.5 0.0 -0.5 -2.3
Euro Am 8.5 8.3 7.0 7.6 7.7 6.6 7.3 6.6 5.6 5.9 5.6 5.5 5.3 5.3 5.2 4.8 4.9 4.6 4.4 3.9 4.0 3.8 3.9 3.6 3.1 2.9 3.0 2.7 2.7 2.6 2.3 2.1 1.8 1.7 1.4 1.4
Initial Score


Grade 8 Reading
Fall 2004 to Spring 2005 Growth
Growth
8
7
6
5
4
3
2
1
0
-1
-2
200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235
Afr Am 5.4 5.3 4.6 4.2 6.0 4.3 4.3 4.7 3.1 3.1 3.3 3.1 1.9 2.6 1.9 1.7 1.6 1.7 1.0 1.0 0.7 0.6 0.7 0.2 0.1 0.0 0.1 -1.2 -0.4 -1.7 0.0 -0.6 -1.4 -1.4 -1.4 -0.5
Euro Am 7.1 7.1 6.9 6.4 6.1 6.5 5.5 5.9 5.5 5.6 5.7 5.1 4.9 4.6 4.6 4.2 4.4 4.1 3.8 3.4 3.4 3.2 2.8 2.7 2.8 2.5 2.0 1.9 1.9 1.6 1.4 1.5 1.2 1.4 1.1 1.0
Initial Score

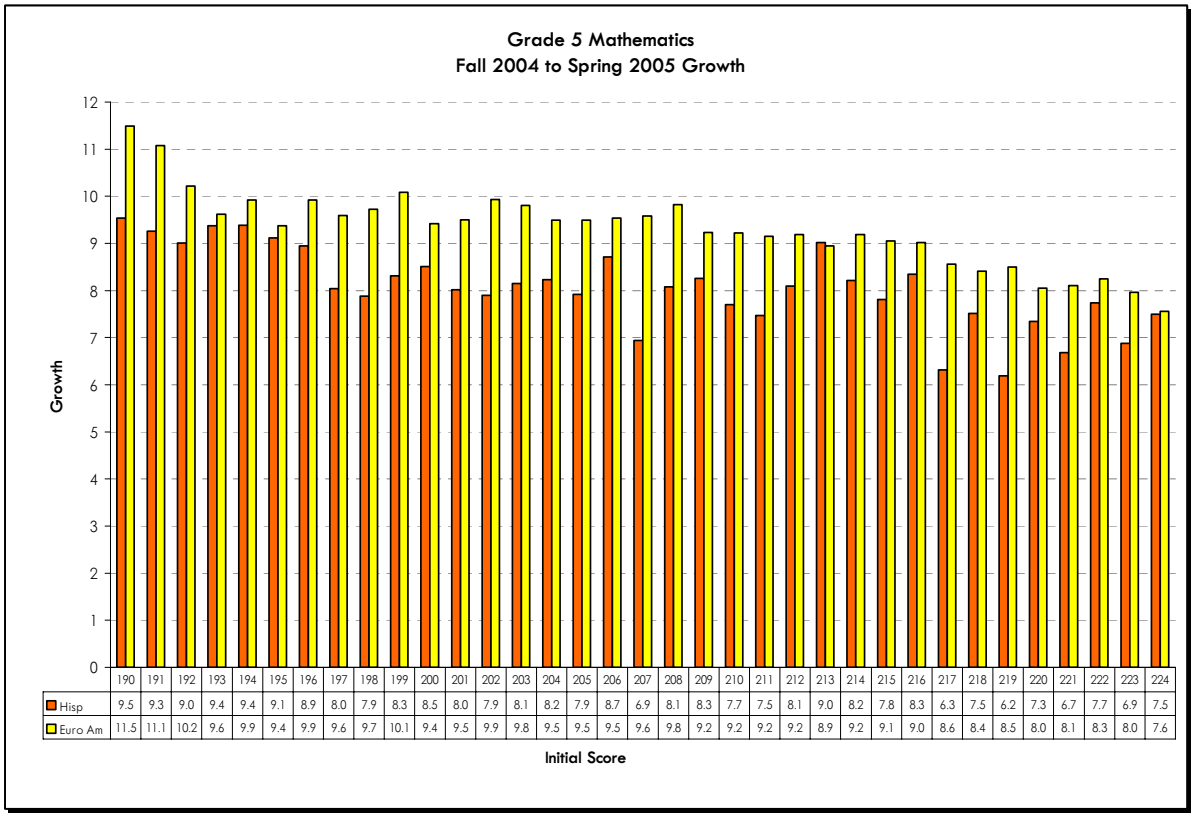
Appendix M: Fall 2004 to Spring 2005 Mathematics Growth by Ethnic Group—Hispanic



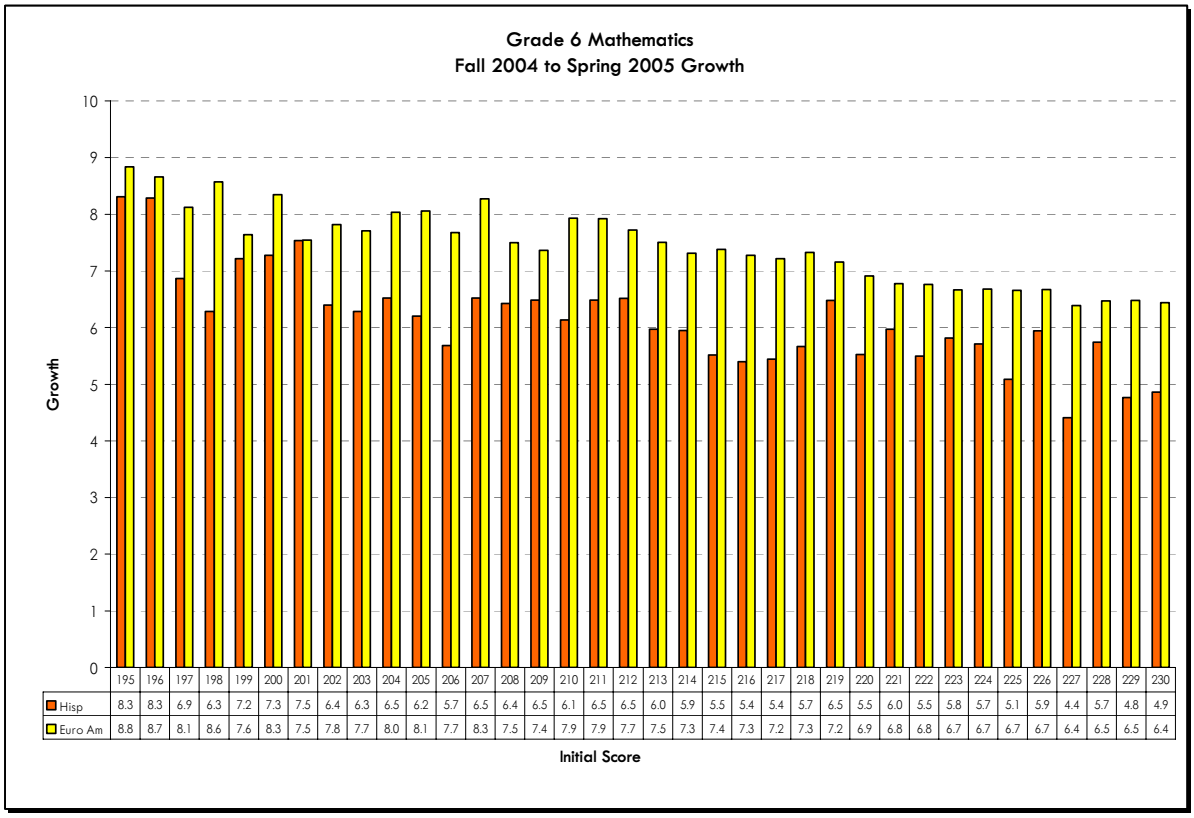
Initial Score	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Hisp	13.4	13.0	13.7	14.0	13.3	12.6	12.5	12.4	13.4	12.8	13.3	13.0	12.2	11.8	11.4	11.8	10.7	11.5	10.5	10.5	10.6	10.1	10.0	9.9	9.5	8.9	9.5	8.6	7.6	8.5	7.5	8.3	7.2	8.1	8.3	6.7
Euro Am	15.3	16.3	17.0	15.6	15.4	14.9	15.6	15.0	14.8	14.6	14.2	14.2	13.5	13.6	13.5	13.3	13.0	12.4	12.6	12.0	11.9	11.3	11.2	10.8	10.7	10.4	10.2	10.0	9.9	9.7	9.6	9.5	9.1	9.3	9.2	9.0



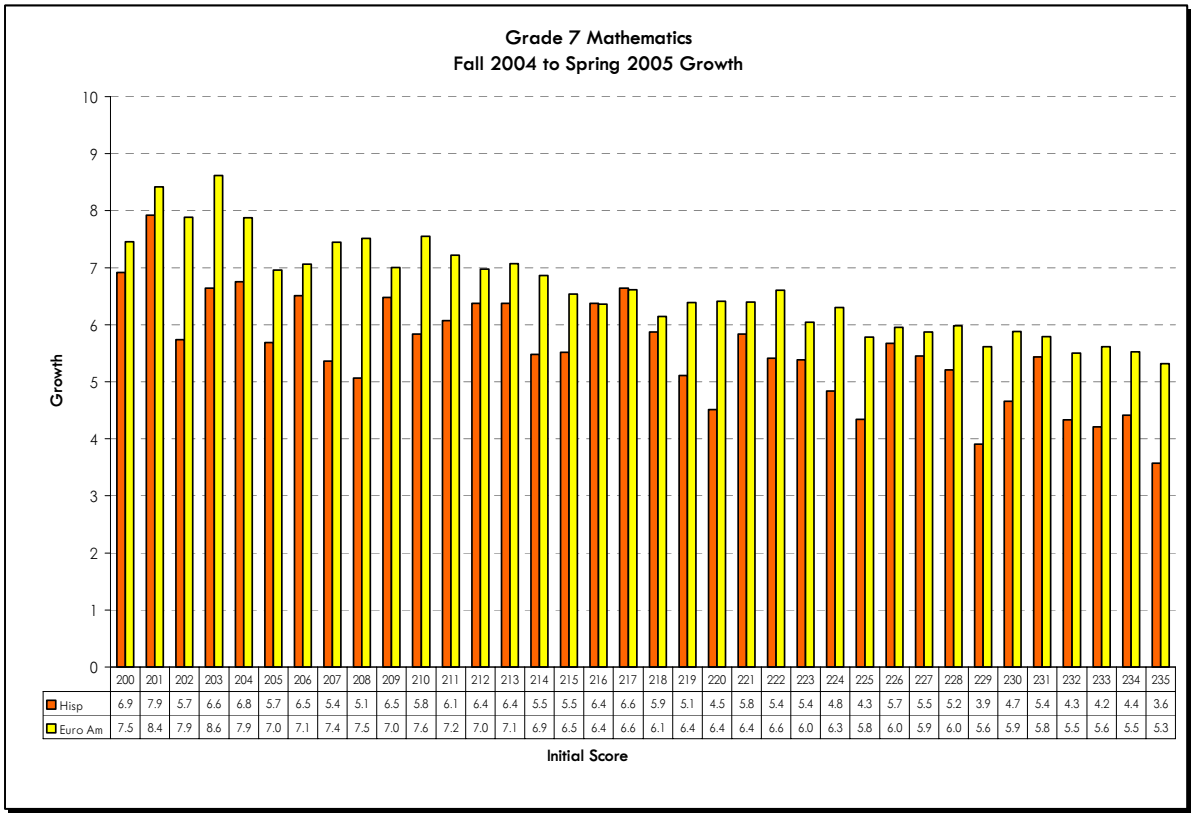
Initial Score	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Hisp	14.3	11.3	10.6	10.9	10.2	11.3	9.5	9.1	10.9	10.1	9.5	9.5	9.0	9.4	9.0	8.3	8.3	7.5	8.3	8.1	8.1	7.9	7.1	8.3	7.8	7.8	7.6	8.0	7.0	7.2	7.4	7.4	7.5	7.5	7.2	6.7
Euro Am	14.9	14.2	14.2	13.1	12.1	11.8	12.7	11.7	11.8	11.2	11.3	11.1	11.0	10.3	10.6	9.9	10.0	9.7	9.8	9.4	9.7	9.8	9.7	9.6	9.3	9.4	9.4	9.2	9.3	8.9	9.0	8.6	8.6	8.8	8.2	8.1



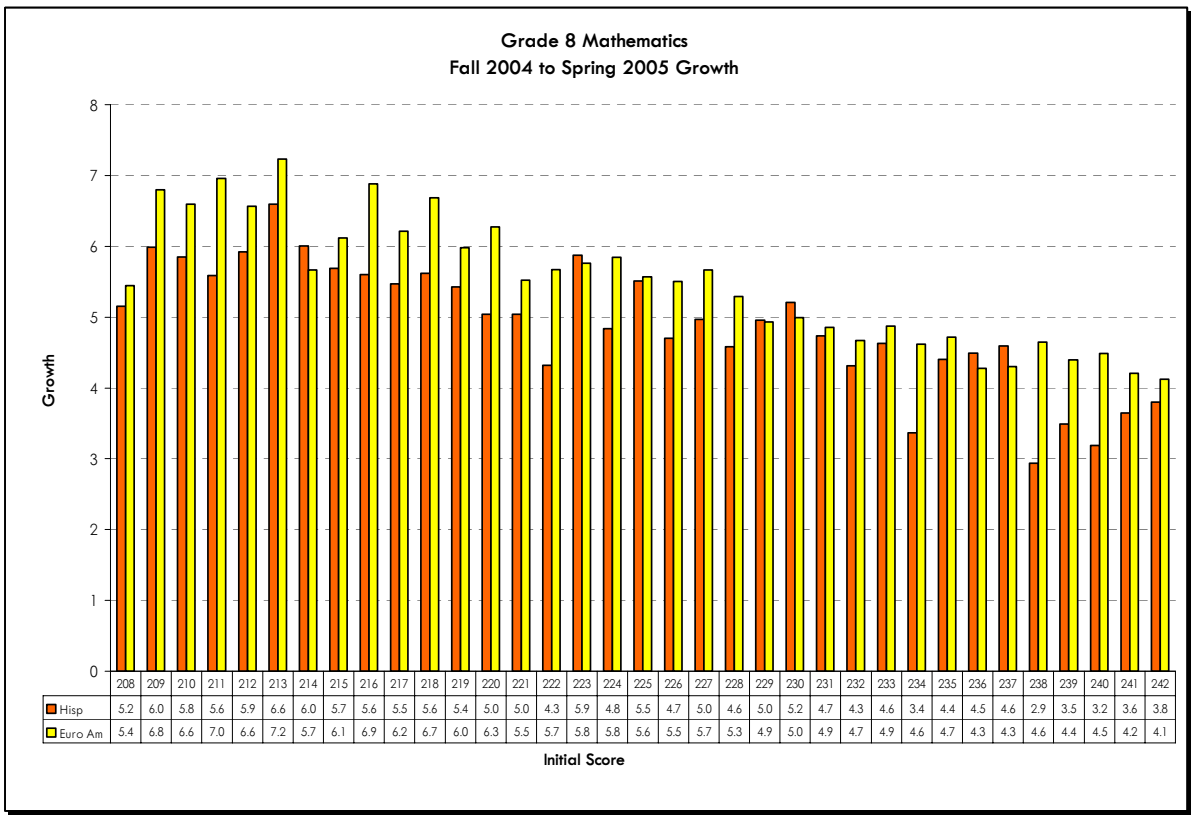
	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
Hisp	9.5	9.3	9.0	9.4	9.4	9.1	8.9	8.0	7.9	8.3	8.5	8.0	7.9	8.1	8.2	7.9	8.7	6.9	8.1	8.3	7.7	7.5	8.1	9.0	8.2	7.8	8.3	6.3	7.5	6.2	7.3	6.7	7.7	6.9	7.5
Euro Am	11.5	11.1	10.2	9.6	9.9	9.4	9.9	9.6	9.7	10.1	9.4	9.5	9.9	9.8	9.5	9.5	9.5	9.6	9.8	9.2	9.2	9.2	9.2	8.9	9.2	9.1	9.0	8.6	8.4	8.5	8.0	8.1	8.3	8.0	7.6



	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Hisp	8.3	8.3	6.9	6.3	7.2	7.3	7.5	6.4	6.3	6.5	6.2	5.7	6.5	6.4	6.5	6.1	6.5	6.5	6.0	5.9	5.5	5.4	5.4	5.7	6.5	5.5	6.0	5.5	5.8	5.7	5.1	5.9	4.4	5.7	4.8	4.9
Euro Am	8.8	8.7	8.1	8.6	7.6	8.3	7.5	7.8	7.7	8.0	8.1	7.7	8.3	7.5	7.4	7.9	7.9	7.7	7.5	7.3	7.4	7.3	7.2	7.3	7.2	6.9	6.8	6.8	6.7	6.7	6.7	6.7	6.4	6.5	6.5	6.4

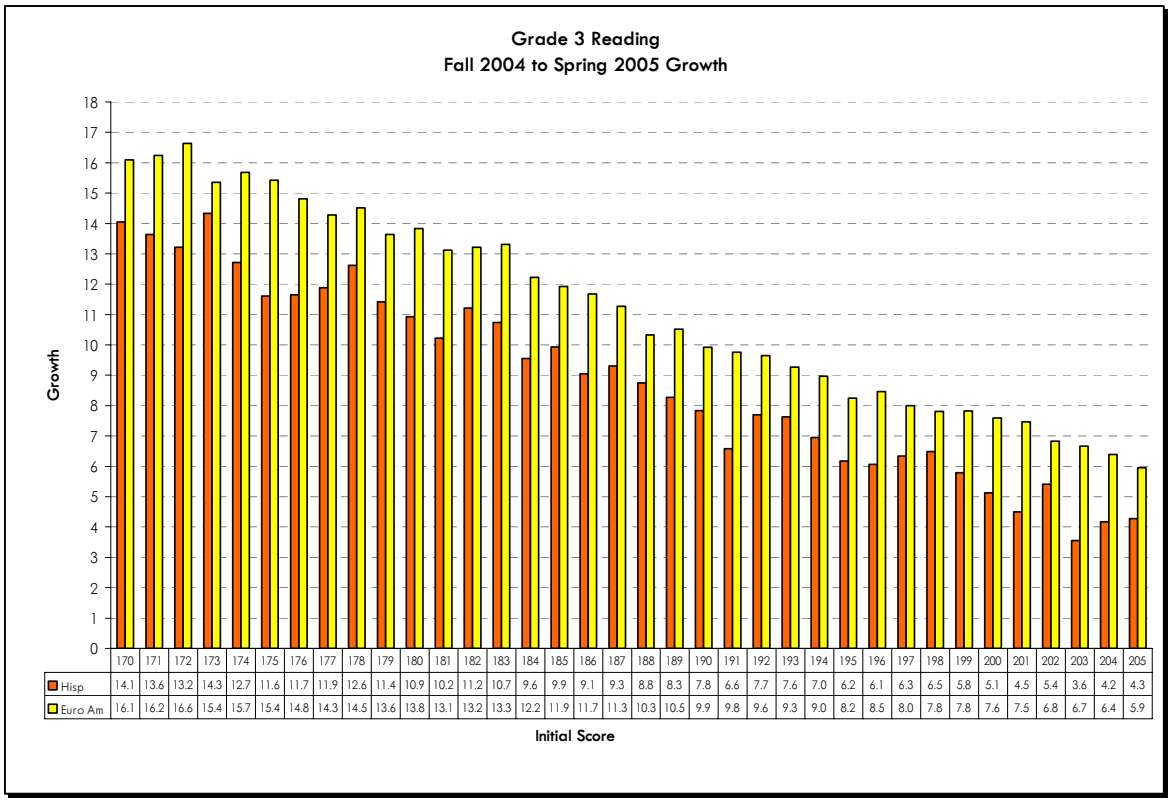


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Hisp	6.9	7.9	5.7	6.6	6.8	5.7	6.5	5.4	5.1	6.5	5.8	6.1	6.4	6.4	5.5	5.5	6.4	6.6	5.9	5.1	4.5	5.8	5.4	5.4	4.8	4.3	5.7	5.5	5.2	3.9	4.7	5.4	4.3	4.2	4.4	3.6
Euro Am	7.5	8.4	7.9	8.6	7.9	7.0	7.1	7.4	7.5	7.0	7.6	7.2	7.0	7.1	6.9	6.5	6.4	6.6	6.1	6.4	6.4	6.4	6.6	6.0	6.3	5.8	6.0	5.9	6.0	5.6	5.9	5.8	5.5	5.6	5.5	5.3

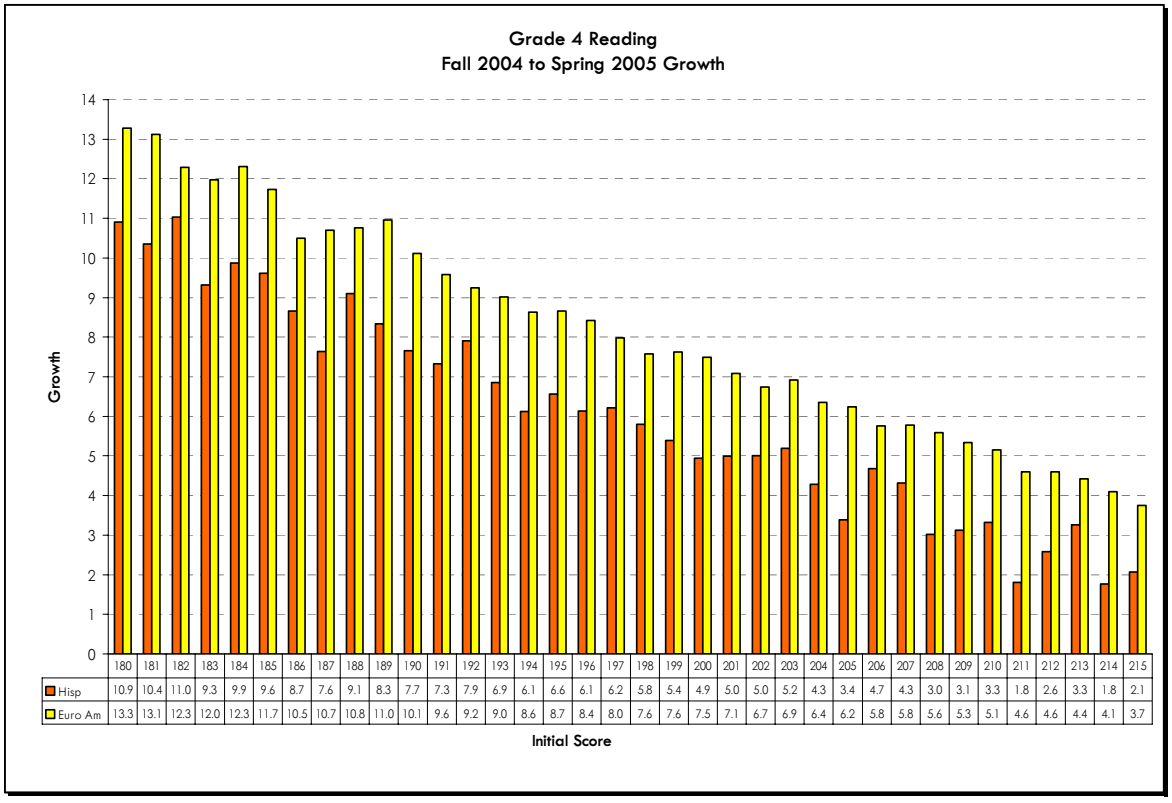


	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242
Hisp	5.2	6.0	5.8	5.6	5.9	6.6	6.0	5.7	5.6	5.5	5.6	5.4	5.0	5.0	4.3	5.9	4.8	5.5	4.7	5.0	4.6	5.0	5.2	4.7	4.3	4.6	3.4	4.4	4.5	4.6	2.9	3.5	3.2	3.6	3.8
Euro Am	5.4	6.8	6.6	7.0	6.6	7.2	5.7	6.1	6.9	6.2	6.7	6.0	6.3	5.5	5.7	5.8	5.8	5.6	5.5	5.7	5.3	4.9	5.0	4.9	4.7	4.9	4.6	4.7	4.3	4.3	4.6	4.4	4.5	4.2	4.1

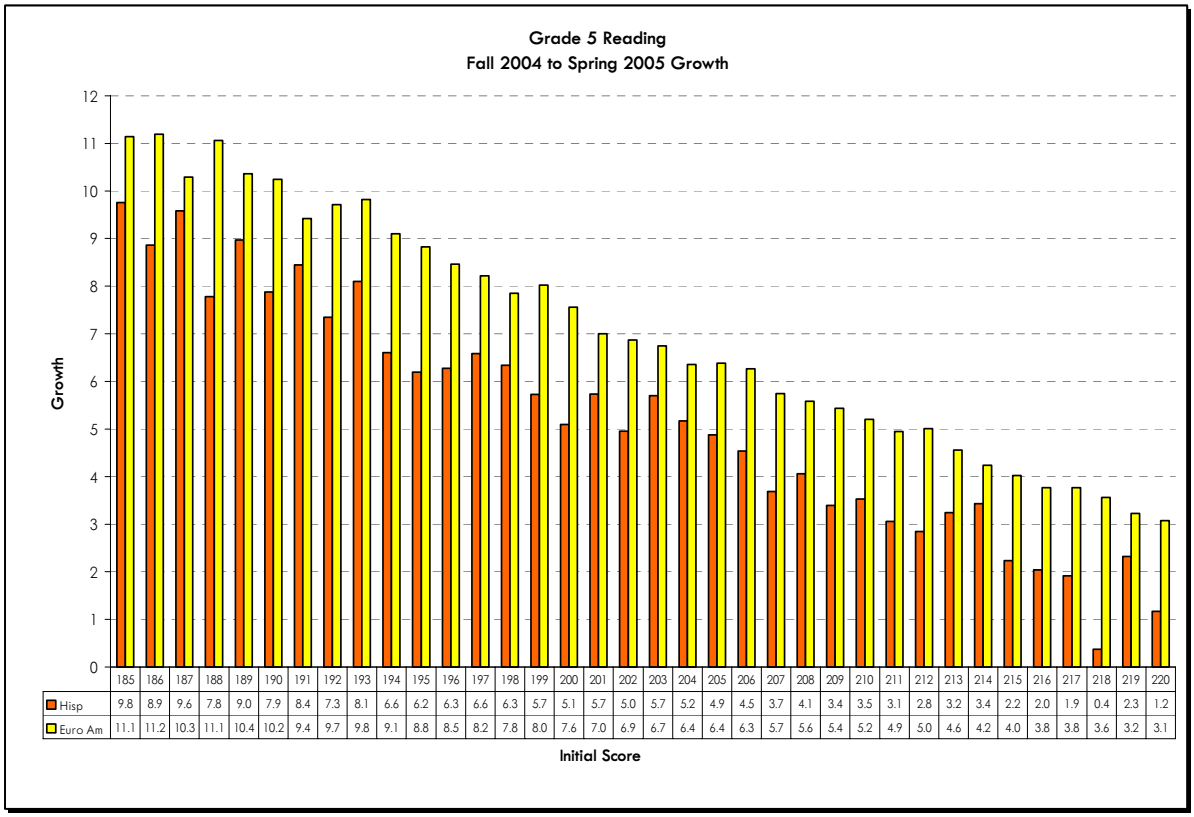
Appendix N: Fall 2004 to Spring 2005 Reading Growth by Ethnic Group—Hispanic



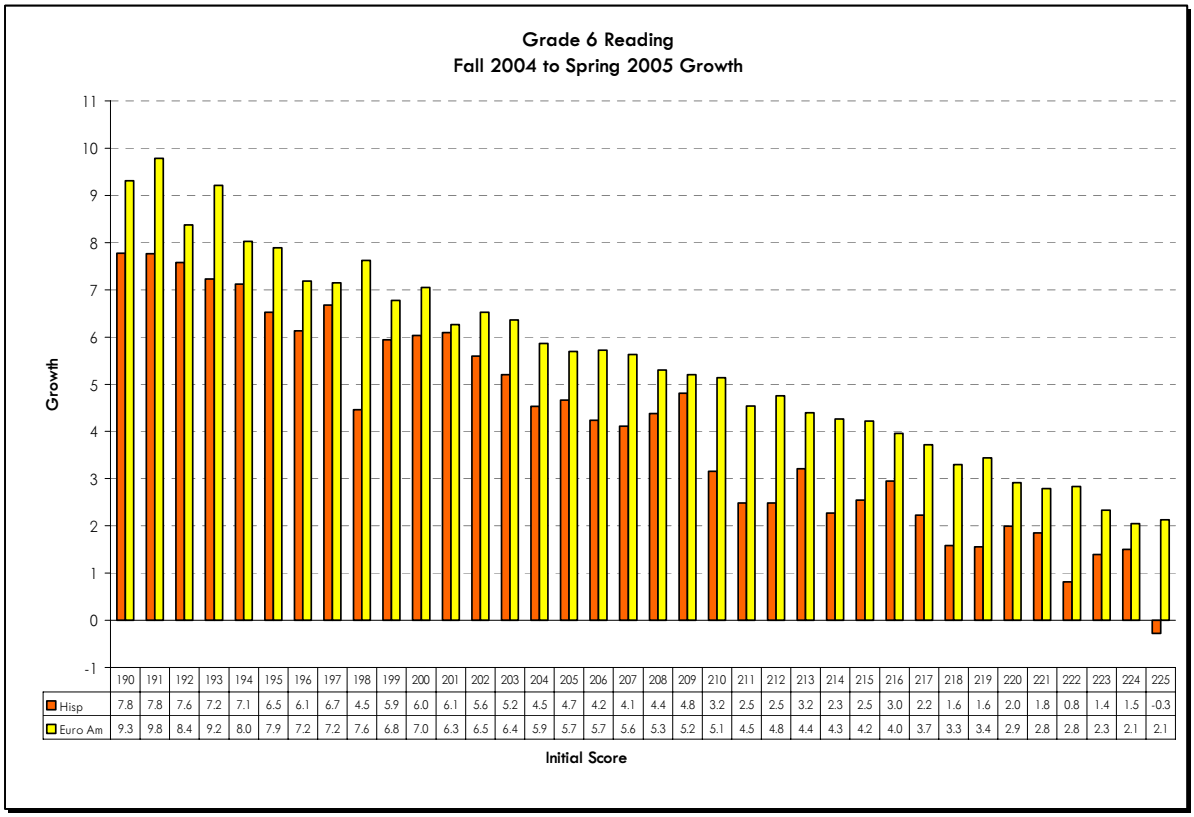
Initial Score	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Hisp	14.1	13.6	13.2	14.3	12.7	11.6	11.7	11.9	12.6	11.4	10.9	10.2	11.2	10.7	9.6	9.9	9.1	9.3	8.8	8.3	7.8	6.6	7.7	7.6	7.0	6.2	6.1	6.3	6.5	5.8	5.1	4.5	5.4	3.6	4.2	4.3
Euro Am	16.1	16.2	16.6	15.4	15.7	15.4	14.8	14.3	14.5	13.6	13.8	13.1	13.2	13.3	12.2	11.9	11.7	11.3	10.3	10.5	9.9	9.8	9.6	9.3	9.0	8.2	8.5	8.0	7.8	7.8	7.6	7.5	6.8	6.7	6.4	5.9



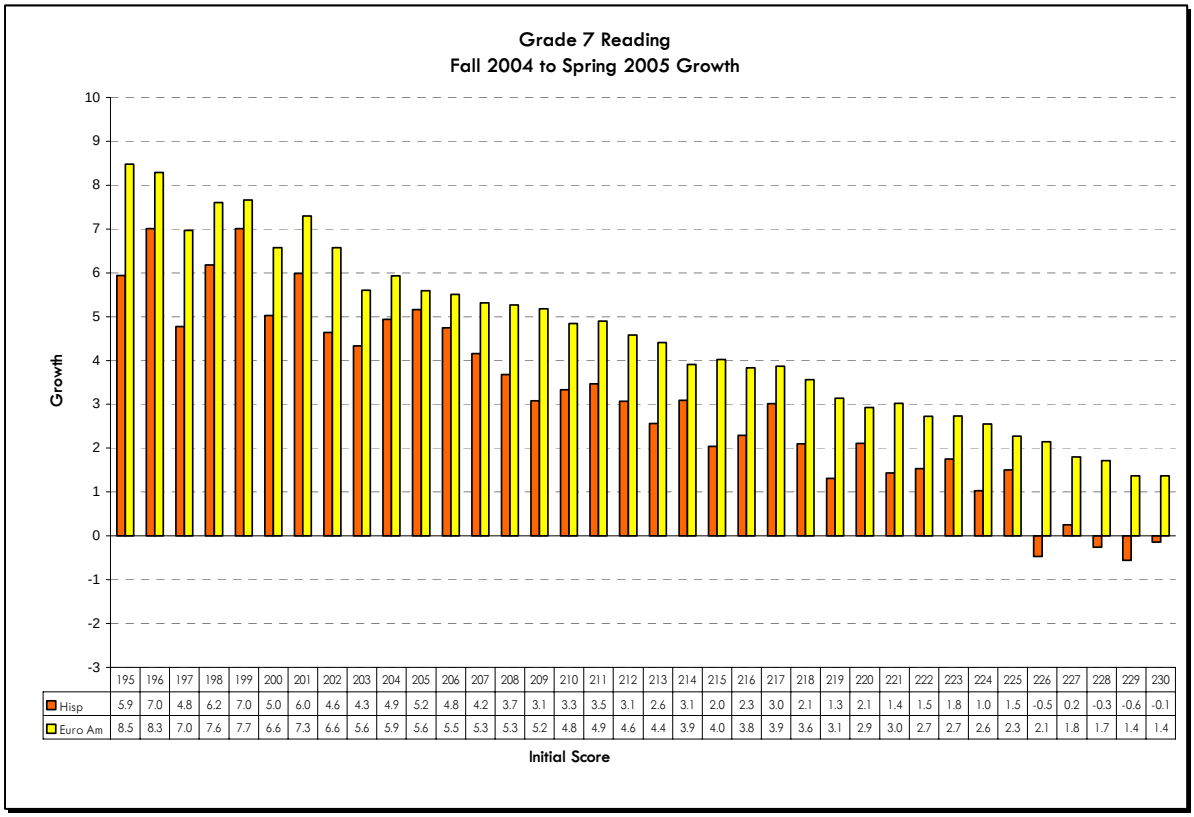
Initial Score	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Hisp	10.9	10.4	11.0	9.3	9.9	9.6	8.7	7.6	9.1	8.3	7.7	7.3	7.9	6.9	6.1	6.6	6.1	6.2	5.8	5.4	4.9	5.0	5.0	5.2	4.3	3.4	4.7	4.3	3.0	3.1	3.3	1.8	2.6	3.3	1.8	2.1
Euro Am	13.3	13.1	12.3	12.0	12.3	11.7	10.5	10.7	10.8	11.0	10.1	9.6	9.2	9.0	8.6	8.7	8.4	8.0	7.6	7.6	7.5	7.1	6.7	6.9	6.4	6.2	5.8	5.8	5.6	5.3	5.1	4.6	4.6	4.4	4.1	3.7



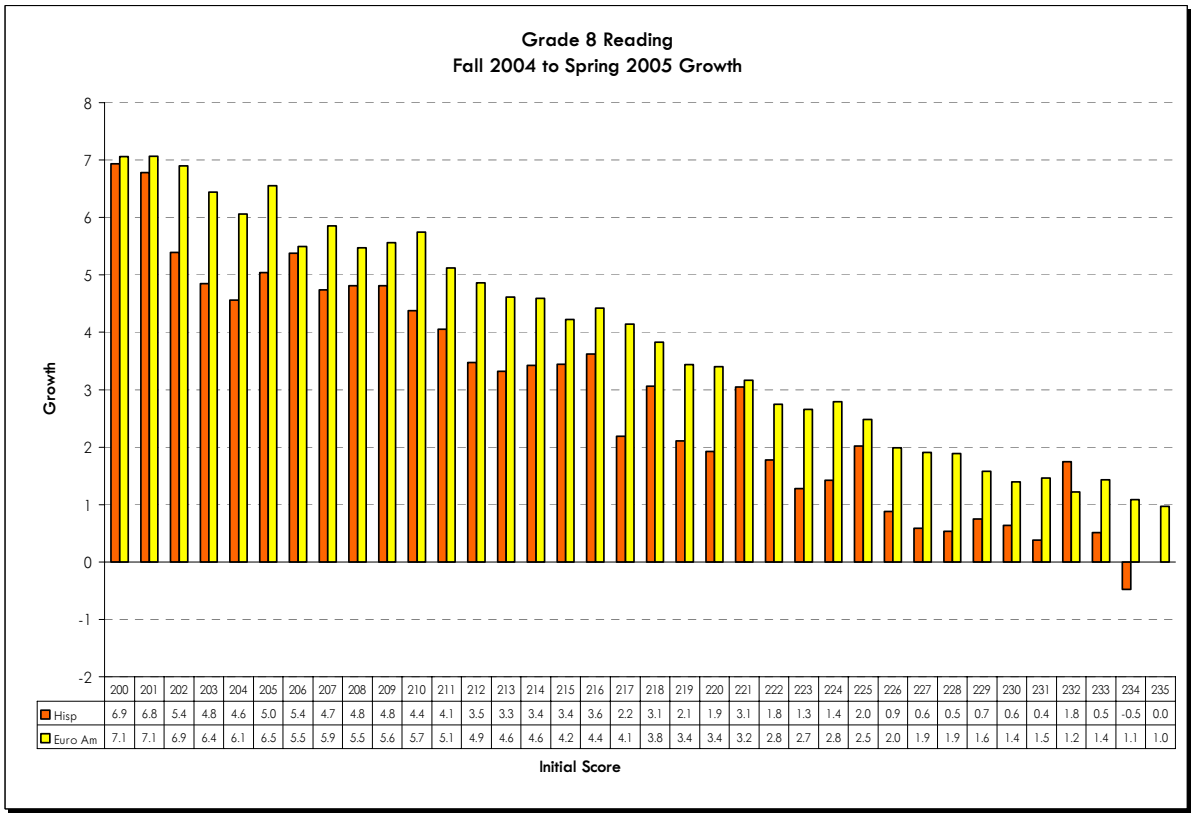
	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Hisp	9.8	8.9	9.6	7.8	9.0	7.9	8.4	7.3	8.1	6.6	6.2	6.3	6.6	6.3	5.7	5.1	5.7	5.0	5.7	5.2	4.9	4.5	3.7	4.1	3.4	3.5	3.1	2.8	3.2	3.4	2.2	2.0	1.9	0.4	2.3	1.2
Euro Am	11.1	11.2	10.3	11.1	10.4	10.2	9.4	9.7	9.8	9.1	8.8	8.5	8.2	7.8	8.0	7.6	7.0	6.9	6.7	6.4	6.4	6.3	5.7	5.6	5.4	5.2	4.9	5.0	4.6	4.2	4.0	3.8	3.8	3.6	3.2	3.1



	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Hisp	7.8	7.8	7.6	7.2	7.1	6.5	6.1	6.7	4.5	5.9	6.0	6.1	5.6	5.2	4.5	4.7	4.2	4.1	4.4	4.8	3.2	2.5	2.5	3.2	2.3	2.5	3.0	2.2	1.6	1.6	2.0	1.8	0.8	1.4	1.5	-0.3
Euro Am	9.3	9.8	8.4	9.2	8.0	7.9	7.2	7.2	7.6	6.8	7.0	6.3	6.5	6.4	5.9	5.7	5.7	5.6	5.3	5.2	5.1	4.5	4.8	4.4	4.3	4.2	4.0	3.7	3.3	3.4	2.9	2.8	2.8	2.3	2.1	2.1

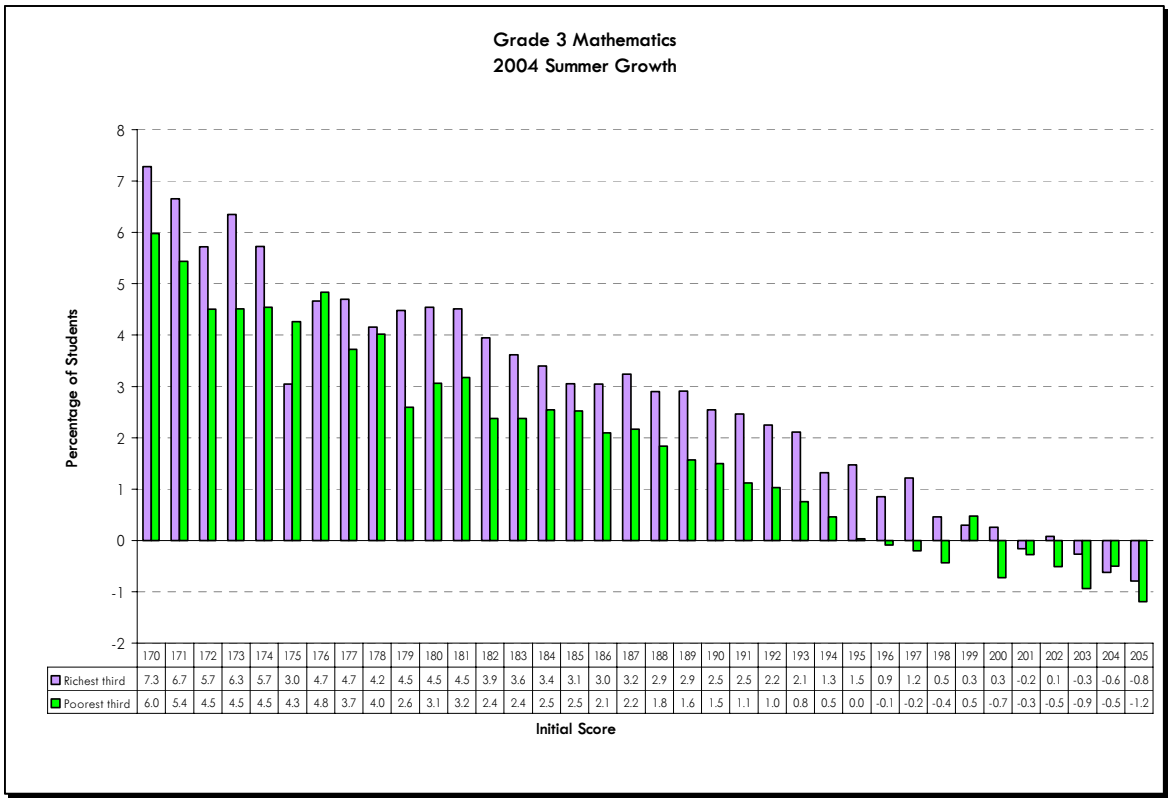


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Hisp	5.9	7.0	4.8	6.2	7.0	5.0	6.0	4.6	4.3	4.9	5.2	4.8	4.2	3.7	3.1	3.3	3.5	3.1	2.6	3.1	2.0	2.3	3.0	2.1	1.3	2.1	1.4	1.5	1.8	1.0	1.5	-0.5	0.2	-0.3	-0.6	-0.1
Euro Am	8.5	8.3	7.0	7.6	7.7	6.6	7.3	6.6	5.6	5.9	5.6	5.5	5.3	5.3	5.2	4.8	4.9	4.6	4.4	3.9	4.0	3.8	3.9	3.6	3.1	2.9	3.0	2.7	2.7	2.6	2.3	2.1	1.8	1.7	1.4	1.4

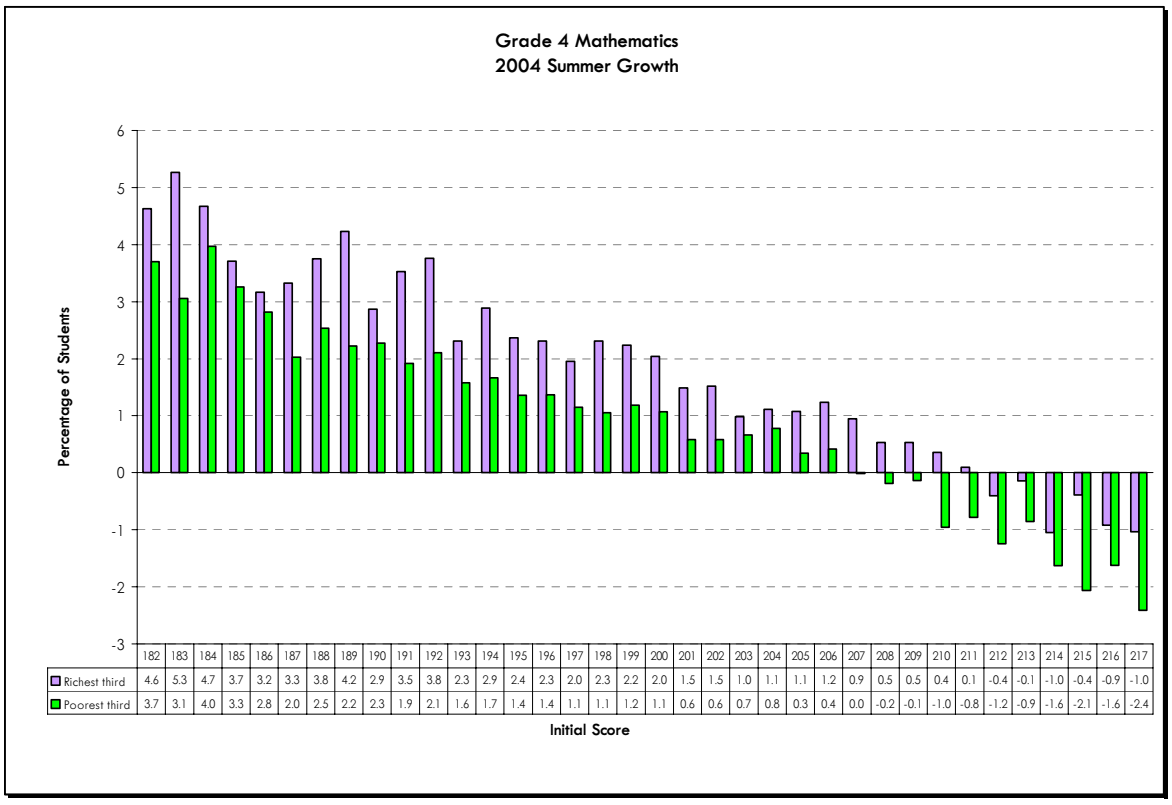


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Hisp	6.9	6.8	5.4	4.8	4.6	5.0	5.4	4.7	4.8	4.8	4.4	4.1	3.5	3.3	3.4	3.4	3.6	2.2	3.1	2.1	1.9	3.1	1.8	1.3	1.4	2.0	0.9	0.6	0.5	0.7	0.6	0.4	1.8	0.5	-0.5	0.0
Euro Am	7.1	7.1	6.9	6.4	6.1	6.5	5.5	5.9	5.5	5.6	5.7	5.1	4.9	4.6	4.6	4.2	4.4	4.1	3.8	3.4	3.4	3.2	2.8	2.7	2.8	2.5	2.0	1.9	1.9	1.6	1.4	1.5	1.2	1.4	1.1	1.0

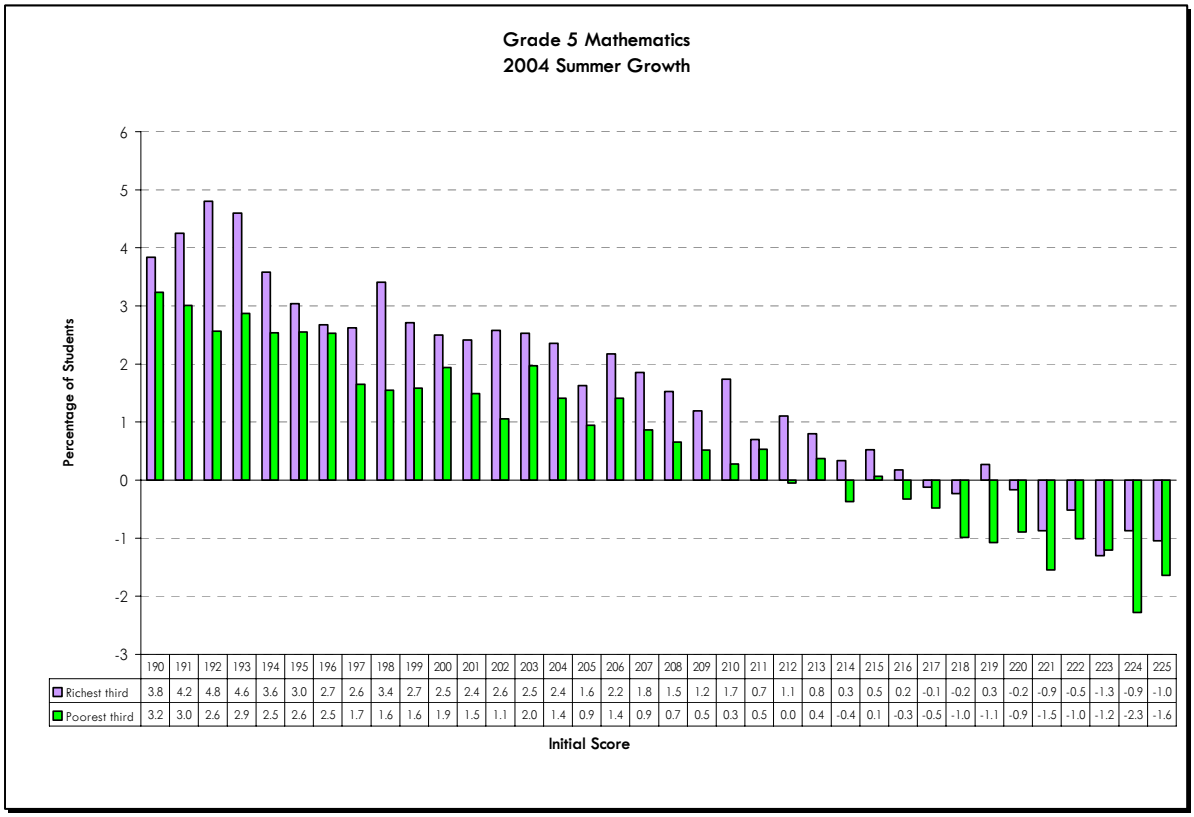
Appendix O: Spring 2004 to Fall 2004 Summer Growth by Poverty Category—Mathematics



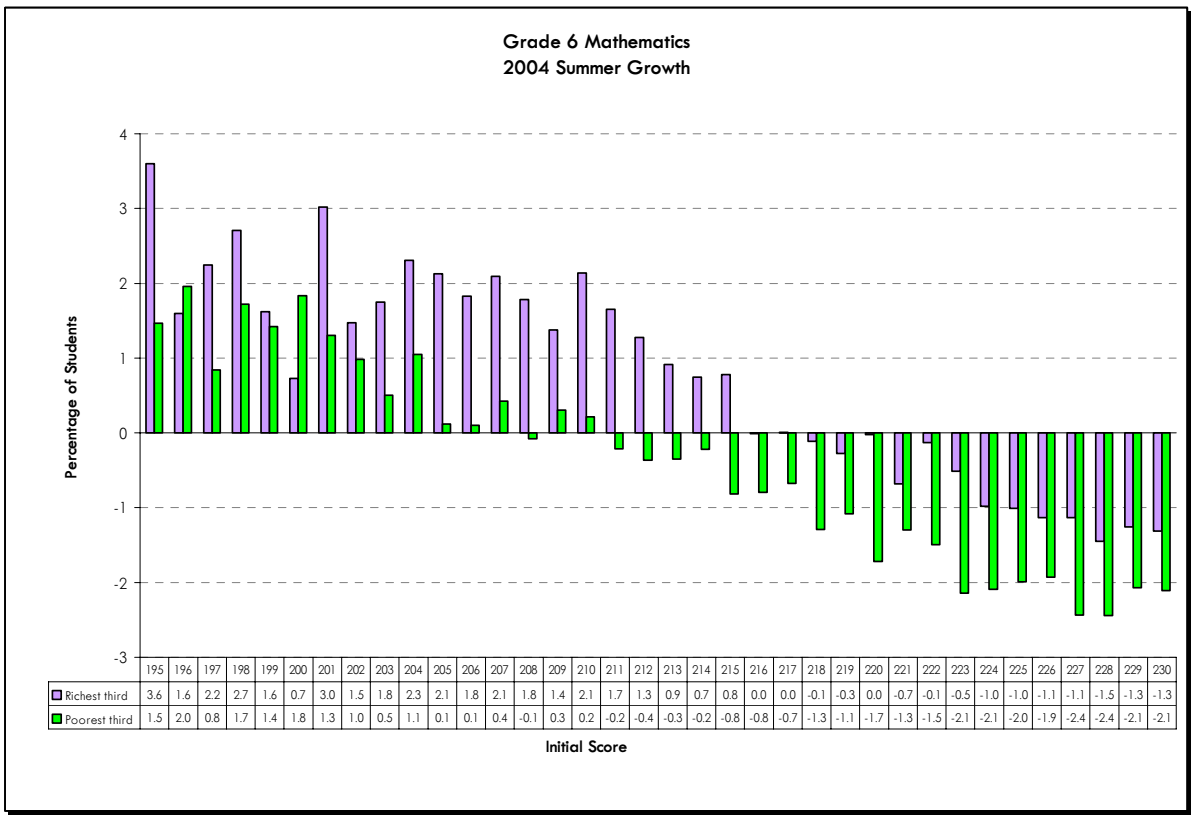
	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Richest third	7.3	6.7	5.7	6.3	5.7	3.0	4.7	4.7	4.2	4.5	4.5	4.5	3.9	3.6	3.4	3.1	3.0	3.2	2.9	2.9	2.5	2.5	2.2	2.1	1.3	1.5	0.9	1.2	0.5	0.3	0.3	-0.2	0.1	-0.3	-0.6	-0.8
Poorest third	6.0	5.4	4.5	4.5	4.5	4.3	4.8	3.7	4.0	2.6	3.1	3.2	2.4	2.4	2.5	2.5	2.1	2.2	1.8	1.6	1.5	1.1	1.0	0.8	0.5	0.0	-0.1	-0.2	-0.4	0.5	-0.7	-0.3	-0.5	-0.9	-0.5	-1.2



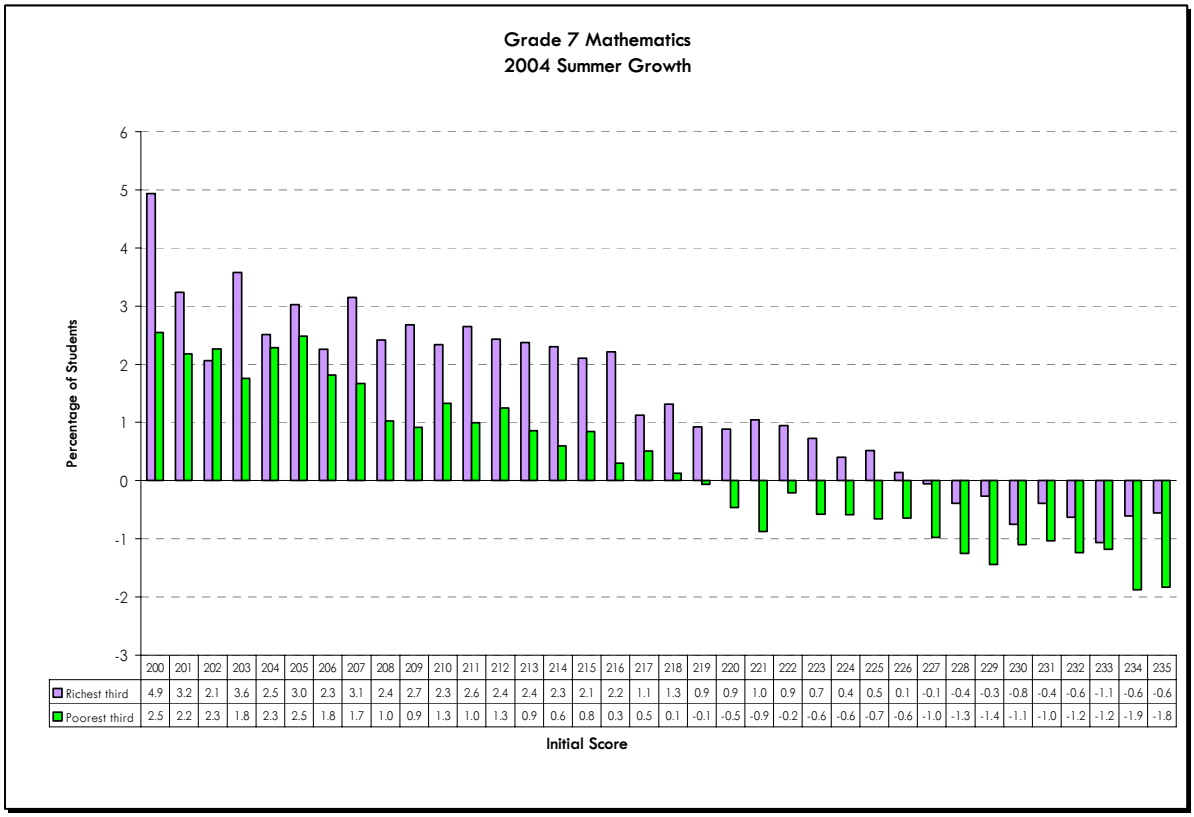
	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217
Richest third	4.6	5.3	4.7	3.7	3.2	3.3	3.8	4.2	2.9	3.5	3.8	2.3	2.9	2.4	2.3	2.0	2.3	2.2	2.0	1.5	1.5	1.0	1.1	1.1	1.2	0.9	0.5	0.5	0.4	0.1	-0.4	-0.1	-1.0	-0.4	-0.9	-1.0
Poorest third	3.7	3.1	4.0	3.3	2.8	2.0	2.5	2.2	2.3	1.9	2.1	1.6	1.7	1.4	1.4	1.1	1.1	1.2	1.1	0.6	0.6	0.7	0.8	0.3	0.4	0.0	-0.2	-0.1	-1.0	-0.8	-1.2	-0.9	-1.6	-2.1	-1.6	-2.4



	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Richest third	3.8	4.2	4.8	4.6	3.6	3.0	2.7	2.6	3.4	2.7	2.5	2.4	2.6	2.5	2.4	1.6	2.2	1.8	1.5	1.2	1.7	0.7	1.1	0.8	0.3	0.5	0.2	-0.1	-0.2	0.3	-0.2	-0.9	-0.5	-1.3	-0.9	-1.0
Poorest third	3.2	3.0	2.6	2.9	2.5	2.6	2.5	1.7	1.6	1.6	1.9	1.5	1.1	2.0	1.4	0.9	1.4	0.9	0.7	0.5	0.3	0.5	0.0	0.4	-0.4	0.1	-0.3	-0.5	-1.0	-1.1	-0.9	-1.5	-1.0	-1.2	-2.3	-1.6

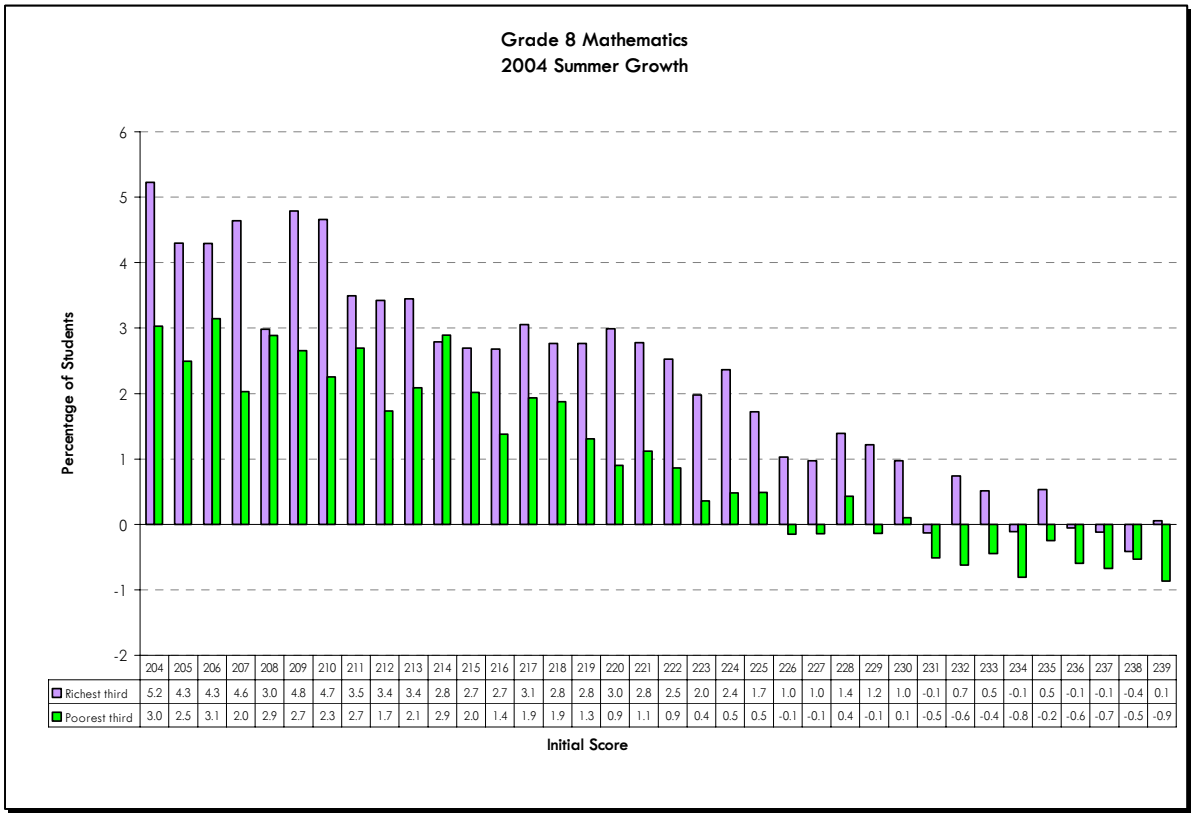


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Richest third	3.6	1.6	2.2	2.7	1.6	0.7	3.0	1.5	1.8	2.3	2.1	1.8	2.1	1.8	1.4	2.1	1.7	1.3	0.9	0.7	0.8	0.0	0.0	-0.1	-0.3	0.0	-0.7	-0.1	-0.5	-1.0	-1.0	-1.1	-1.1	-1.5	-1.3	-1.3
Poorest third	1.5	2.0	0.8	1.7	1.4	1.8	1.3	1.0	0.5	1.1	0.1	0.1	0.4	-0.1	0.3	0.2	-0.2	-0.4	-0.3	-0.2	-0.8	-0.8	-0.7	-1.3	-1.1	-1.7	-1.3	-1.5	-2.1	-2.1	-2.0	-1.9	-2.4	-2.4	-2.1	-2.1



	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Richest third	4.9	3.2	2.1	3.6	2.5	3.0	2.3	3.1	2.4	2.7	2.3	2.6	2.4	2.4	2.3	2.1	2.2	1.1	1.3	0.9	0.9	1.0	0.9	0.7	0.4	0.5	0.1	-0.1	-0.4	-0.3	-0.8	-0.4	-0.6	-1.1	-0.6	-0.6
Poorest third	2.5	2.2	2.3	1.8	2.3	2.5	1.8	1.7	1.0	0.9	1.3	1.0	1.3	0.9	0.6	0.8	0.3	0.5	0.1	-0.1	-0.5	-0.9	-0.2	-0.6	-0.6	-0.7	-0.6	-1.0	-1.3	-1.4	-1.1	-1.0	-1.2	-1.2	-1.9	-1.8

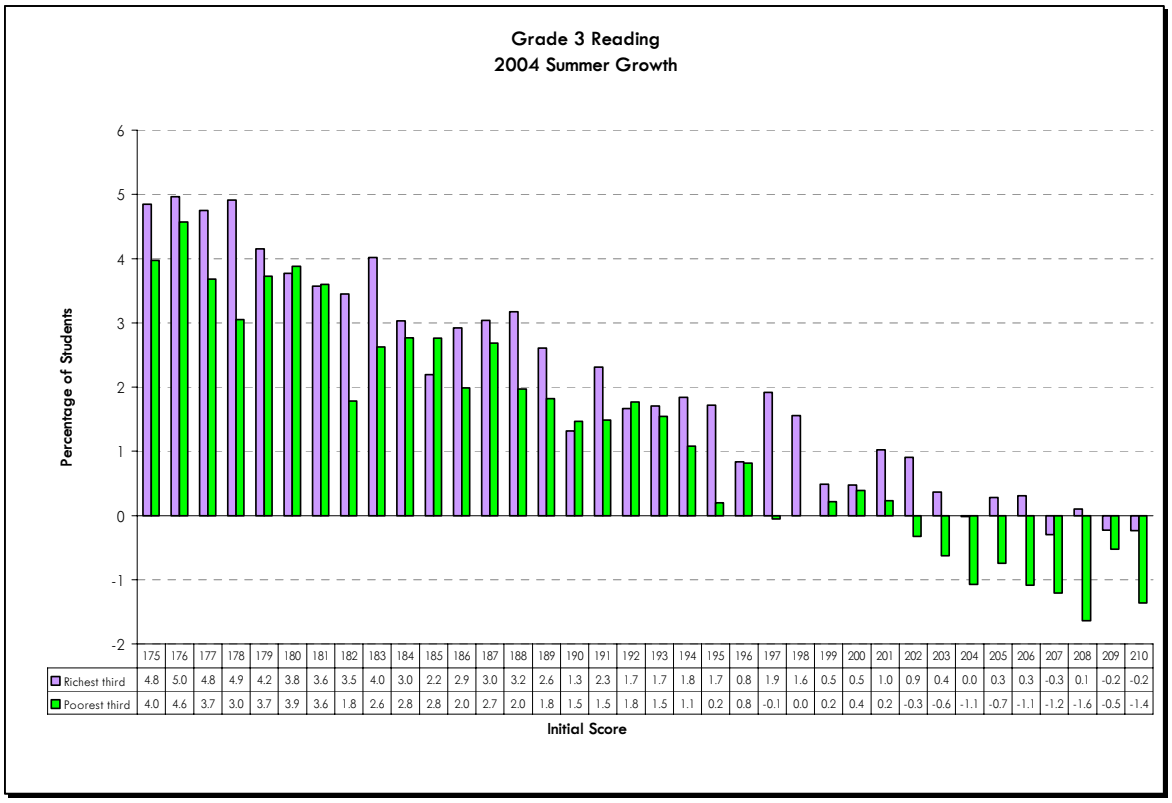
Initial Score



	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Richest third	5.2	4.3	4.3	4.6	3.0	4.8	4.7	3.5	3.4	3.4	2.8	2.7	2.7	3.1	2.8	2.8	3.0	2.8	2.5	2.0	2.4	1.7	1.0	1.0	1.4	1.2	1.0	-0.1	0.7	0.5	-0.1	0.5	-0.1	-0.1	-0.4	0.1
Poorest third	3.0	2.5	3.1	2.0	2.9	2.7	2.3	2.7	1.7	2.1	2.9	2.0	1.4	1.9	1.9	1.3	0.9	1.1	0.9	0.4	0.5	0.5	-0.1	-0.1	0.4	-0.1	0.1	-0.5	-0.6	-0.4	-0.8	-0.2	-0.6	-0.7	-0.5	-0.9

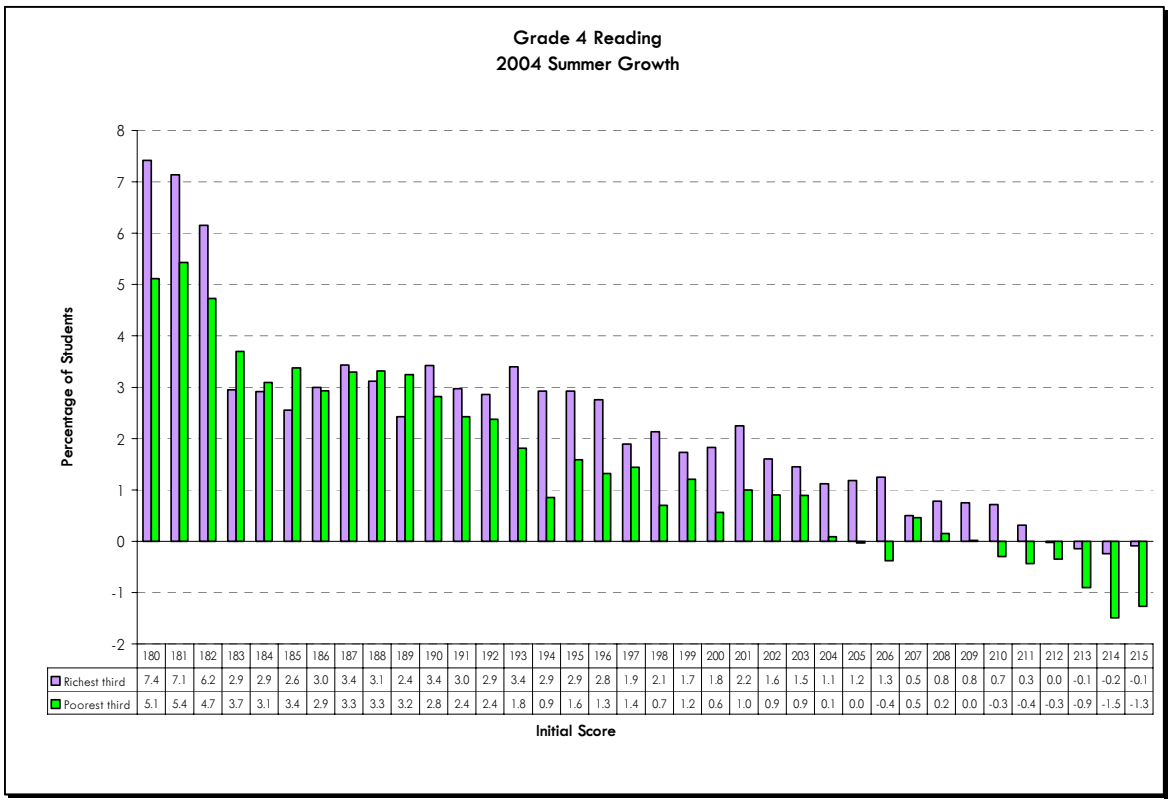
Initial Score

Appendix P: Spring 2004 to Fall 2004 Summer Growth by Poverty Category—Reading



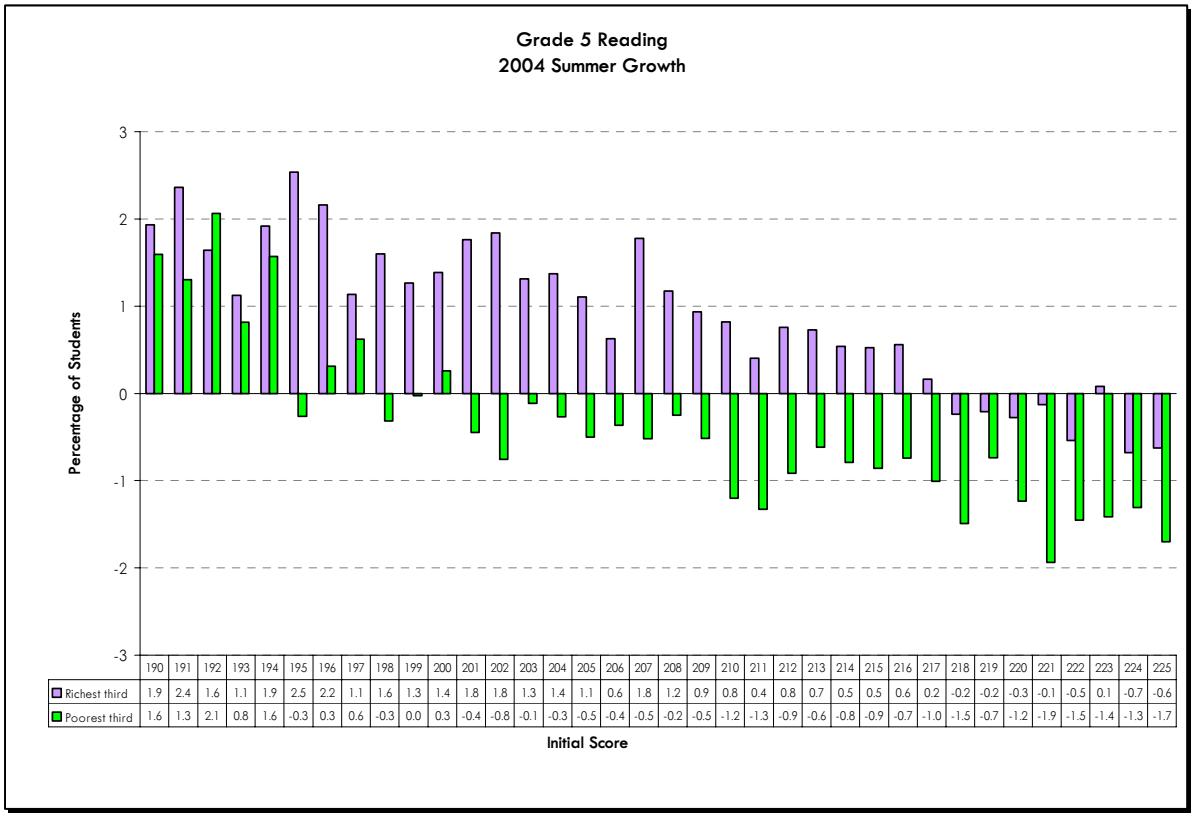
	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
Richest third	4.8	5.0	4.8	4.9	4.2	3.8	3.6	3.5	4.0	3.0	2.2	2.9	3.0	3.2	2.6	1.3	2.3	1.7	1.7	1.8	1.7	0.8	1.9	1.6	0.5	0.5	1.0	0.9	0.4	0.0	0.3	0.3	-0.3	0.1	-0.2	-0.2
Poorest third	4.0	4.6	3.7	3.0	3.7	3.9	3.6	1.8	2.6	2.8	2.8	2.0	2.7	2.0	1.8	1.5	1.5	1.8	1.5	1.1	0.2	0.8	-0.1	0.0	0.2	0.4	0.2	-0.3	-0.6	-1.1	-0.7	-1.1	-1.2	-1.6	-0.5	-1.4

Initial Score

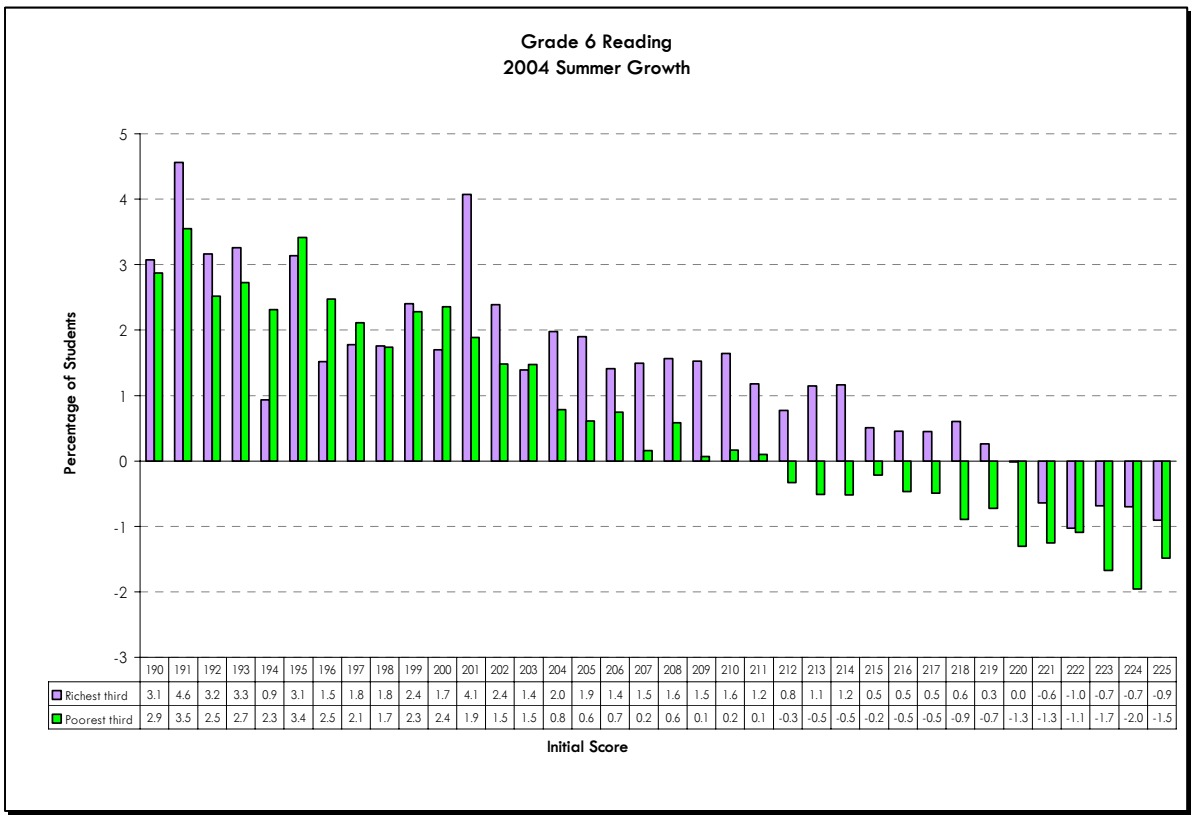


	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Richest third	7.4	7.1	6.2	2.9	2.9	2.6	3.0	3.4	3.1	2.4	3.4	3.0	2.9	3.4	2.9	2.9	2.8	1.9	2.1	1.7	1.8	2.2	1.6	1.5	1.1	1.2	1.3	0.5	0.8	0.8	0.7	0.3	0.0	-0.1	-0.2	-0.1
Poorest third	5.1	5.4	4.7	3.7	3.1	3.4	2.9	3.3	3.3	3.2	2.8	2.4	2.4	1.8	0.9	1.6	1.3	1.4	0.7	1.2	0.6	1.0	0.9	0.9	0.1	0.0	-0.4	0.5	0.2	0.0	-0.3	-0.4	-0.3	-0.9	-1.5	-1.3

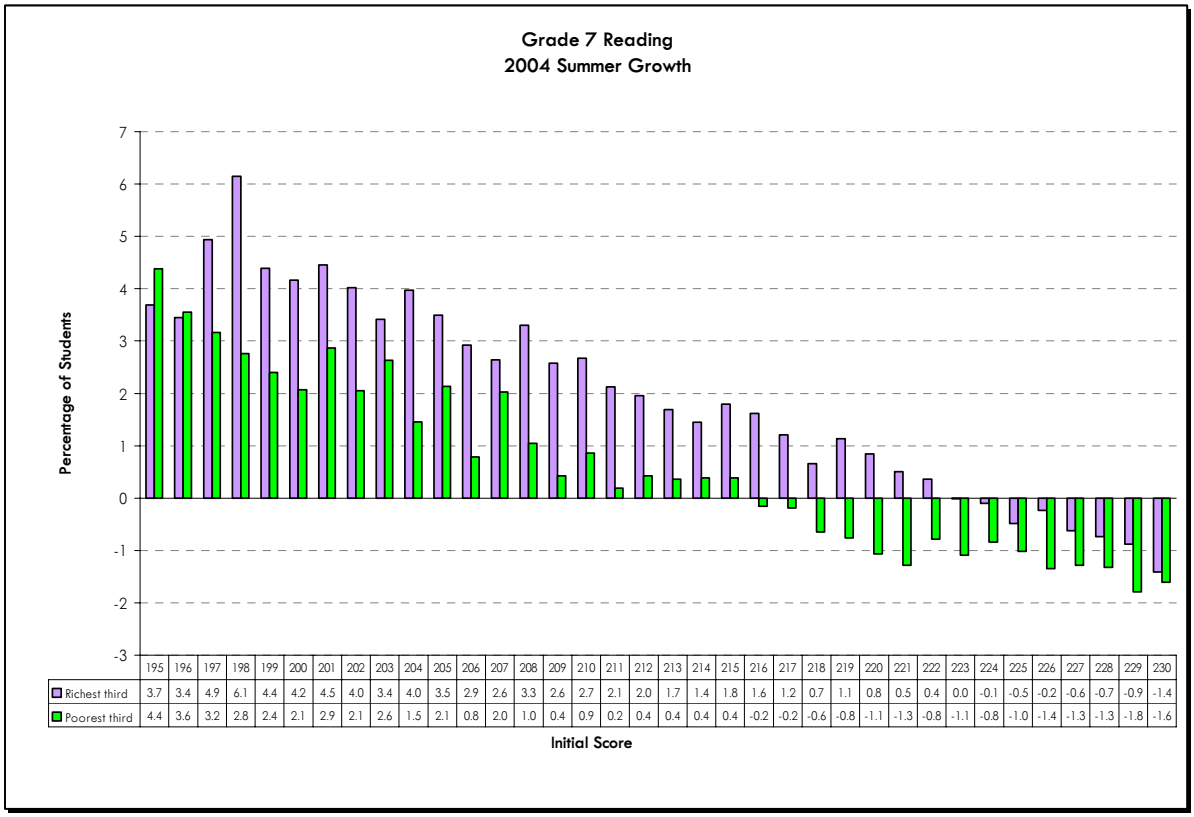
Initial Score



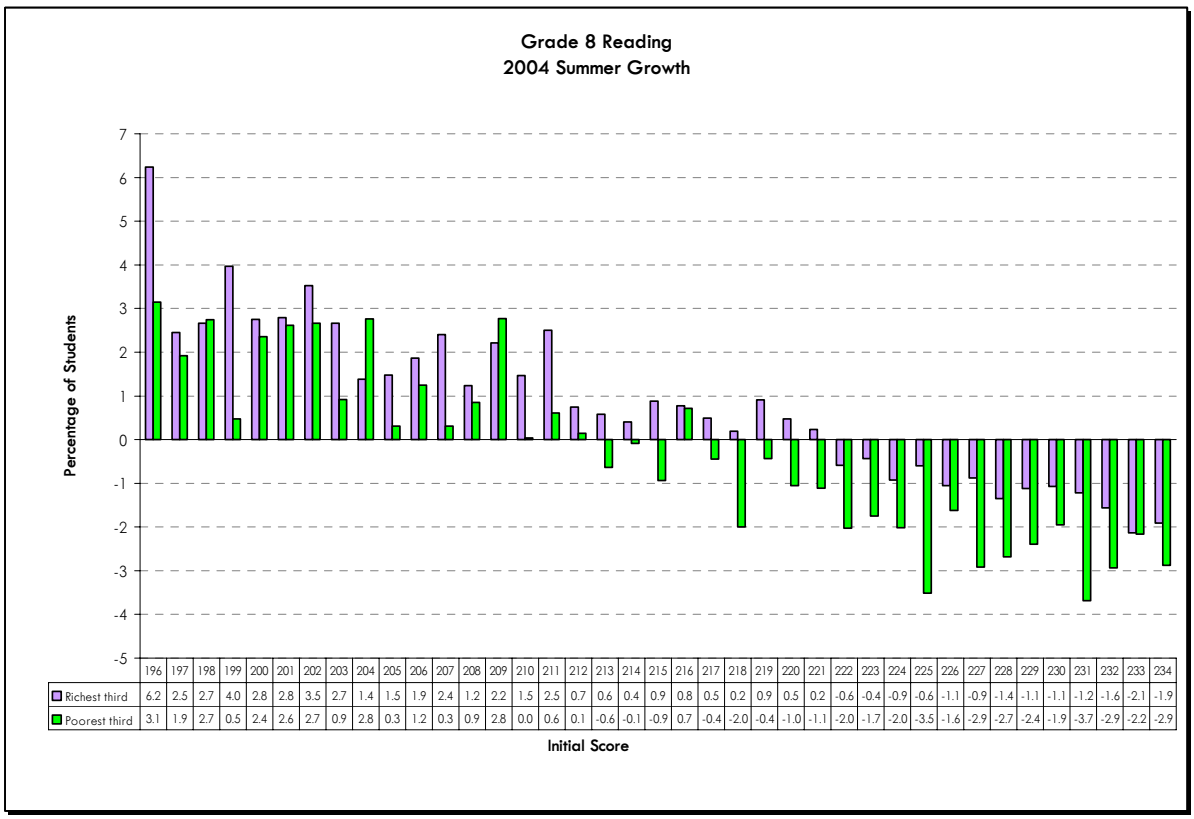
	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Richest third	1.9	2.4	1.6	1.1	1.9	2.5	2.2	1.1	1.6	1.3	1.4	1.8	1.8	1.3	1.4	1.1	0.6	1.8	1.2	0.9	0.8	0.4	0.8	0.7	0.5	0.5	0.6	0.2	-0.2	-0.2	-0.3	-0.1	-0.5	0.1	-0.7	-0.6
Poorest third	1.6	1.3	2.1	0.8	1.6	-0.3	0.3	0.6	-0.3	0.0	0.3	-0.4	-0.8	-0.1	-0.3	-0.5	-0.4	-0.5	-0.2	-0.5	-1.2	-1.3	-0.9	-0.6	-0.8	-0.9	-0.7	-1.0	-1.5	-0.7	-1.2	-1.9	-1.5	-1.4	-1.3	-1.7



	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Richest third	3.1	4.6	3.2	3.3	0.9	3.1	1.5	1.8	1.8	2.4	1.7	4.1	2.4	1.4	2.0	1.9	1.4	1.5	1.6	1.5	1.6	1.2	0.8	1.1	1.2	0.5	0.5	0.5	0.6	0.3	0.0	-0.6	-1.0	-0.7	-0.7	-0.9
Poorest third	2.9	3.5	2.5	2.7	2.3	3.4	2.5	2.1	1.7	2.3	2.4	1.9	1.5	1.5	0.8	0.6	0.7	0.2	0.6	0.1	0.2	0.1	-0.3	-0.5	-0.5	-0.2	-0.5	-0.5	-0.9	-0.7	-1.3	-1.3	-1.1	-1.7	-2.0	-1.5

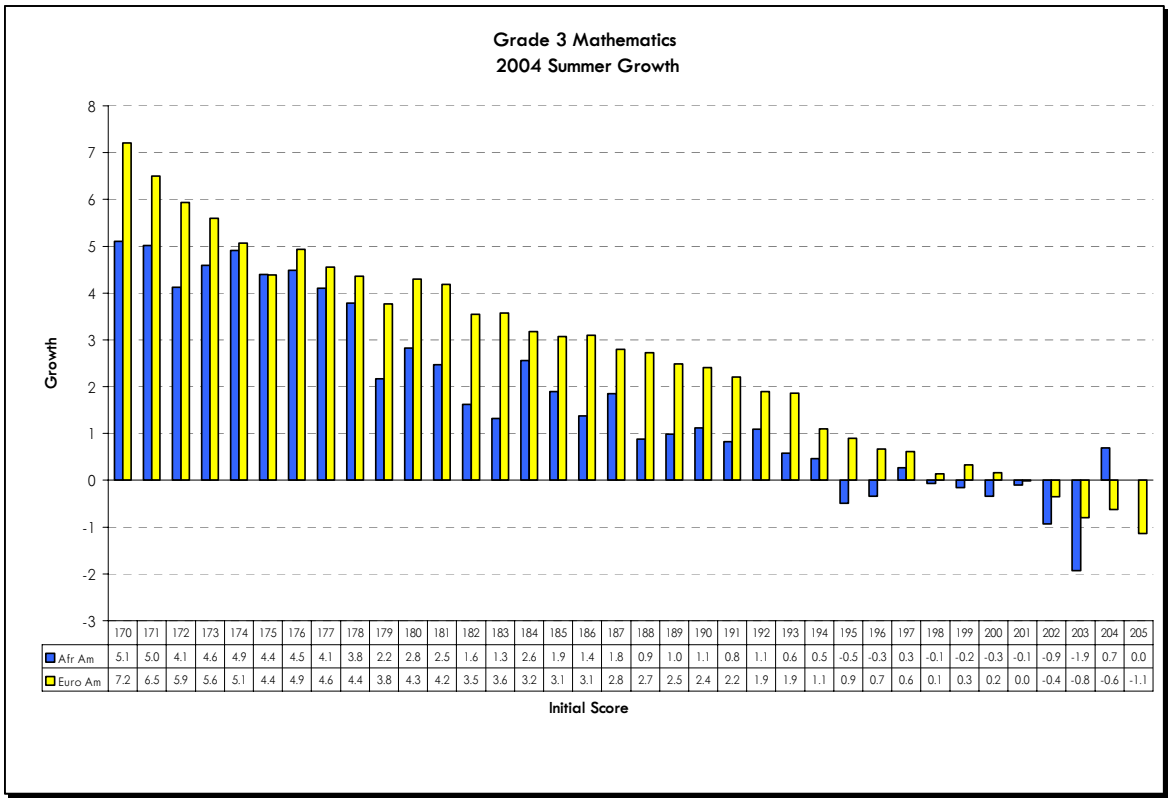


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Richest third	3.7	3.4	4.9	6.1	4.4	4.2	4.5	4.0	3.4	4.0	3.5	2.9	2.6	3.3	2.6	2.7	2.1	2.0	1.7	1.4	1.8	1.6	1.2	0.7	1.1	0.8	0.5	0.4	0.0	-0.1	-0.5	-0.2	-0.6	-0.7	-0.9	-1.4
Poorest third	4.4	3.6	3.2	2.8	2.4	2.1	2.9	2.1	2.6	1.5	2.1	0.8	2.0	1.0	0.4	0.9	0.2	0.4	0.4	0.4	0.4	-0.2	-0.2	-0.6	-0.8	-1.1	-1.3	-0.8	-1.1	-0.8	-1.0	-1.4	-1.3	-1.3	-1.8	-1.6

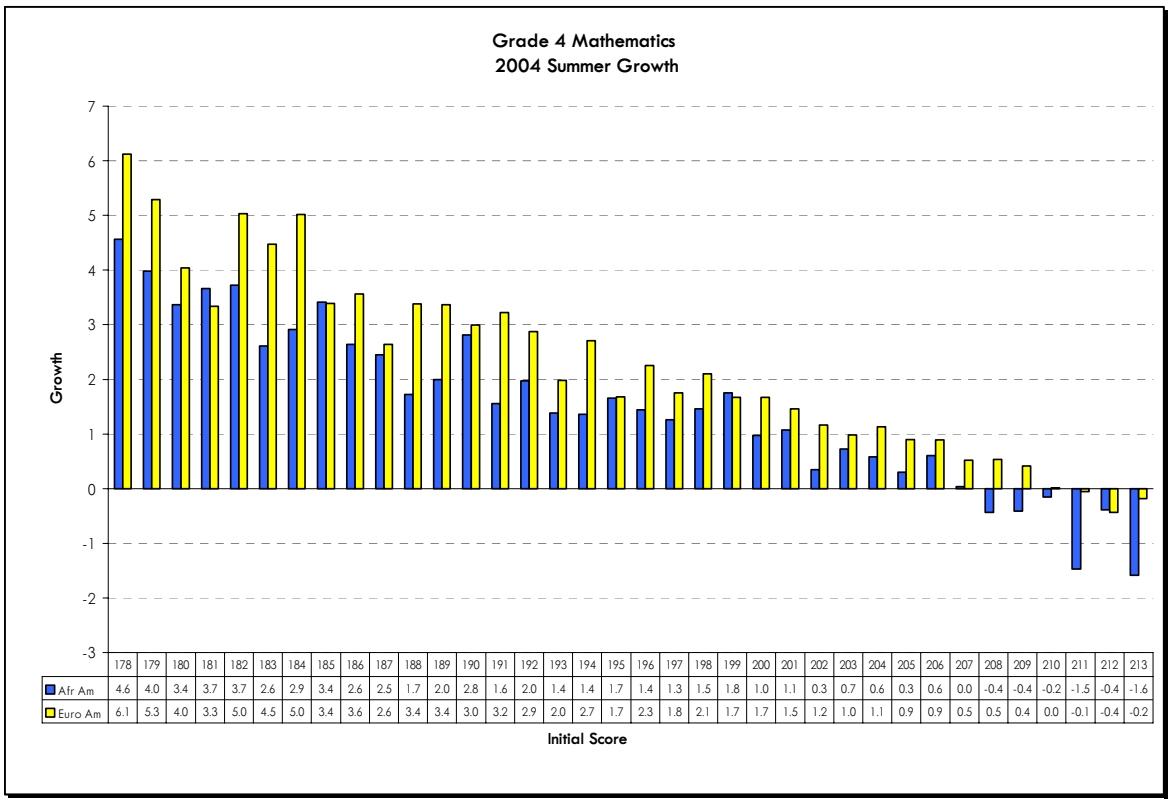


	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
Richest third	6.2	2.5	2.7	4.0	2.8	2.8	3.5	2.7	1.4	1.5	1.9	2.4	1.2	2.2	1.5	2.5	0.7	0.6	0.4	0.9	0.8	0.5	0.2	0.9	0.5	0.2	-0.6	-0.4	-0.9	-0.6	-1.1	-0.9	-1.4	-1.1	-1.1	-1.2	-1.6	-2.1	-1.9
Poorest third	3.1	1.9	2.7	0.5	2.4	2.6	2.7	0.9	2.8	0.3	1.2	0.3	0.9	2.8	0.0	0.6	0.1	-0.6	-0.1	-0.9	0.7	-0.4	-2.0	-0.4	-1.0	-1.1	-2.0	-1.7	-2.0	-3.5	-1.6	-2.9	-2.7	-2.4	-1.9	-3.7	-2.9	-2.2	-2.9

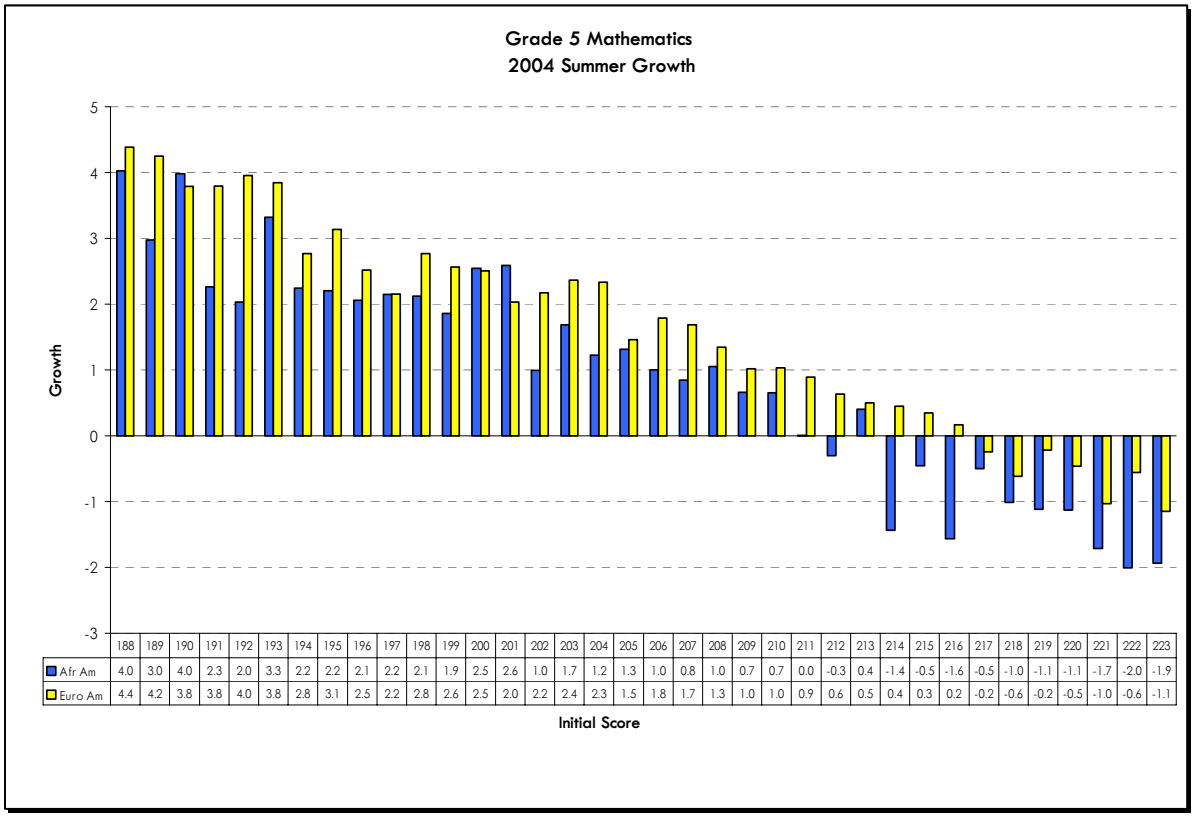
Appendix Q: Spring 2004 to Fall 2004 Mathematics Summer Growth by Ethnic Group—African-American



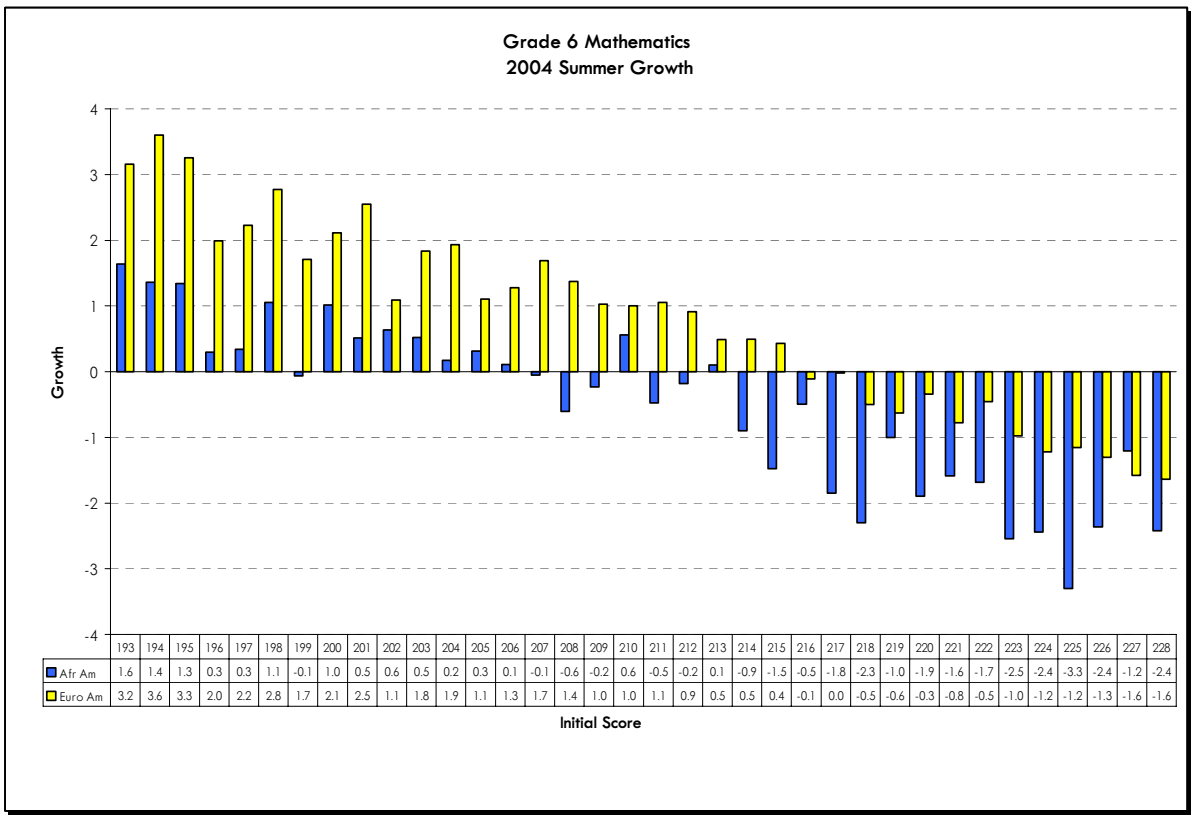
	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Afr Am	5.1	5.0	4.1	4.6	4.9	4.4	4.5	4.1	3.8	2.2	2.8	2.5	1.6	1.3	2.6	1.9	1.4	1.8	0.9	1.0	1.1	0.8	1.1	0.6	0.5	-0.5	-0.3	0.3	-0.1	-0.2	-0.3	-0.1	-0.9	-1.9	0.7	0.0
Euro Am	7.2	6.5	5.9	5.6	5.1	4.4	4.9	4.6	4.4	3.8	4.3	4.2	3.5	3.6	3.2	3.1	3.1	2.8	2.7	2.5	2.4	2.2	1.9	1.9	1.1	0.9	0.7	0.6	0.1	0.3	0.2	0.0	-0.4	-0.8	-0.6	-1.1



	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213
Afr Am	4.6	4.0	3.4	3.7	3.7	2.6	2.9	3.4	2.6	2.5	1.7	2.0	2.8	1.6	2.0	1.4	1.4	1.7	1.4	1.3	1.5	1.8	1.0	1.1	0.3	0.7	0.6	0.3	0.6	0.0	-0.4	-0.4	-0.2	-1.5	-0.4	-1.6
Euro Am	6.1	5.3	4.0	3.3	5.0	4.5	5.0	3.4	3.6	2.6	3.4	3.4	3.0	3.2	2.9	2.0	2.7	1.7	2.3	1.8	2.1	1.7	1.7	1.5	1.2	1.0	1.1	0.9	0.9	0.5	0.5	0.4	0.0	-0.1	-0.4	-0.2



	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Afr Am	4.0	3.0	4.0	2.3	2.0	3.3	2.2	2.2	2.1	2.2	2.1	1.9	2.5	2.6	1.0	1.7	1.2	1.3	1.0	0.8	1.0	0.7	0.7	0.0	-0.3	0.4	-1.4	-0.5	-1.6	-0.5	-1.0	-1.1	-1.1	-1.7	-2.0	-1.9
Euro Am	4.4	4.2	3.8	3.8	4.0	3.8	2.8	3.1	2.5	2.2	2.8	2.6	2.5	2.0	2.2	2.4	2.3	1.5	1.8	1.7	1.3	1.0	1.0	0.9	0.6	0.5	0.4	0.3	0.2	-0.2	-0.6	-0.2	-0.5	-1.0	-0.6	-1.1



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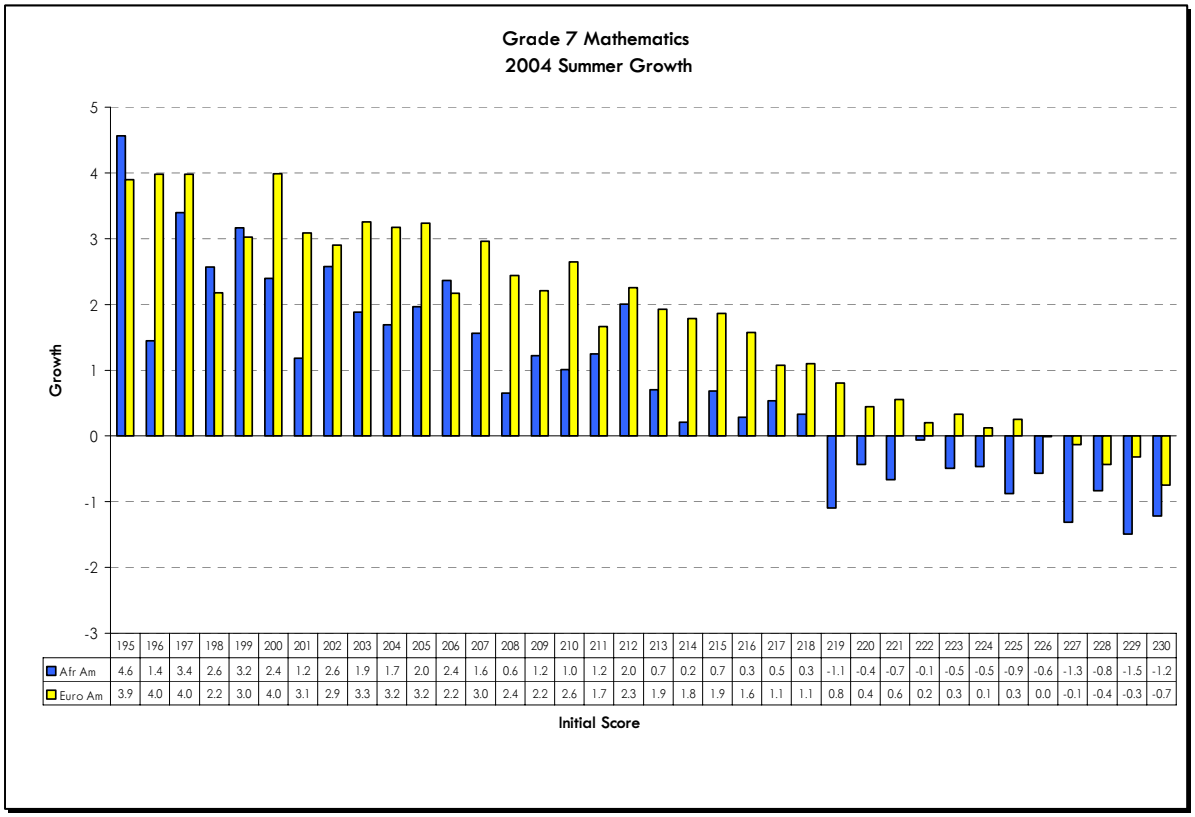
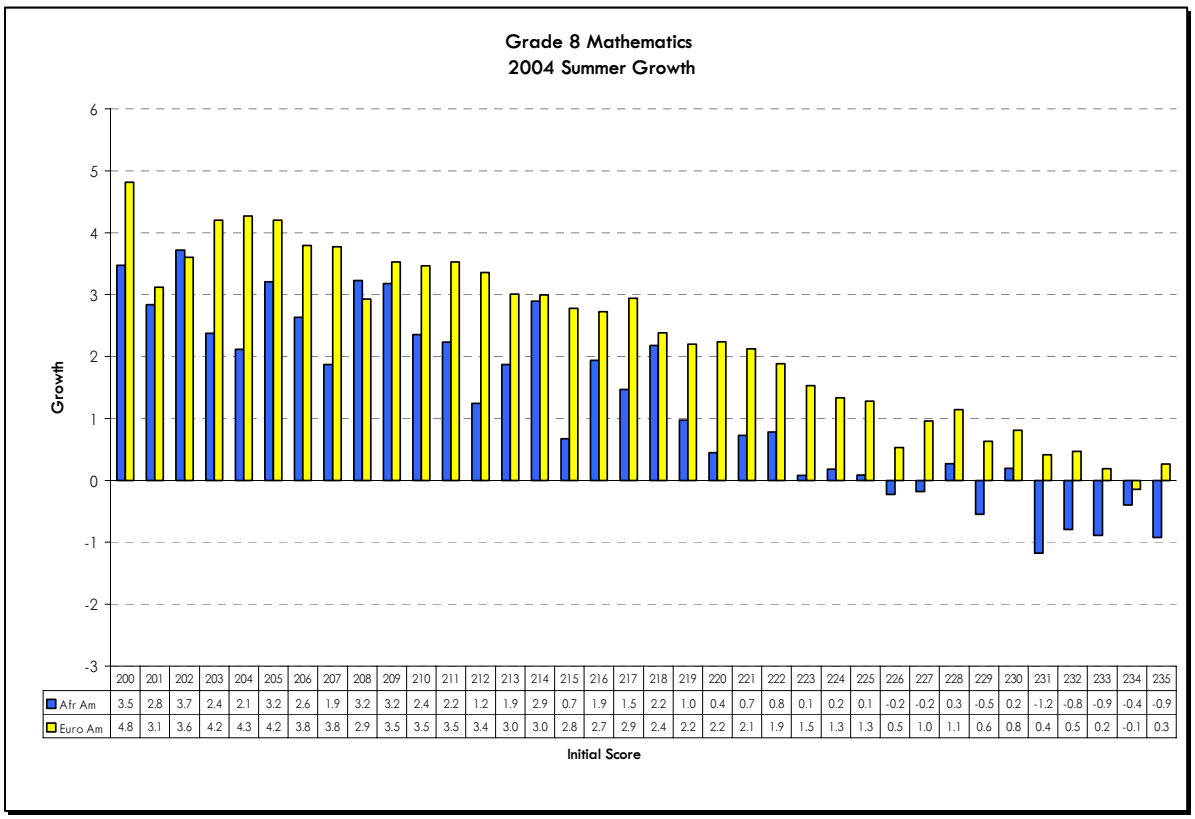
Afr Am	1.6	1.4	1.3	0.3	0.3	1.1	-0.1	1.0	0.5	0.6	0.5	0.2	0.3	0.1	-0.1	-0.6	-0.2	0.6	-0.5	-0.2	0.1	-0.9	-1.5	-0.5	-1.8	-2.3	-1.0	-1.9	-1.6	-1.7	-2.5	-2.4	-3.3	-2.4	-1.2	-2.4
Euro Am	3.2	3.6	3.3	2.0	2.2	2.8	1.7	2.1	2.5	1.1	1.8	1.9	1.1	1.3	1.7	1.4	1.0	1.0	1.1	0.9	0.5	0.5	0.4	-0.1	0.0	-0.5	-0.6	-0.3	-0.8	-0.5	-1.0	-1.2	-1.2	-1.3	-1.6	-1.6

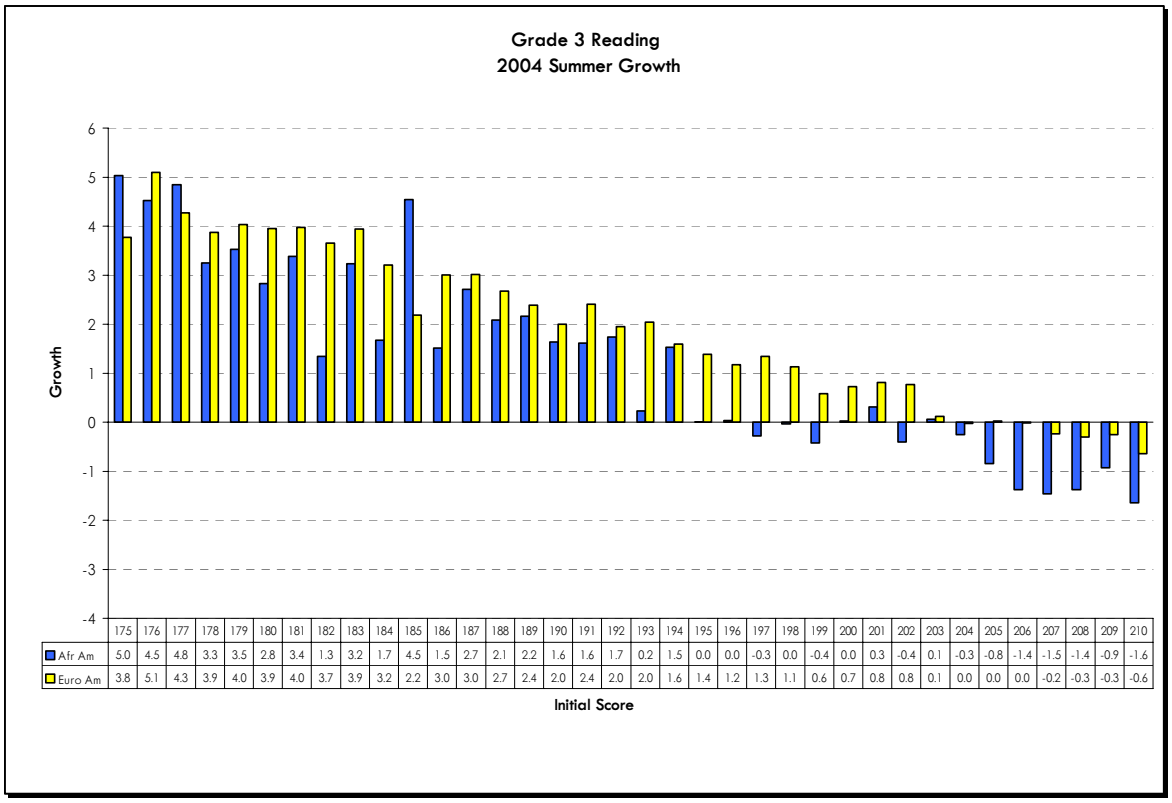


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Afr Am	4.6	1.4	3.4	2.6	3.2	2.4	1.2	2.6	1.9	1.7	2.0	2.4	1.6	0.6	1.2	1.0	1.2	2.0	0.7	0.2	0.7	0.3	0.5	0.3	-1.1	-0.4	-0.7	-0.1	-0.5	-0.5	-0.9	-0.6	-1.3	-0.8	-1.5	-1.2
Euro Am	3.9	4.0	4.0	2.2	3.0	4.0	3.1	2.9	3.3	3.2	3.2	2.2	3.0	2.4	2.2	2.6	1.7	2.3	1.9	1.8	1.9	1.6	1.1	1.1	0.8	0.4	0.6	0.2	0.3	0.1	0.3	0.0	-0.1	-0.4	-0.3	-0.7



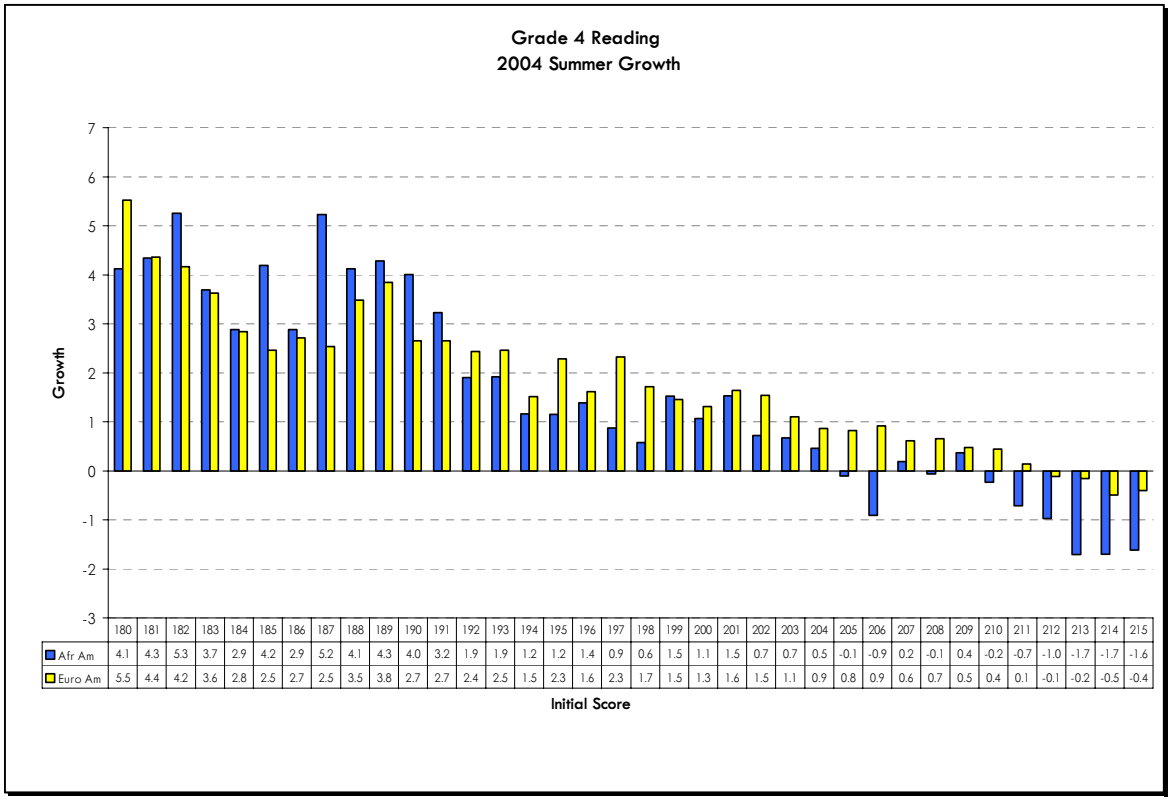
	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Afr Am	3.5	2.8	3.7	2.4	2.1	3.2	2.6	1.9	3.2	3.2	2.4	2.2	1.2	1.9	2.9	0.7	1.9	1.5	2.2	1.0	0.4	0.7	0.8	0.1	0.2	0.1	-0.2	-0.2	0.3	-0.5	0.2	-1.2	-0.8	-0.9	-0.4	-0.9
Euro Am	4.8	3.1	3.6	4.2	4.3	4.2	3.8	3.8	2.9	3.5	3.5	3.5	3.4	3.0	3.0	2.8	2.7	2.9	2.4	2.2	2.2	2.1	1.9	1.5	1.3	1.3	0.5	1.0	1.1	0.6	0.8	0.4	0.5	0.2	-0.1	0.3

Appendix R: Spring 2004 to Fall 2004 Reading Summer Growth by Ethnic Group—African-American



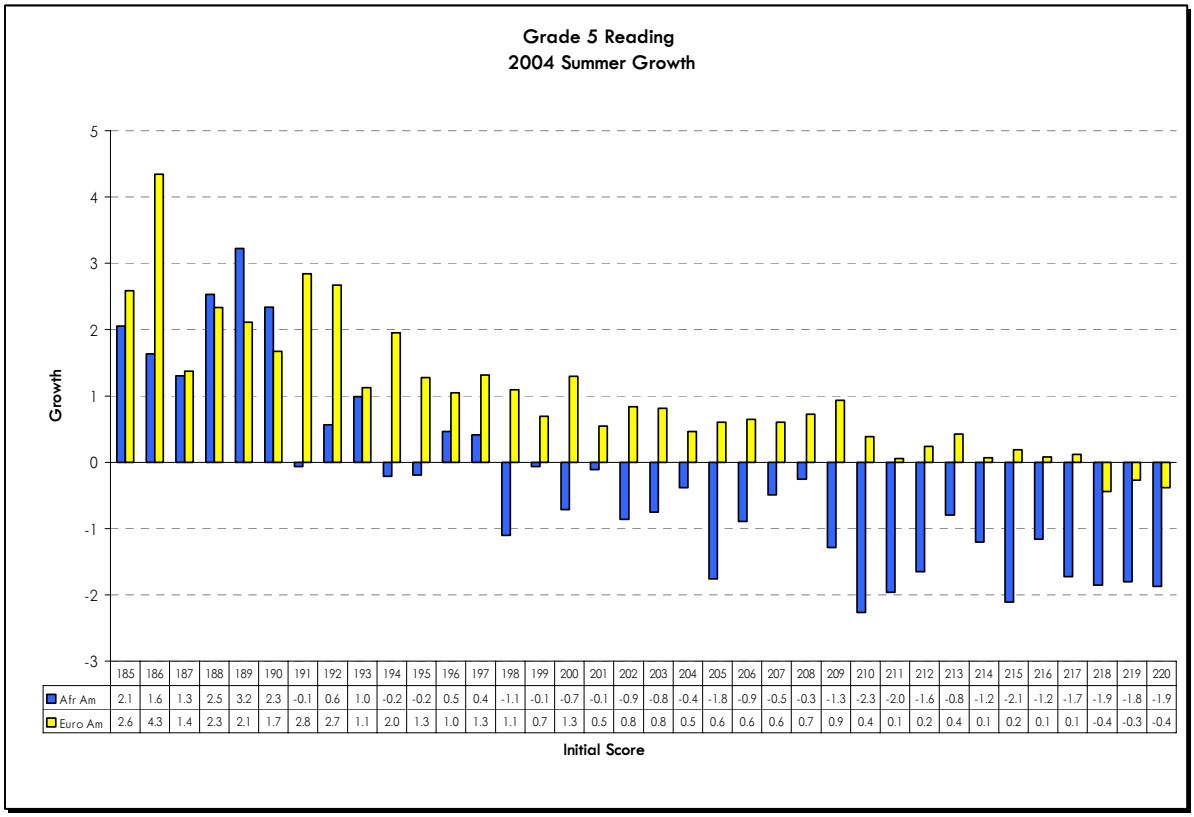
	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
Afr Am	5.0	4.5	4.8	3.3	3.5	2.8	3.4	1.3	3.2	1.7	4.5	1.5	2.7	2.1	2.2	1.6	1.6	1.7	0.2	1.5	0.0	0.0	-0.3	0.0	-0.4	0.0	0.3	-0.4	0.1	-0.3	-0.8	-1.4	-1.5	-1.4	-0.9	-1.6
Euro Am	3.8	5.1	4.3	3.9	4.0	3.9	4.0	3.7	3.9	3.2	2.2	3.0	3.0	2.7	2.4	2.0	2.4	2.0	2.0	1.6	1.4	1.2	1.3	1.1	0.6	0.7	0.8	0.8	0.1	0.0	0.0	0.0	-0.2	-0.3	-0.3	-0.6

Initial Score

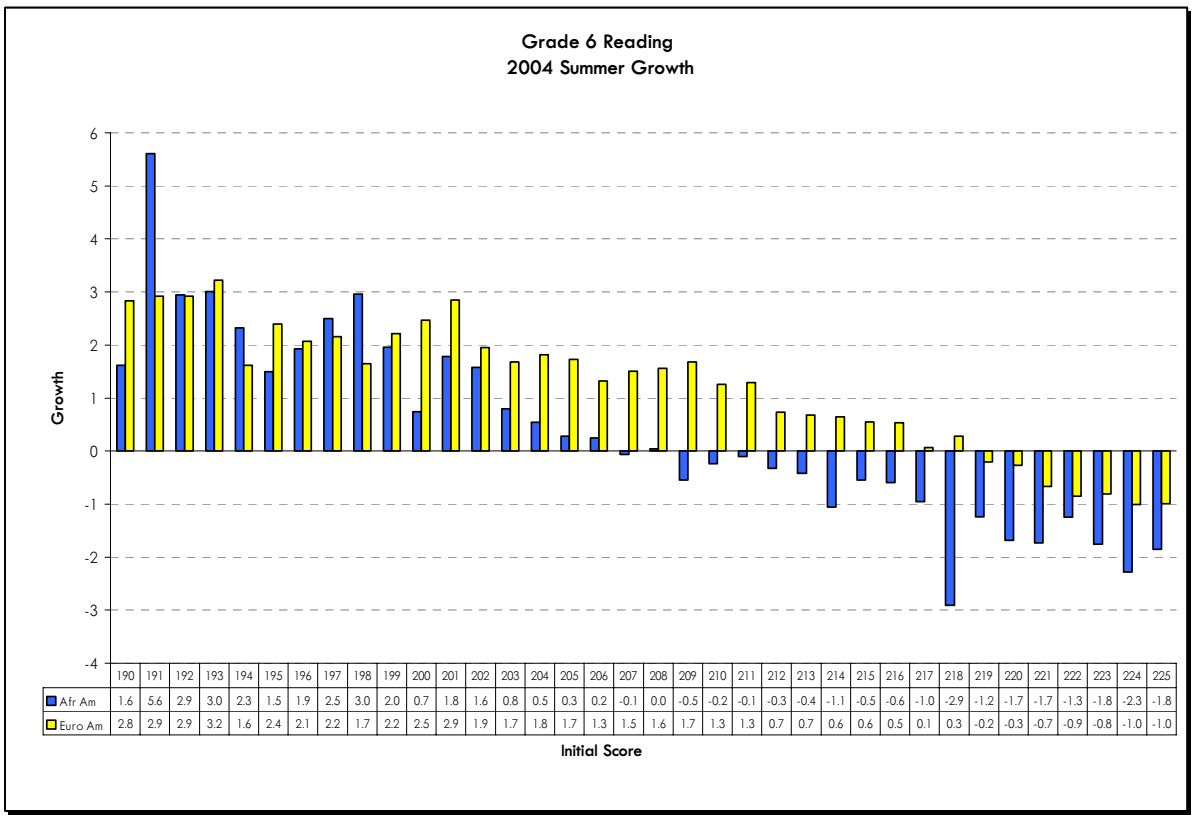


	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Afr Am	4.1	4.3	5.3	3.7	2.9	4.2	2.9	5.2	4.1	4.3	4.0	3.2	1.9	1.9	1.2	1.2	1.4	0.9	0.6	1.5	1.1	1.5	0.7	0.7	0.5	-0.1	-0.9	0.2	-0.1	0.4	-0.2	-0.7	-1.0	-1.7	-1.7	-1.6
Euro Am	5.5	4.4	4.2	3.6	2.8	2.5	2.7	2.5	3.5	3.8	2.7	2.7	2.4	2.5	1.5	2.3	1.6	2.3	1.7	1.5	1.3	1.6	1.5	1.1	0.9	0.8	0.9	0.6	0.7	0.5	0.4	0.1	-0.1	-0.2	-0.5	-0.4

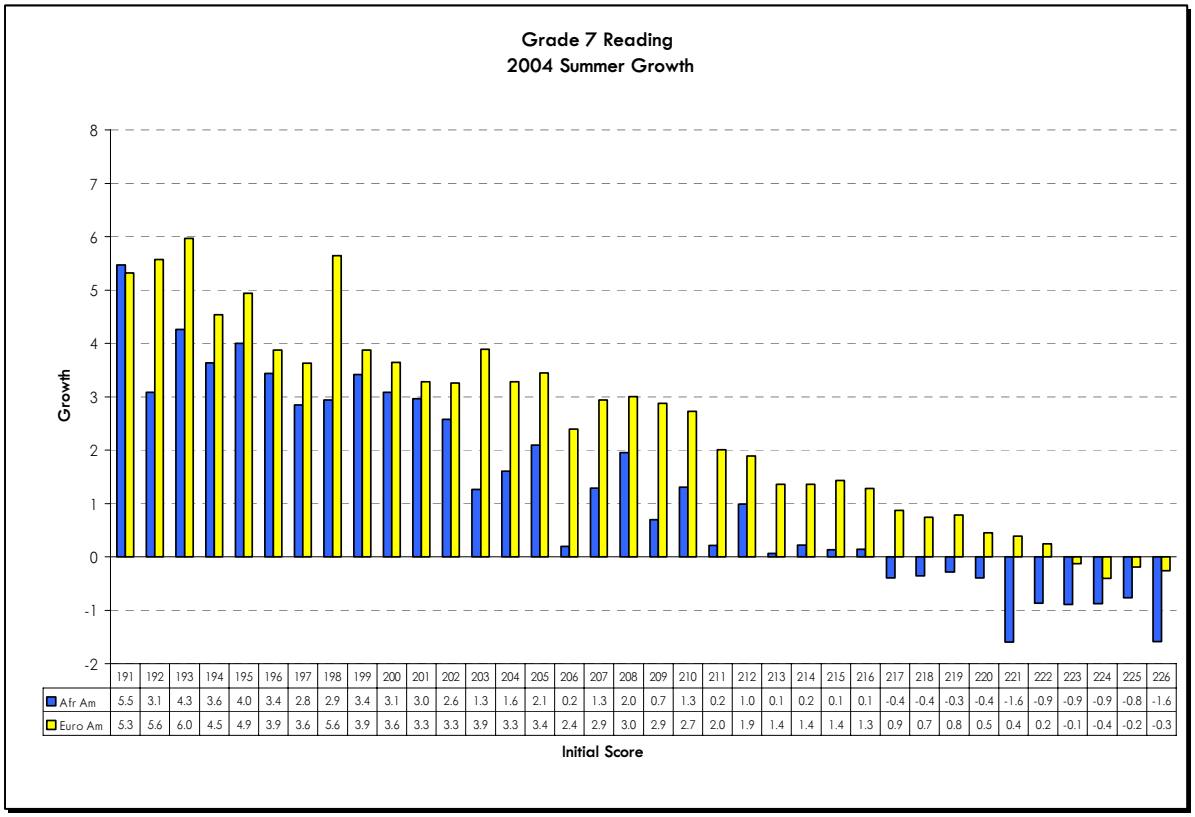
Initial Score

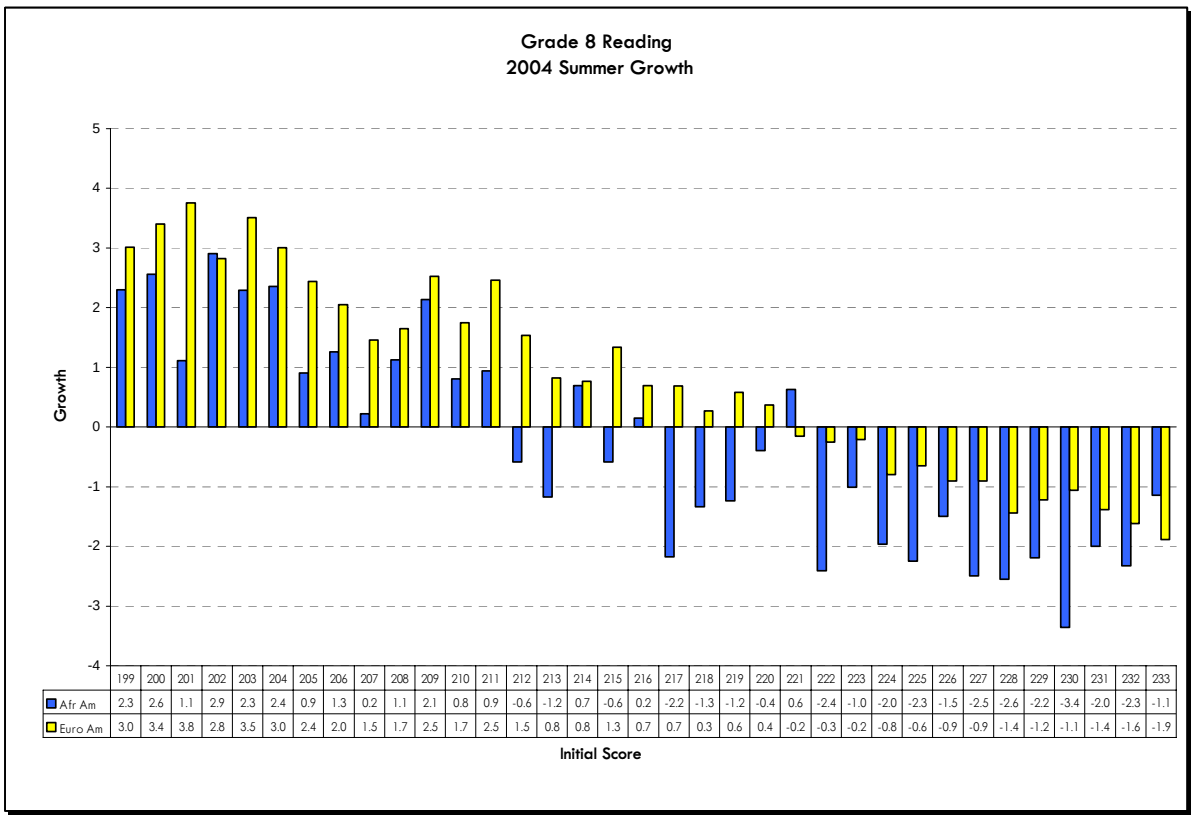


	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
Afr Am	2.1	1.6	1.3	2.5	3.2	2.3	-0.1	0.6	1.0	-0.2	-0.2	0.5	0.4	-1.1	-0.1	-0.7	-0.1	-0.9	-0.8	-0.4	-1.8	-0.9	-0.5	-0.3	-1.3	-2.3	-2.0	-1.6	-0.8	-1.2	-2.1	-1.2	-1.7	-1.9	-1.8	-1.9
Euro Am	2.6	4.3	1.4	2.3	2.1	1.7	2.8	2.7	1.1	2.0	1.3	1.0	1.3	1.1	0.7	1.3	0.5	0.8	0.8	0.5	0.6	0.6	0.6	0.7	0.9	0.4	0.1	0.2	0.4	0.1	0.2	0.1	0.1	-0.4	-0.3	-0.4

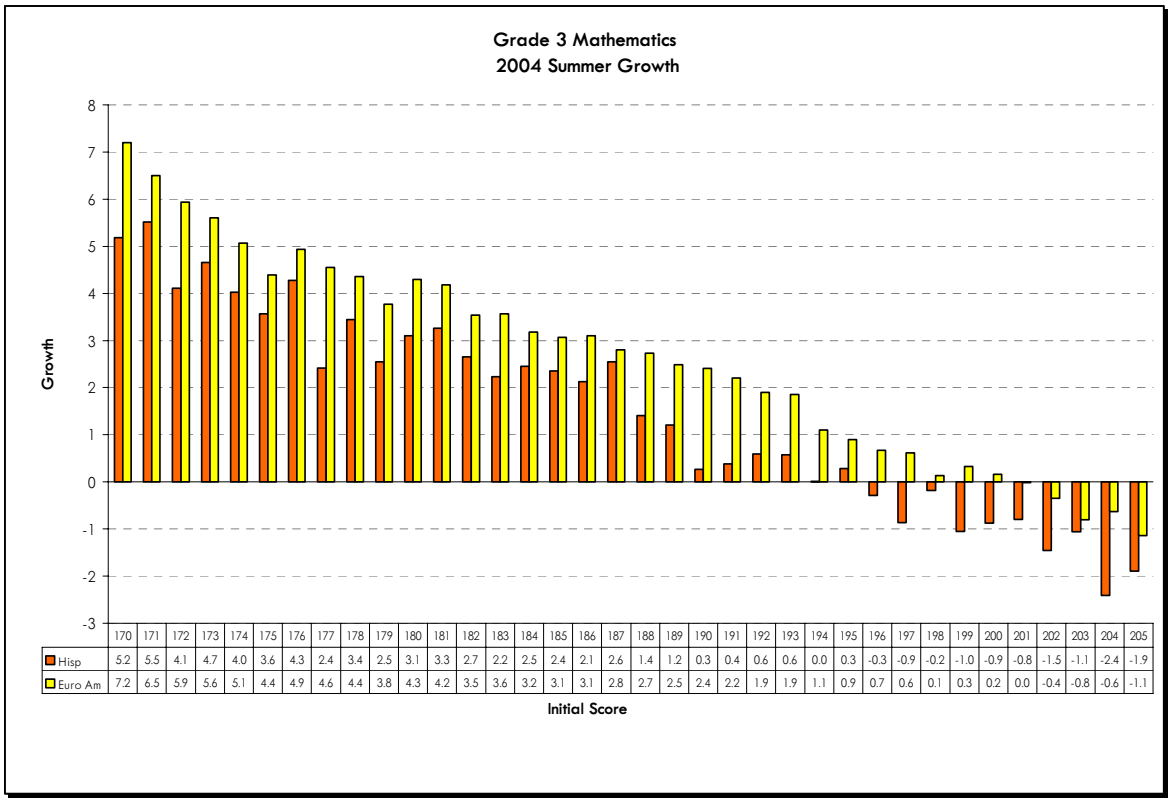


	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Afr Am	1.6	5.6	2.9	3.0	2.3	1.5	1.9	2.5	3.0	2.0	0.7	1.8	1.6	0.8	0.5	0.3	0.2	-0.1	0.0	-0.5	-0.2	-0.1	-0.3	-0.4	-1.1	-0.5	-0.6	-1.0	-2.9	-1.2	-1.7	-1.7	-1.3	-1.8	-2.3	-1.8
Euro Am	2.8	2.9	2.9	3.2	1.6	2.4	2.1	2.2	1.7	2.2	2.5	2.9	1.9	1.7	1.8	1.7	1.3	1.5	1.6	1.7	1.3	1.3	0.7	0.7	0.6	0.6	0.5	0.1	0.3	-0.2	-0.3	-0.7	-0.9	-0.8	-1.0	-1.0

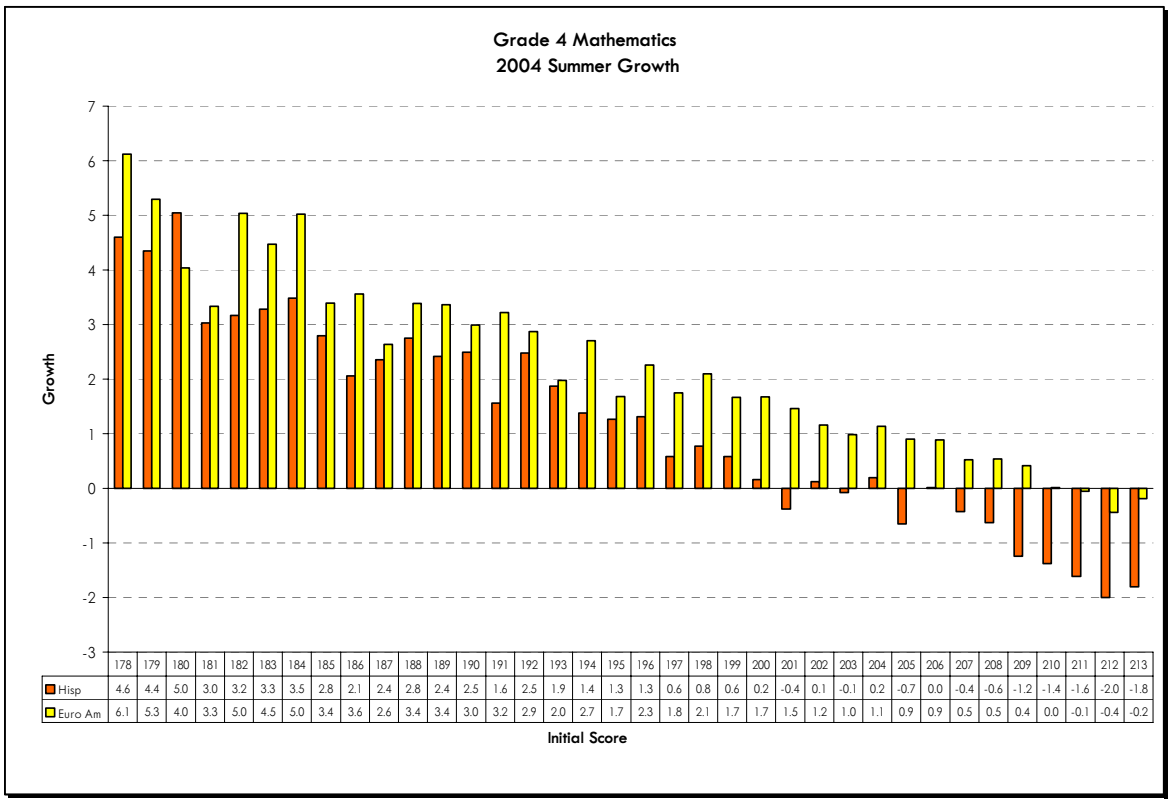

Grade 7 Reading
2004 Summer Growth
Growth
8
7
6
5
4
3
2
1
0
-1
-2
191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226
Afr Am 5.5 3.1 4.3 3.6 4.0 3.4 2.8 2.9 3.4 3.1 3.0 2.6 1.3 1.6 2.1 0.2 1.3 2.0 0.7 1.3 0.2 1.0 0.1 0.2 0.1 0.1 -0.4 -0.4 -0.3 -0.4 -1.6 -0.9 -0.9 -0.9 -0.8 -1.6
Euro Am 5.3 5.6 6.0 4.5 4.9 3.9 3.6 5.6 3.9 3.6 3.3 3.3 3.9 3.3 3.4 2.4 2.9 3.0 2.9 2.7 2.0 1.9 1.4 1.4 1.4 1.3 0.9 0.7 0.8 0.5 0.4 0.2 -0.1 -0.4 -0.2 -0.3
Initial Score


Grade 8 Reading
2004 Summer Growth
Growth
5
4
3
2
1
0
-1
-2
-3
-4
199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233
Afr Am 2.3 2.6 1.1 2.9 2.3 2.4 0.9 1.3 0.2 1.1 2.1 0.8 0.9 -0.6 -1.2 0.7 -0.6 0.2 -2.2 -1.3 -1.2 -0.4 0.6 -2.4 -1.0 -2.0 -2.3 -1.5 -2.5 -2.6 -2.2 -3.4 -2.0 -2.3 -1.1
Euro Am 3.0 3.4 3.8 2.8 3.5 3.0 2.4 2.0 1.5 1.7 2.5 1.7 2.5 1.5 0.8 0.8 1.3 0.7 0.7 0.3 0.6 0.4 -0.2 -0.3 -0.2 -0.8 -0.6 -0.9 -0.9 -1.4 -1.2 -1.1 -1.4 -1.6 -1.9
Initial Score

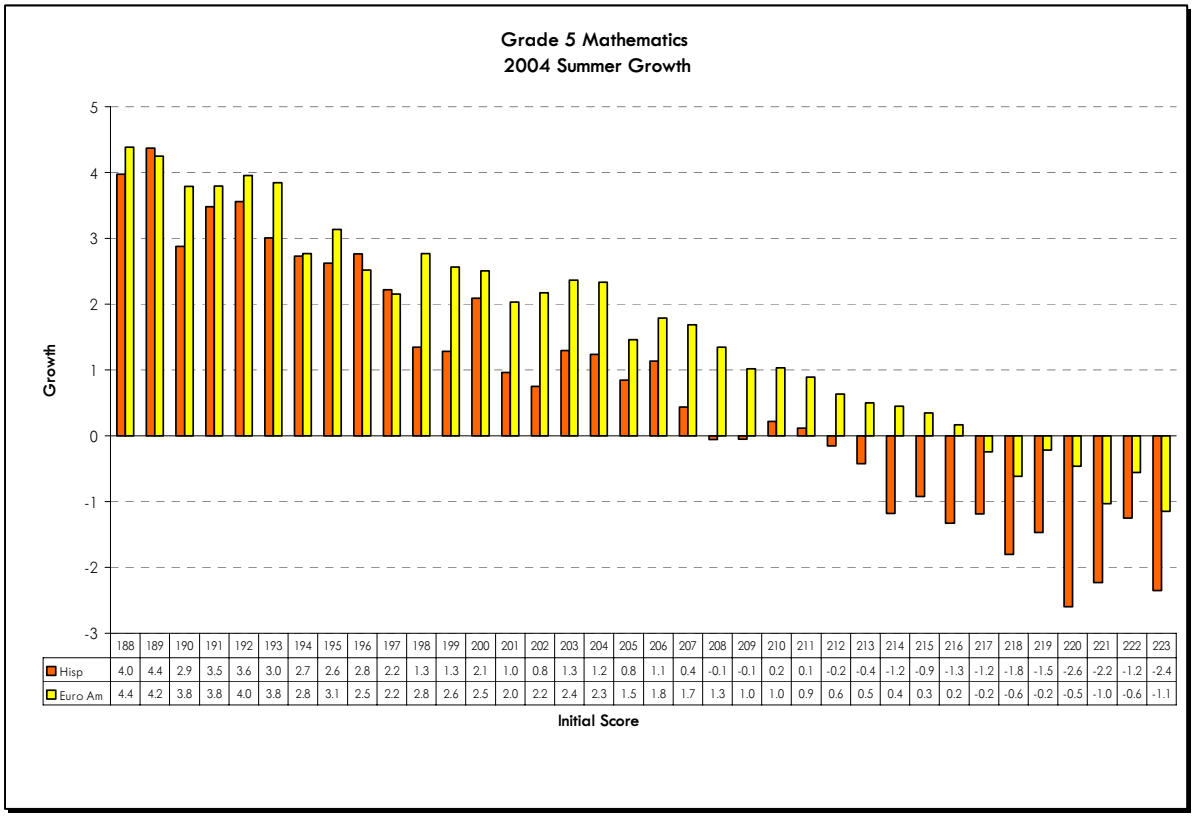
Appendix S: Spring 2004 to Fall 2004 Mathematics Summer Growth by Ethnic Group—Hispanic



	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205
Hisp	5.2	5.5	4.1	4.7	4.0	3.6	4.3	2.4	3.4	2.5	3.1	3.3	2.7	2.2	2.5	2.4	2.1	2.6	1.4	1.2	0.3	0.4	0.6	0.6	0.0	0.3	-0.3	-0.9	-0.2	-1.0	-0.9	-0.8	-1.5	-1.1	-2.4	-1.9
Euro Am	7.2	6.5	5.9	5.6	5.1	4.4	4.9	4.6	4.4	3.8	4.3	4.2	3.5	3.6	3.2	3.1	3.1	2.8	2.7	2.5	2.4	2.2	1.9	1.9	1.1	0.9	0.7	0.6	0.1	0.3	0.2	0.0	-0.4	-0.8	-0.6	-1.1

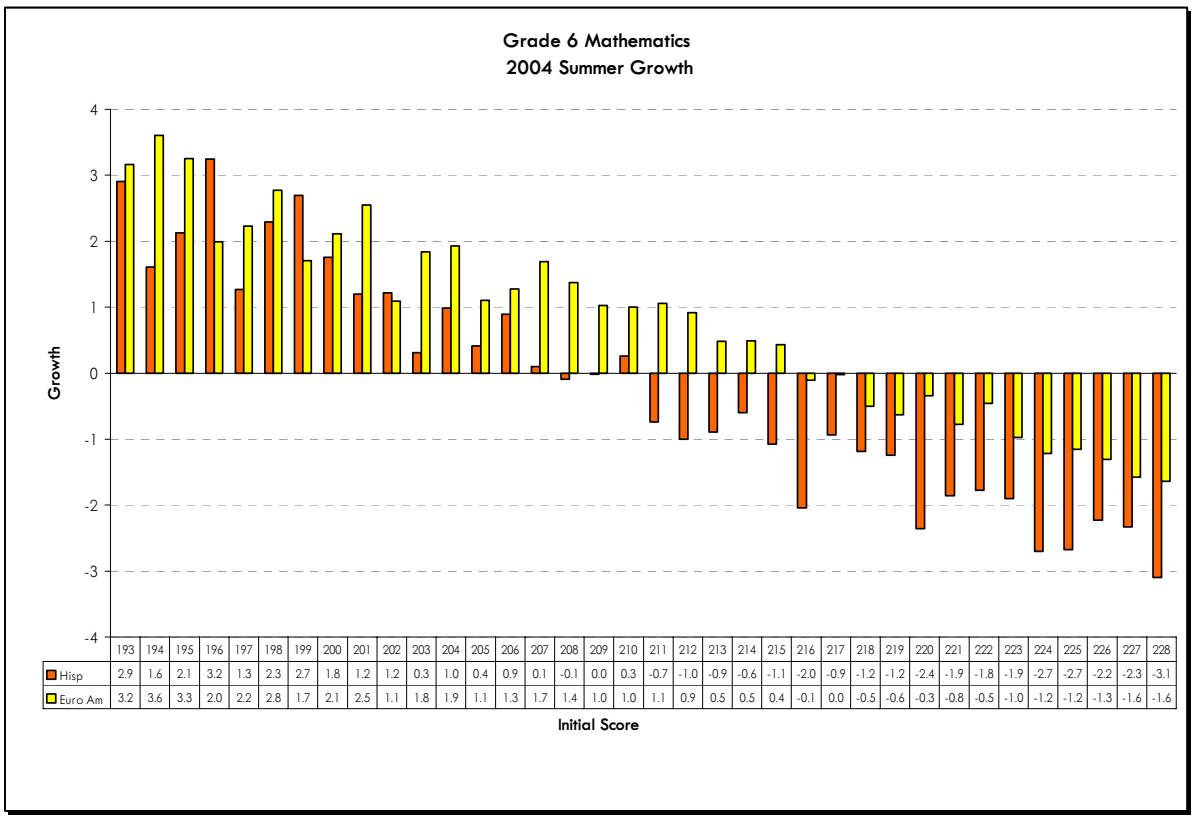


	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213
Hisp	4.6	4.4	5.0	3.0	3.2	3.3	3.5	2.8	2.1	2.4	2.8	2.4	2.5	1.6	2.5	1.9	1.4	1.3	1.3	0.6	0.8	0.6	0.2	-0.4	0.1	-0.1	0.2	-0.7	0.0	-0.4	-0.6	-1.2	-1.4	-1.6	-2.0	-1.8
Euro Am	6.1	5.3	4.0	3.3	5.0	4.5	5.0	3.4	3.6	2.6	3.4	3.4	3.0	3.2	2.9	2.0	2.7	1.7	2.3	1.8	2.1	1.7	1.7	1.5	1.2	1.0	1.1	0.9	0.9	0.5	0.5	0.4	0.0	-0.1	-0.4	-0.2



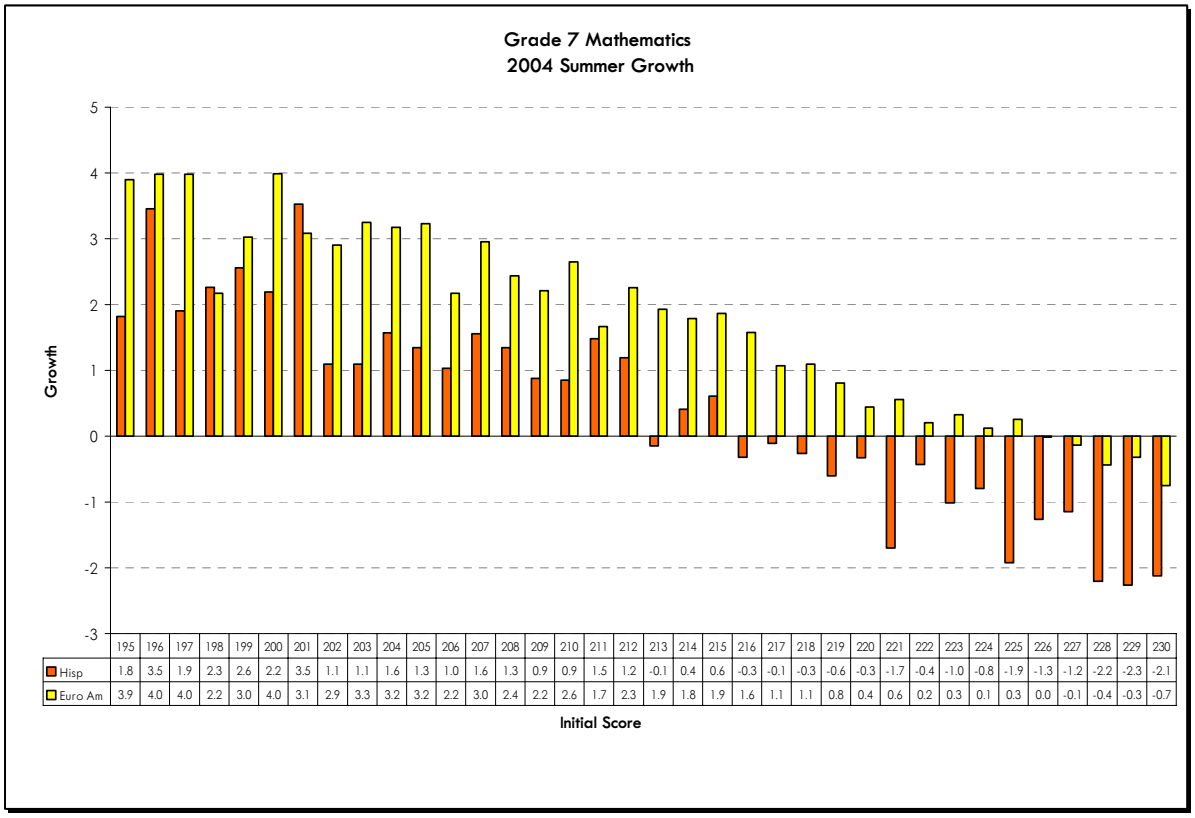
	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Hisp	4.0	4.4	2.9	3.5	3.6	3.0	2.7	2.6	2.8	2.2	1.3	1.3	2.1	1.0	0.8	1.3	1.2	0.8	1.1	0.4	-0.1	-0.1	0.2	0.1	-0.2	-0.4	-1.2	-0.9	-1.3	-1.2	-1.8	-1.5	-2.6	-2.2	-1.2	-2.4
Euro Am	4.4	4.2	3.8	3.8	4.0	3.8	2.8	3.1	2.5	2.2	2.8	2.6	2.5	2.0	2.2	2.4	2.3	1.5	1.8	1.7	1.3	1.0	1.0	0.9	0.6	0.5	0.4	0.3	0.2	-0.2	-0.6	-0.2	-0.5	-1.0	-0.6	-1.1

Initial Score

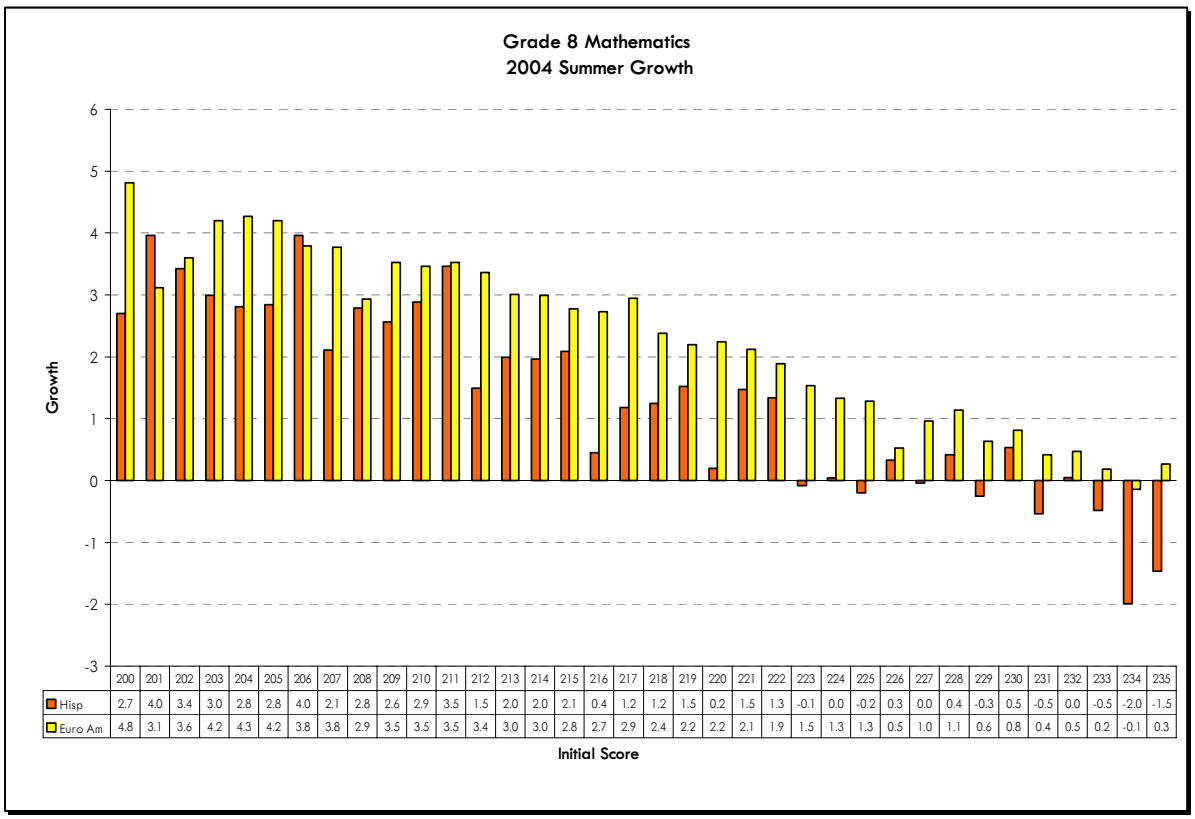


	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228
Hisp	2.9	1.6	2.1	3.2	1.3	2.3	2.7	1.8	1.2	1.2	0.3	1.0	0.4	0.9	0.1	-0.1	0.0	0.3	-0.7	-1.0	-0.9	-0.6	-1.1	-2.0	-0.9	-1.2	-1.2	-2.4	-1.9	-1.8	-1.9	-2.7	-2.7	-2.2	-2.3	-3.1
Euro Am	3.2	3.6	3.3	2.0	2.2	2.8	1.7	2.1	2.5	1.1	1.8	1.9	1.1	1.3	1.7	1.4	1.0	1.0	1.1	0.9	0.5	0.5	0.4	-0.1	0.0	-0.5	-0.6	-0.3	-0.8	-0.5	-1.0	-1.2	-1.2	-1.3	-1.6	-1.6

Initial Score

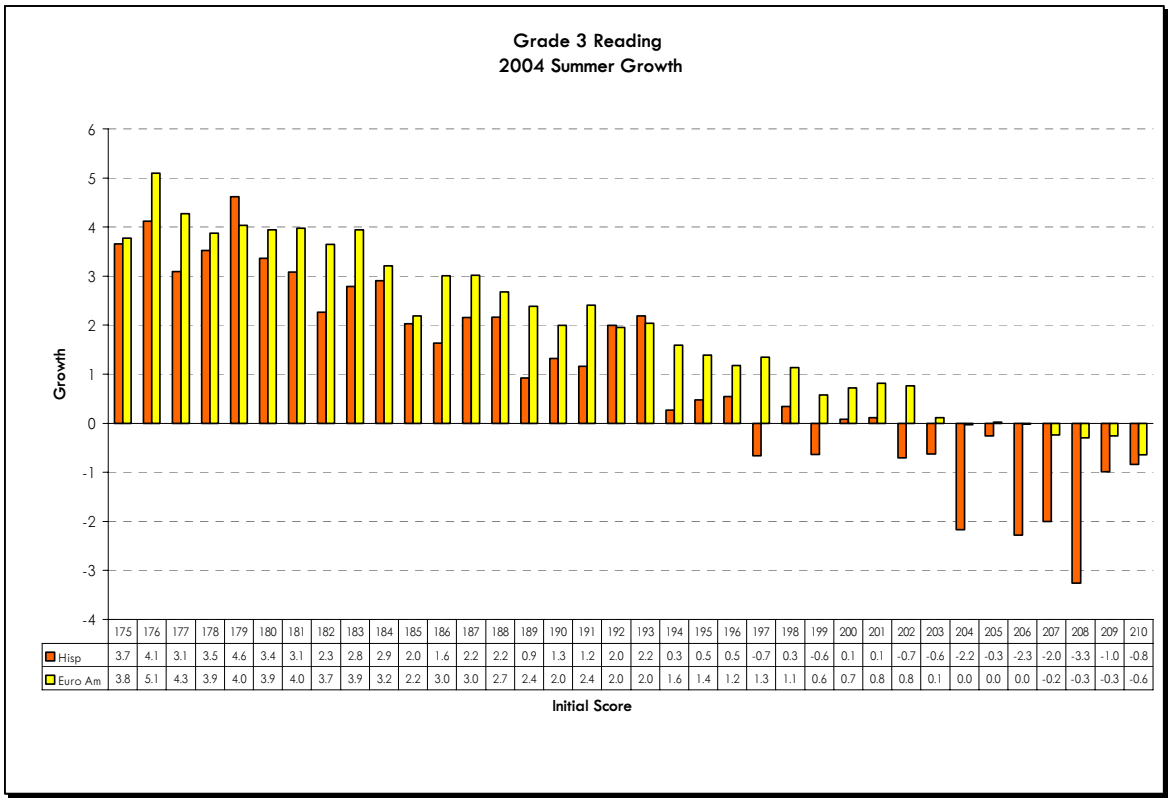


	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230
Hisp	1.8	3.5	1.9	2.3	2.6	2.2	3.5	1.1	1.1	1.6	1.3	1.0	1.6	1.3	0.9	0.9	1.5	1.2	-0.1	0.4	0.6	-0.3	-0.1	-0.3	-0.6	-0.3	-1.7	-0.4	-1.0	-0.8	-1.9	-1.3	-1.2	-2.2	-2.3	-2.1
Euro Am	3.9	4.0	4.0	2.2	3.0	4.0	3.1	2.9	3.3	3.2	3.2	2.2	3.0	2.4	2.2	2.6	1.7	2.3	1.9	1.8	1.9	1.6	1.1	1.1	0.8	0.4	0.6	0.2	0.3	0.1	0.3	0.0	-0.1	-0.4	-0.3	-0.7

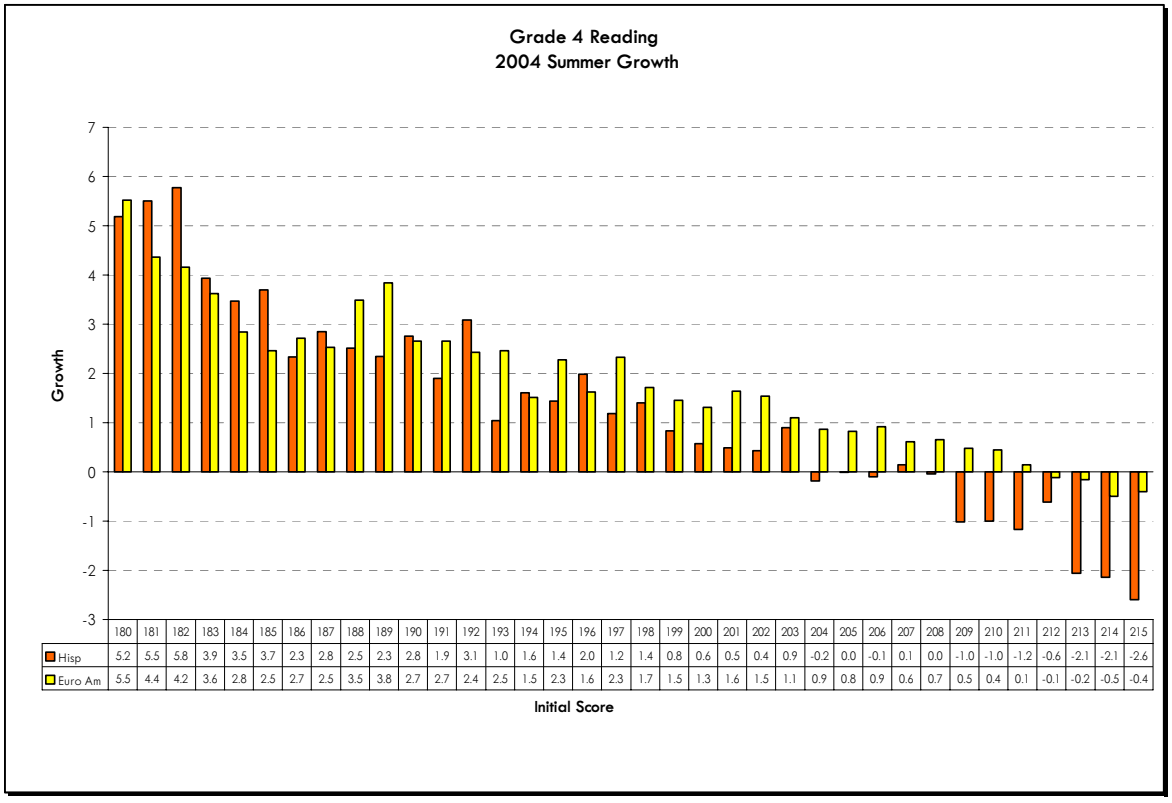


	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235
Hisp	2.7	4.0	3.4	3.0	2.8	2.8	4.0	2.1	2.8	2.6	2.9	3.5	1.5	2.0	2.0	2.1	0.4	1.2	1.2	1.5	0.2	1.5	1.3	-0.1	0.0	-0.2	0.3	0.0	0.4	-0.3	0.5	-0.5	0.0	-0.5	-2.0	-1.5
Euro Am	4.8	3.1	3.6	4.2	4.3	4.2	3.8	3.8	2.9	3.5	3.5	3.5	3.4	3.0	3.0	2.8	2.7	2.9	2.4	2.2	2.2	2.1	1.9	1.5	1.3	1.3	0.5	1.0	1.1	0.6	0.8	0.4	0.5	0.2	-0.1	0.3

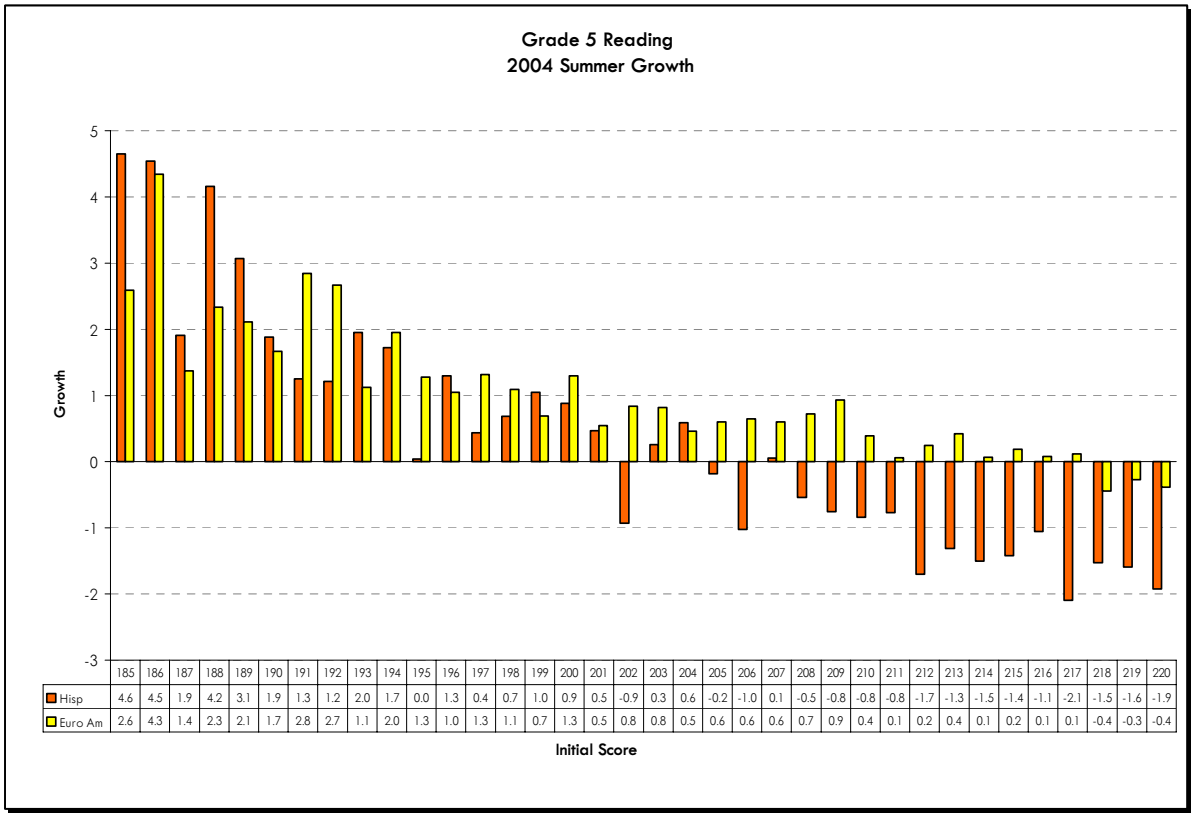
Appendix T: Spring 2004 to Fall 2004 Reading Summer Growth by Ethnic Group—Hispanic



	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
Hisp	3.7	4.1	3.1	3.5	4.6	3.4	3.1	2.3	2.8	2.9	2.0	1.6	2.2	2.2	0.9	1.3	1.2	2.0	2.2	0.3	0.5	0.5	-0.7	0.3	-0.6	0.1	0.1	-0.7	-0.6	-2.2	-0.3	-2.3	-2.0	-3.3	-1.0	-0.8
Euro Am	3.8	5.1	4.3	3.9	4.0	3.9	4.0	3.7	3.9	3.2	2.2	3.0	3.0	2.7	2.4	2.0	2.4	2.0	2.0	1.6	1.4	1.2	1.3	1.1	0.6	0.7	0.8	0.8	0.1	0.0	0.0	0.0	-0.2	-0.3	-0.3	-0.6



	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215
Hisp	5.2	5.5	5.8	3.9	3.5	3.7	2.3	2.8	2.5	2.3	2.8	1.9	3.1	1.0	1.6	1.4	2.0	1.2	1.4	0.8	0.6	0.5	0.4	0.9	-0.2	0.0	-0.1	0.1	0.0	-1.0	-1.0	-1.2	-0.6	-2.1	-2.1	-2.6
Euro Am	5.5	4.4	4.2	3.6	2.8	2.5	2.7	2.5	3.5	3.8	2.7	2.7	2.4	2.5	1.5	2.3	1.6	2.3	1.7	1.5	1.3	1.6	1.5	1.1	0.9	0.8	0.9	0.6	0.7	0.5	0.4	0.1	-0.1	-0.2	-0.5	-0.4



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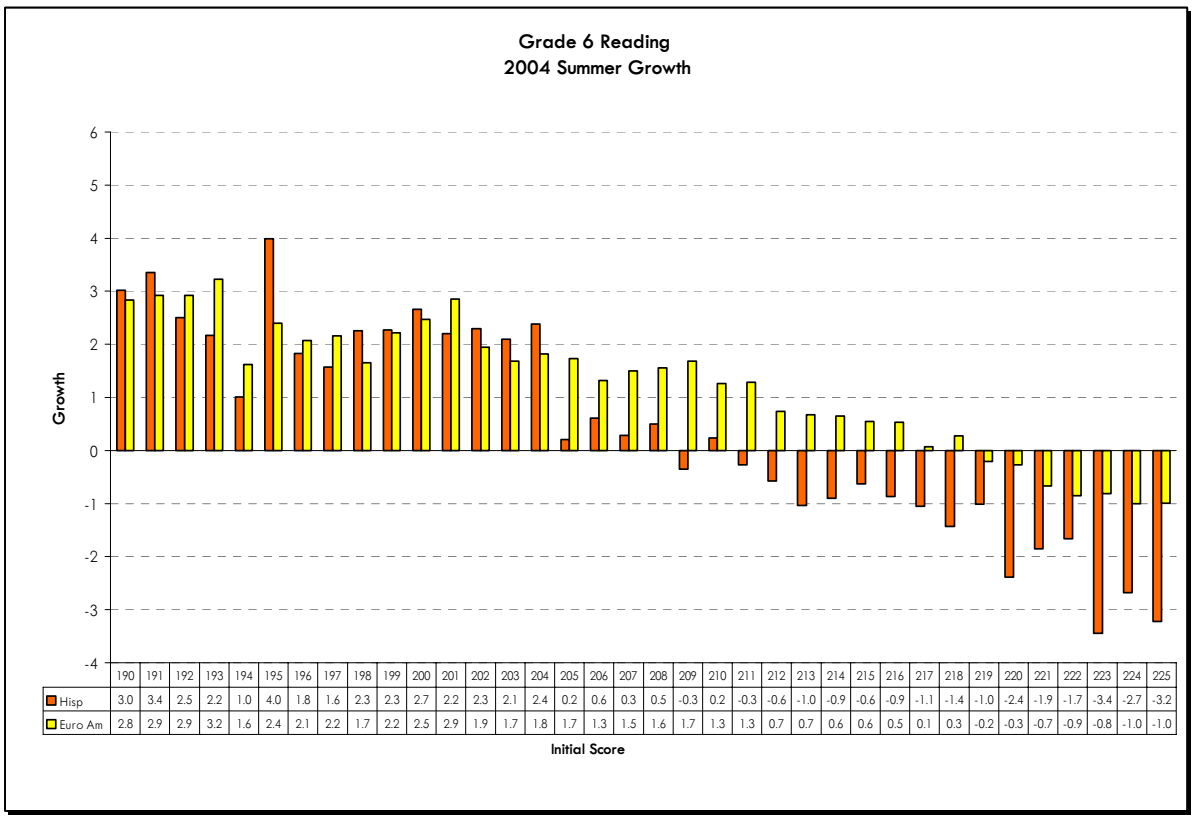
Hisp	4.6	4.5	1.9	4.2	3.1	1.9	1.3	1.2	2.0	1.7	0.0	1.3	0.4	0.7	1.0	0.9	0.5	-0.9	0.3	0.6	-0.2	-1.0	0.1	-0.5	-0.8	-0.8	-0.8	-1.7	-1.3	-1.5	-1.4	-1.1	-2.1	-1.5	-1.6	-1.9
Euro Am	2.6	4.3	1.4	2.3	2.1	1.7	2.8	2.7	1.1	2.0	1.3	1.0	1.3	1.1	0.7	1.3	0.5	0.8	0.8	0.5	0.6	0.6	0.6	0.7	0.9	0.4	0.1	0.2	0.4	0.1	0.2	0.1	0.1	-0.4	-0.3	-0.4



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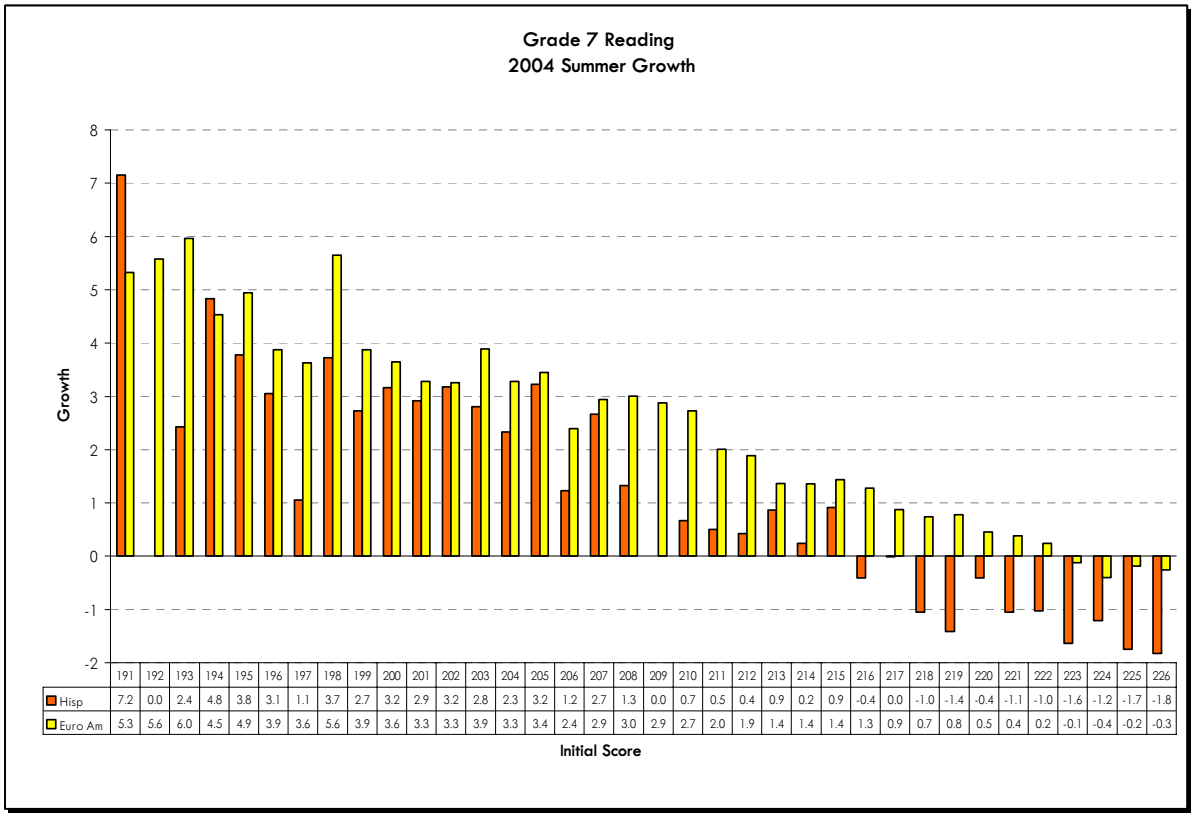
Hisp	3.0	3.4	2.5	2.2	1.0	4.0	1.8	1.6	2.3	2.3	2.7	2.2	2.3	2.1	2.4	0.2	0.6	0.3	0.5	-0.3	0.2	-0.3	-0.6	-1.0	-0.9	-0.6	-0.9	-1.1	-1.4	-1.0	-2.4	-1.9	-1.7	-3.4	-2.7	-3.2
Euro Am	2.8	2.9	2.9	3.2	1.6	2.4	2.1	2.2	1.7	2.2	2.5	2.9	1.9	1.7	1.8	1.7	1.3	1.5	1.6	1.7	1.3	1.3	0.7	0.7	0.6	0.6	0.5	0.1	0.3	-0.2	-0.3	-0.7	-0.9	-0.8	-1.0	-1.0



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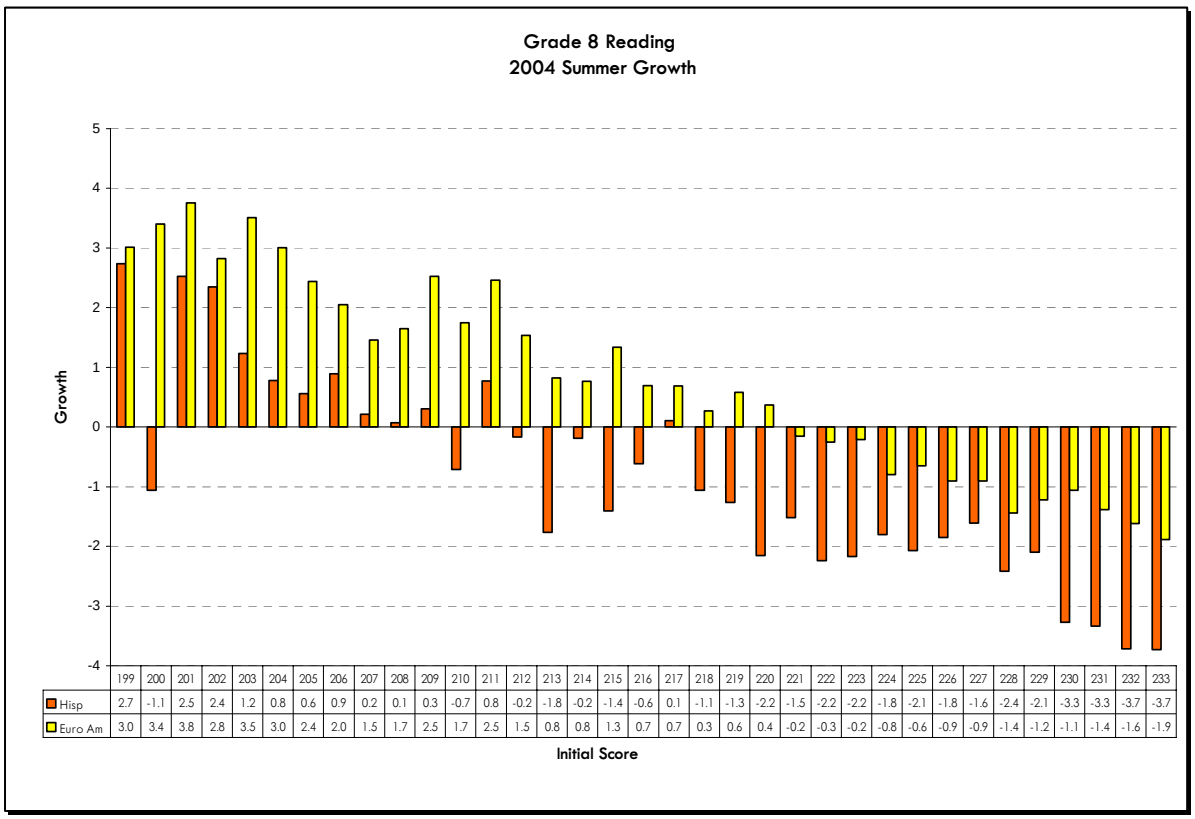
Hisp	7.2	0.0	2.4	4.8	3.8	3.1	1.1	3.7	2.7	3.2	2.9	3.2	2.8	2.3	3.2	1.2	2.7	1.3	0.0	0.7	0.5	0.4	0.9	0.2	0.9	-0.4	0.0	-1.0	-1.4	-0.4	-1.1	-1.0	-1.6	-1.2	-1.7	-1.8
Euro Am	5.3	5.6	6.0	4.5	4.9	3.9	3.6	5.6	3.9	3.6	3.3	3.3	3.9	3.3	3.4	2.4	2.9	3.0	2.9	2.7	2.0	1.9	1.4	1.4	1.4	1.3	0.9	0.7	0.8	0.5	0.4	0.2	-0.1	-0.4	-0.2	-0.3



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Hisp	2.7	-1.1	2.5	2.4	1.2	0.8	0.6	0.9	0.2	0.1	0.3	-0.7	0.8	-0.2	-1.8	-0.2	-1.4	-0.6	0.1	-1.1	-1.3	-2.2	-1.5	-2.2	-2.2	-1.8	-2.1	-1.8	-1.6	-2.4	-2.1	-3.3	-3.3	-3.7	-3.7
Euro Am	3.0	3.4	3.8	2.8	3.5	3.0	2.4	2.0	1.5	1.7	2.5	1.7	2.5	1.5	0.8	0.8	1.3	0.7	0.7	0.3	0.6	0.4	-0.2	-0.3	-0.2	-0.8	-0.6	-0.9	-0.9	-1.4	-1.2	-1.1	-1.4	-1.6	-1.9