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Do Higher State Test Scores in Texas Make for Better High School Outcomes?

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Abstract

Making schools accountable through state testing was the pre-eminent educational reform of the 1990s. Thirty-nine states now administer some form of performance-based assessment, 24 states attach stakes to their tests, and 40 states use test scores for school accountability purposes (Stecher and Barron, 1999). Proponents argue that using student scores on curriculum-based tests as a measure of school effectiveness encourages teachers to teach the curriculum. The test results set a minimum standard by which schools can be judged; they quantify school quality in a way that parents and politicians can easily understand. By setting student improvement goals for schools, states can motivate school personnel to reach continuously higher, while also identifying those schools that are unwilling or unable to meet the prescribed goals. Indeed, some analyses of national test results suggest that those states, such as North Carolina and Texas, that implemented standards and testing to standards in the early 1990s, showed large, positive gains in mathematics between 1992 and 1996 (Grissmer and Flanagan, 1998). Other analyses show that low-performing schools made significantly larger gains than higherperforming schools in states with strong accountability systems, although it is difficult to attribute causal effects. (For a summary of recent studies, see Carnoy, 2001). However, many disagree with these positive analyses of the new accountability systems. Critics argue that such testing does not promote real improvement in student learning.

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Introduction

Making schools accountable through state testing was the pre-eminent educational reform of the 1990s. Thirty-nine states now administer some form of performance-based assessment, 24 states attach stakes to their tests, and 40 states use test scores for school accountability purposes (Stecher and Barron, 1999). Proponents argue that using student scores on curriculum-based tests as a measure of school effectiveness encourages teachers to teach the curriculum. The test results set a minimum standard by which schools can be judged; they quantify school quality in a way that parents and politicians can easily understand. By setting student improvement goals for schools, states can motivate school personnel to reach continuously higher, while also identifying those schools that are unwilling or unable to meet the prescribed goals.

Indeed, some analyses of national test results suggest that those states, such as North Carolina and Texas, that implemented standards and testing to standards in the early 1990s, showed large, positive gains in mathematics between 1992 and 1996 (Grissmer and Flanagan, 1998). Other analyses show that low-performing schools made significantly larger gains than higher-performing schools in states with strong accountability systems, although it is difficult to attribute causal effects. (For a summary of recent studies, see Carnoy, 2001).

However, many disagree with these positive analyses of the new accountability systems. Critics argue that such testing does not promote real improvement in student learning. Rather, teachers and principals are motivated to meet standards by teaching the test. Instead of creating an improved learning environment, these crude forms of assessment may reduce opportunities to learn higher-order skills, particularly for low-income students (McNeil and Valenzuela, 1999). Critics also claim that state testing increases the probability that disadvantaged students will drop out by forcing students to repeat grades (Haney, 1999; Haney, 2000; Shrag, 2000). Using data from the National Longitudinal Study, Reardon (1996) found that high-stakes eighth grade tests were associated with six-to-eight percent higher dropout rates between the eighth and tenth grades. Kreitzer, Madaus, and Haney (1989) compared states with the highest dropout rates and states with the lowest dropout rates and found that the former were much more likely to have high-stakes graduation tests. None of the low dropout states used such tests (see also Heubert and Hauser, 1999). Others have questioned the larger gains on the National Assessment of Educational Progress tests in states such as Texas and the allegedly even bigger gains among disadvantaged minorities (Fisher, 2000; Klein, Hamilton, McCaffrey, and Stecher, 2000).

Texas has the most visible state testing program. The Texas Assessment of Academic Skills (TAAS) is a battery of tests administered every spring to all public school students in grades three to eight and again in grade ten, when passing the test is a requirement for high school graduation. Schools are evaluated on both the percentage of their students who pass the TAAS and on the percentage of their low-income and minority students who pass the tests. Rewards for doing well and sanctions for doing poorly are both implicit and explicit. Schools that perform well relative to state norms are given an *exemplary* designation and financial bonuses to spend

on pet projects. Schools that do poorly are given an *inadequate* designation. *Inadequate* schools get new management if they do not improve by the following year. Designations are widely publicized, so parents know how their children's schools rate. These designations take into account the proportion of disadvantaged students and the proportion of African American and Latino students in a school, so an *exemplary* poor or largely minority school may have a lower pass rate than an all-White or high-income school.

The reason so many educational policymakers and politicians nationwide are looking to Texas is simple: the state has apparently achieved great success in raising average test scores and in closing the gap between disadvantaged and advantaged students, at least in the lower grades. Texas students in all grades have made substantial gains on the TAAS. In addition, they have made gains on an independent measure of achievement gains, the National Assessment of Educational Progress (NAEP). The NAEP results show that Texas and North Carolina made the largest average gains among all the states between 1990 and 1997 (Grissmer and Flanagan, 2000). When ranking states according to the 1996 NAEP mathematics scores of fourth grade students, only five states ranked higher than Texas. Significantly, all five of these states had much lower minority populations than Texas. The Texas gains on the fourth grade NAEP reading test were smaller, but still higher than gains nationally.

Because of the large Latino and African American student population in Texas, state educational gains depend heavily on how well these minority groups perform. The 1996 NAEP results for Texas eighth grade students and high school seniors were not as positive as the results for fourth grade students. The gap between minorities and Whites has not decreased (and may have widened) in the higher grades (Fisher, 2000; Klein, Hamilton, McCaffrey, and Stecher, 2000; Haney, 1999). But this may be a question of time. When the 2000 NAEP results are released next year, we will discover whether 1996 fourth grade students (eighth grade students in 2000) presage a more learned high school class of 2004, or whether the Texas accountability system is mainly good at raising the elementary school NAEP scores of minority students, but not their scores in middle and high school.

The effect of TAAS-type accountability on student performance in the higher grades is important. It is not sensible to claim that student outcomes are improving if the criteria for measuring academic achievement—the TAAS scores—do not lead to outcomes that count in life, such as increased school attainment or increased achievement over time. In today's world, we measure better education by problem-solving competencies, high school completion, and college attendance and completion. These are the signals that society values.

Even if the implementation of the TASS has not led to higher achievement or attainment for students, it may have been beneficial in providing parents with information about their children's achievement and the relative performance of their neighborhood schools. However, if the TAAS leads to poorer student outcomes, then critics would have a strong case for seeking alternatives to state testing. Haney (2000) argues just that. He finds that high school completion rates have faltered as a result of the TAAS, especially among Latino and African American students.

The object of this report is to review the positive and negative claims for the Texas accountability system and to examine, to the extent the data allow, the impact that TAAS has had on student educational attainment. We do this in two ways. First, we assess trends over time in statewide measures of test scores, progression through high school, high school completion, and college plans of high school seniors. Second, we analyze high school data to estimate whether rising test scores are coincident with rising dropout rates. Like Haney and other critics of Texas testing, we find strikingly high ninth grade retention that has increased over time. Evidence of higher retention rates is important because, at the individual level, retention is a strong predictor of dropping out. Rumberger (1995), for example, shows that retained students are four times more likely to drop out, even after controlling for a host of background and school measures. The trend toward higher retention in Texas, however, began well before the implementation of the TAAS. If there is a link between retention and state policies, it is likely to date to the implementation of accountability in a more general sense.[1] We found little relationship between changes in TAAS scores and changes in dropout rates across high schools. To the extent that this relationship does exist, it appears that higher school TAAS scores are associated with reduced, not increased, dropout behavior.

Background

The current Texas educational reform is rooted in two distinct conflicts. The first was the challenge to the unequal distribution of resources among Texas school districts, a result of the need to supplement state education funding with local property taxes. These supplemental taxes created large spending differences among districts, differences that were highly correlated with the ethnic composition of the district. The state's largest minority groups—Latinos and African Americans—went to schools that received far fewer resources than schools that enrolled predominantly White students. The second conflict arose in the 1970s when a group of new Texas businesses based on high technology and services challenged the hegemony of the state's traditional agricultural and oil interests.

The present educational reform began in 1984 with a push from a group of businessmen headed by H. Ross Perot to bring Texas into the high-tech age and to resolve pressures for equalized school funding by low-income minority groups.[2] The reform went through two rounds (1984 and 1987) and by 1991 was institutionalized into Texas politics. In addition to increasing funds for low-spending districts, the reform included a strategic plan that recommended "new learning standards for each grade, measuring learning by linking statewide assessments to those standards, holding schools accountable for results, but not dictating to teachers and principals how to achieve the results" (Grissmer and Flanagan, 1998, p. 28). Ann Richards, the newly-elected governor, implemented this "decentralization" reform that gave the state control over standards and testing, but gave schools choice in how to meet state goals. The reform was continued after 1995 by Richards' successor, George W. Bush.

The tenth grade Texas Assessment of Academic Skills (TAAS) was used as a high school graduation requirement for the first time in 1990-1991. The TAAS was administered to the present complement of grades beginning in 1994. The TAAS was still a basic skills test, but somewhat more difficult and more comprehensive than the earlier Texas Educational Assessment of

Minimum Skills (TEAMS) test used in the 1980s.

The Texas Education Agency sets state curriculum standards (for example, requiring three math courses, including first-year algebra in ninth grade, for high school graduation), administers the TAAS, and determines the *unacceptable, acceptable, recognized*, and *exemplary* levels of test performance. Local school districts may set higher standards. Districts are responsible for implementing improvements to lead their students to satisfactory performance on the TAAS.

Given the increased publicity of school-by-school success, adequacy, or failure on the TAAS and the increased national attention paid to the success of Texas in increasing test scores, the TAAS began to assume a life of its own. Local school districts, responsible for the testing standards, saw that focusing on the test itself was the simplest route to achieving higher pass rates. It appears, based on our observations and interviews, that teachers and principals in schools with a higher percentage of lower-income, African American, and Latino pupils were more likely to focus on teaching to the test than those in schools enrolling higher-income pupils.[3]

Achieving *exemplary* status was also important for high-income schools. Even in high-income schools, however, it was the lower-income, lower-achieving pupils who appeared to receive more test preparation. This is logical. High- or even middle-achieving students are likely to find the test relatively easy and have a high probability of passing. Allocating significant time to teaching these students test material is unlikely to increase school ranking as measured by pass rates.

The TAAS tests are designed to assess student performance on a prescribed curriculum, so it can be convincingly argued that teaching the test to lower-achieving students is not a bad thing. This has had the effect, testing advocates claim, of improving reading and math performance the most among lowest-income and minority students. Thus, the original goals in the 1984 act of improving the system from the bottom up have been realized. Joe Johnson, then with the Dana Center at the University of Texas, claims that:

…teachers were expected to get students to demonstrate proficiency on those objectives, and so, in essence, schools are doing what they have been asked to do. They are teaching students these objectives. So, when you look at those objectives, many of them are central to what we would want anybody's children to learn about reading, mathematics, and writing. What's absolutely clear, when you visit many of the schools and look at instruction in those schools, you see that students are in fact getting opportunities to learn challenging content. They're learning the objectives that are being presented, and they're able to demonstrate their learning on the TAAS test, as well as on other measures (Interview, June 4, 1999).

Critics, however, are not convinced. Linda McNeil and Angela Valenzuela argue:

The pressure to raise TAAS scores leads teachers to substitute commercial TAAS-prep materials for the substance of the curriculum…Subjects tested by TAAS (reading, writing, and mathematics) are reduced, in the test and test-prep materials, to isolated facts and fragments of facts. This artificial treatment of these isolated components may enable children to recognize those components on a multiple-

choice test, but does not necessarily enable them to use these components in other contexts (McNeil and Valenzuela, 1999, p. 5).

Overview of Academic Outcomes

Test Scores

Passing rates on the mathematics Texas Assessment of Academic Skills (TAAS) have improved substantially in every grade, particularly among disadvantaged students. Table 1 presents the results for all students who took the test. The results are slightly higher when special education students who took the test are omitted. It should be noted that these figures are the percentage of students who passed the TAAS, not the percentage score on the TAAS. Gains on the TAAS reading test are as large or larger.

The statewide scores for Texas on the National Assessment of Educational Progress (NAEP) show similar improvements during this time period. For example, gains in scores on the fourth grade math NAEP in Texas far outpaced math NAEP gains nationally from 1992 to 1996. The NAEP reading scores in Texas also improved and kept pace with national gains between 1994 and 1998 (Fisher, 2000). Texas eighth grade math scores on the NAEP increased about one-third of a standard deviation between 1990 and 1996.

Table 1. Percent Meeting Minimum Expectations on Mathematics TAAS, by Grade, 1994-1999 (percent)

	1994	1995	1996	1997	1998	1999
Grade 3						
Whites	72	81	82	86	86	90
African Americans	41	53	57	64	62	65
Latinos	49	62	65	72	71	79
Disadvantaged	47	60	63	70	68	75
Grade 6						
Whites	70	75	84	87	89	93
African Americans	37	40	57	62	70	75
Latinos	46	47	63	69	75	81
Disadvantaged	43	46	61	67	73	80
Grade 8						
Whites	70	70	78	83	88	92
African Americans	32	30	44	55	66	74
Latinos	40	37	51	61	71	80
Disadvantaged	37	35	49	59	69	78
Grade 10						
Whites	68	71	75	81	85	89
African Americans	32	35	43	51	58	66
Latinos	40	42	51	57	65	73
Disadvantaged	39	40	49	55	63	71

Source: TEA (www.tea.state.tx.us/student.assessment/results)

The rise in the eighth grade math TAAS between 1994 and 1998 was about one-half a standard deviation (Grissmer and Flanagan, 1998; Fisher, 2000). NAEP reading gains are not available for 1994-1998, but 76 percent of Texas eighth grade students in 1998 read at basic or higher levels as compared with 74 percent nationally (Fisher, 2000). On the whole, the test scores of Texas students have improved over the 1990s as reflected in TAAS scores and other measures.

An important issue is whether these higher passing rates on the TAAS (and higher NAEP scores) are reflected in other measures of academic success. Although the TAAS is more difficult than the previous TEAMS, it is still a test of basic skills. Indeed, one analysis concludes that the minimum competency test administered in the tenth grade is essentially an eighth grade test, and maybe not even that (see Stosky, 1999). For example, 57 percent of African American, 67 percent of Latino, and 83 percent of White students passed the 1996 fourth grade math TAAS test, while 47 percent of African American, 55 percent of Latino, and 85 percent of White students passed the fourth grade math NAEP test at a minimum competency level.

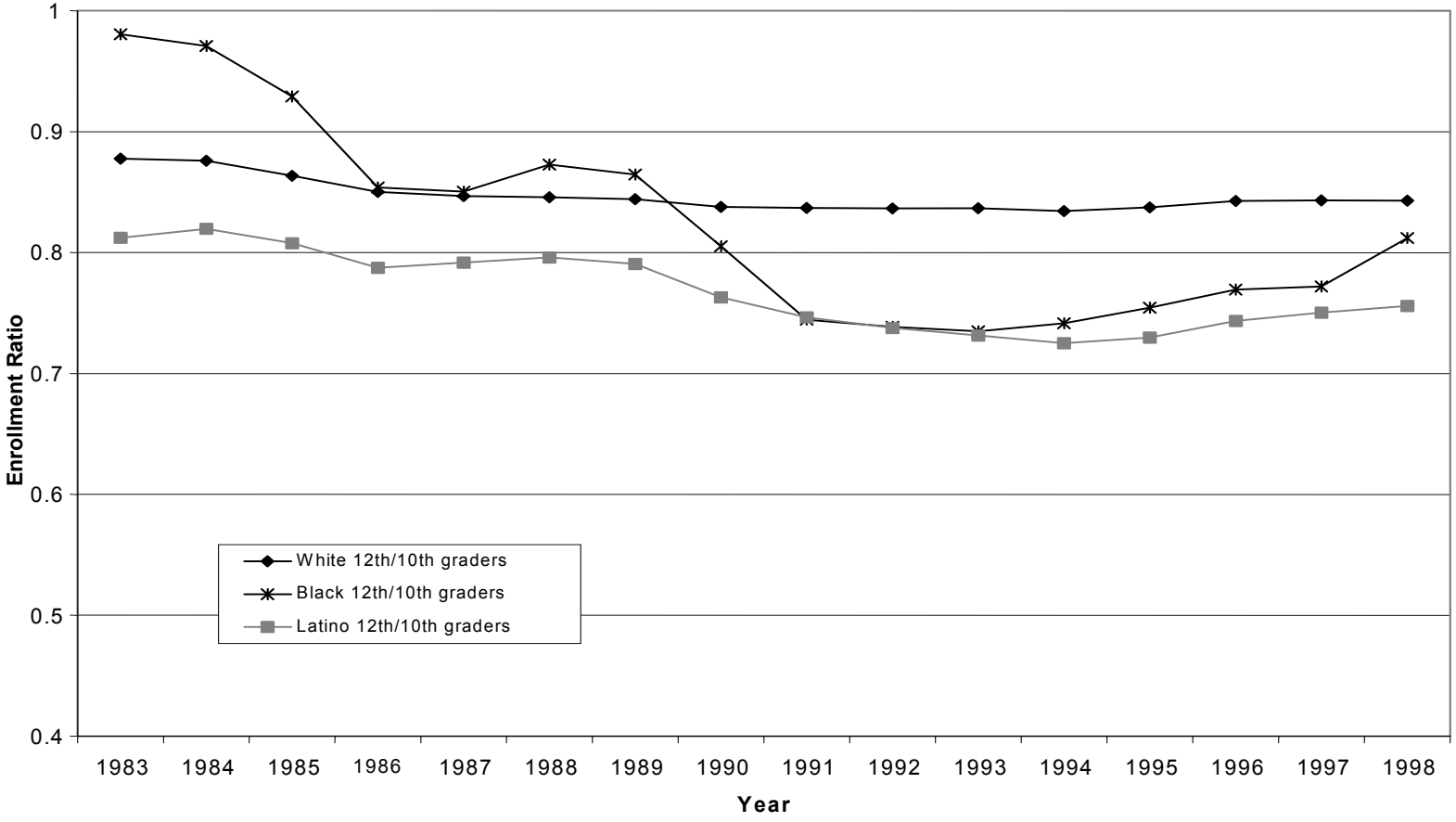
In addition, it is not clear that the convergence in TAAS scores across racial/ethnic groups carries through to other outcomes. Fisher (2000) argues that the TAAS scores show the gap between African American and White students and the gap between Latino and White students declining on the fourth grade math and reading tests while the NAEP results suggest that the gap is staying constant or increasing. The results for eighth grade math are less clear because the NAEP gains are measured for 1990-1996 and the TAAS for 1994-1999, but Fisher claims that these results suggest that the TAAS may sharply overstate minority gains.

Enrollment Trends

When assessing whether the increases in TAAS scores reflect actual gains, it is worth considering measures of educational attainment such as the dropout rate and the completion rate (that is, the proportion of ninth or tenth graders who reach twelfth grade or who graduate from high school). The Texas Education Agency (TEA) reports annual enrollment by grade, as well as dropout rates, the number of high school graduates, and the number of high school graduates who are planning to attend college. As reported by the TEA, dropout rates in middle and high school (seventh to twelfth grade) declined for all groups from 1994 to 1999, a continued decline from even higher dropout rates in the 1980s. The average reported dropout rate for all groups declined from 6.1 percent in 1989-1990 (Shrag, 1999) to 2.8 percent in 1994 to 1.6 percent in 1999.[4] Latinos had the highest dropout rate in both years, but their rate also declined, from 4.2 percent to 2.3 percent.

Critics have expressed serious doubts about the meaning of the dropout rates (Haney, 2000; Shrag, 1999). Many students disappear in the accounting process. Haney (2000) argues that the reported dropout rate is inconsistent with the high school completion or finishing rate. He finds that the ratio of high school graduates to ninth grade enrollment three years earlier declined suddenly for White, African American, and Latino students with the introduction of the tenth grade TAAS in 1990-1991. He reports that the finishing rate for White students recovered in the following year, 1991-1992, then slowly and steadily increased over the rest of the decade (Haney, 2000.) (See Figure 1.) The finishing rate also rebounded

Figure 1. Texas: Twelfth Grade Enrollment Compared to Tenth Grade Three Years Earlier, Three-year Rolling Averages, by Race/Ethnicity, 1983-1997



for African American and Latino students, Haney argues, but not as much and more slowly. He observes, "This indicates that the TAAS exit test has been associated with a 50 percent increase in the gap in progression from grade nine to high school graduation for non-White students as compared to White students" (Haney, 2000, p. 68).

Haney is not the only one who finds a disparity between the official dropout rate and student progression through high school. Colvin (1999) writes, "Statewide, one out of three White students and one out of two African American and Latino students did not graduate on time with their class in 1998. In addition, of those who graduated, only about a third of the African American and Latino students had taken a full complement of college prep courses."

Alternatives to dropout rates for assessing progression through high school. Because of the problems with reported dropout rates, we examined enrollment trends. Figures 2, 3, and 4 summarize the enrollment, graduation, and college plan trends for White, African American, and Latino students. Each of these figures plots twelfth grade enrollment, the number of graduates, and the number of graduates with college plans for each year, as well as the eighth, ninth, tenth, and eleventh grade enrollments respectively for four years, three years, two years, and one year earlier. The highest enrollment is in the ninth grade because of the substantial retention of students at that grade level.

The difference between eighth and ninth grade enrollment of White students increased in the 1990s. This increase, however, does not appear to have resulted in a greater gap between eighth and tenth grade enrollment during this time, or between tenth and eleventh grade enrollment. The difference between twelfth grade enrollment and graduation actually decreased in the 1990s.

We observed some important anomalies in the data for African Americans students. For example, the twelfth grade numbers appear to be wrong for 1988 and 1989. The data, however, do show a clear increase in the number of African American students retained in the ninth grade throughout the period studied. The steepest increase in the retention rate for African American students occurred in the mid-to-late 1980s and the mid-to-late 1990s. The gap between eighth and tenth grade enrollment widened in the early-to-mid-1990s, an indication that many students may have dropped out of school. The difference between tenth and eleventh grade enrollment also increased. But the difference between eighth grade and graduation remained fairly constant, in part because the gap between the graduation rate and eleventh grade enrollment decreased in the 1990s. This suggests that retained students who dropped out may have been the ones most likely to drop out in the later grades if they had not been retained.

The trends for Latino students were very similar to those for African American students, except that there was an increase, between 1988 and 1994, in the gap between Latino eighth grade enrollment and graduation. The percent of high school graduates who had college plans increased substantially for both African Americans and Latinos.[5]

Ninth to twelfth grade progression. Overall enrollments can illustrate trends and identify possible anomalies in the data, but enrollment ratios can provide a clearer picture of changes in student progression through school. In keeping with previous analyses (Haney, 2000), we plotted the

Figure 2. Texas: White Enrollment Trends by Grade

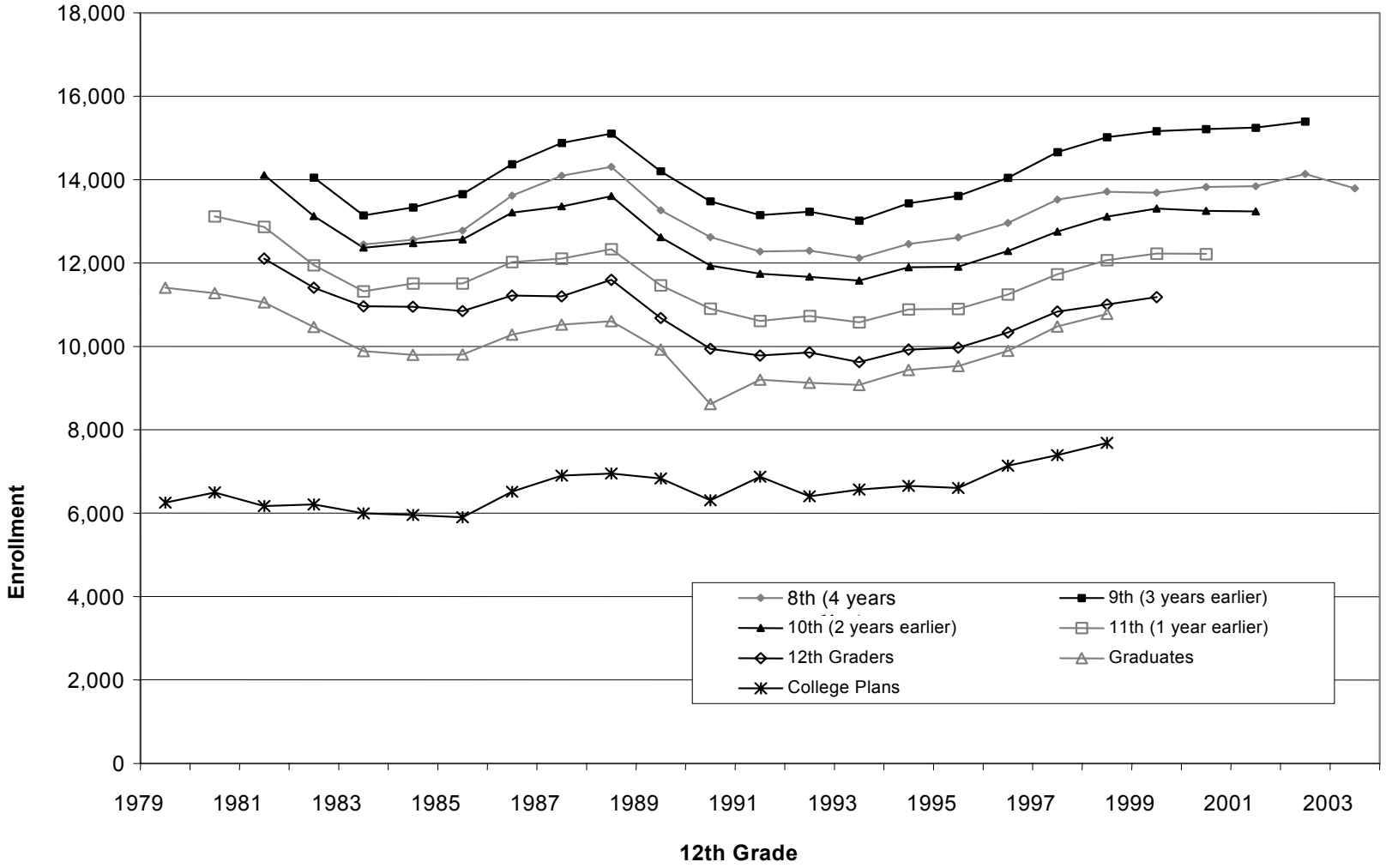


Figure 3. Texas: African American Enrollment Trends by Grade

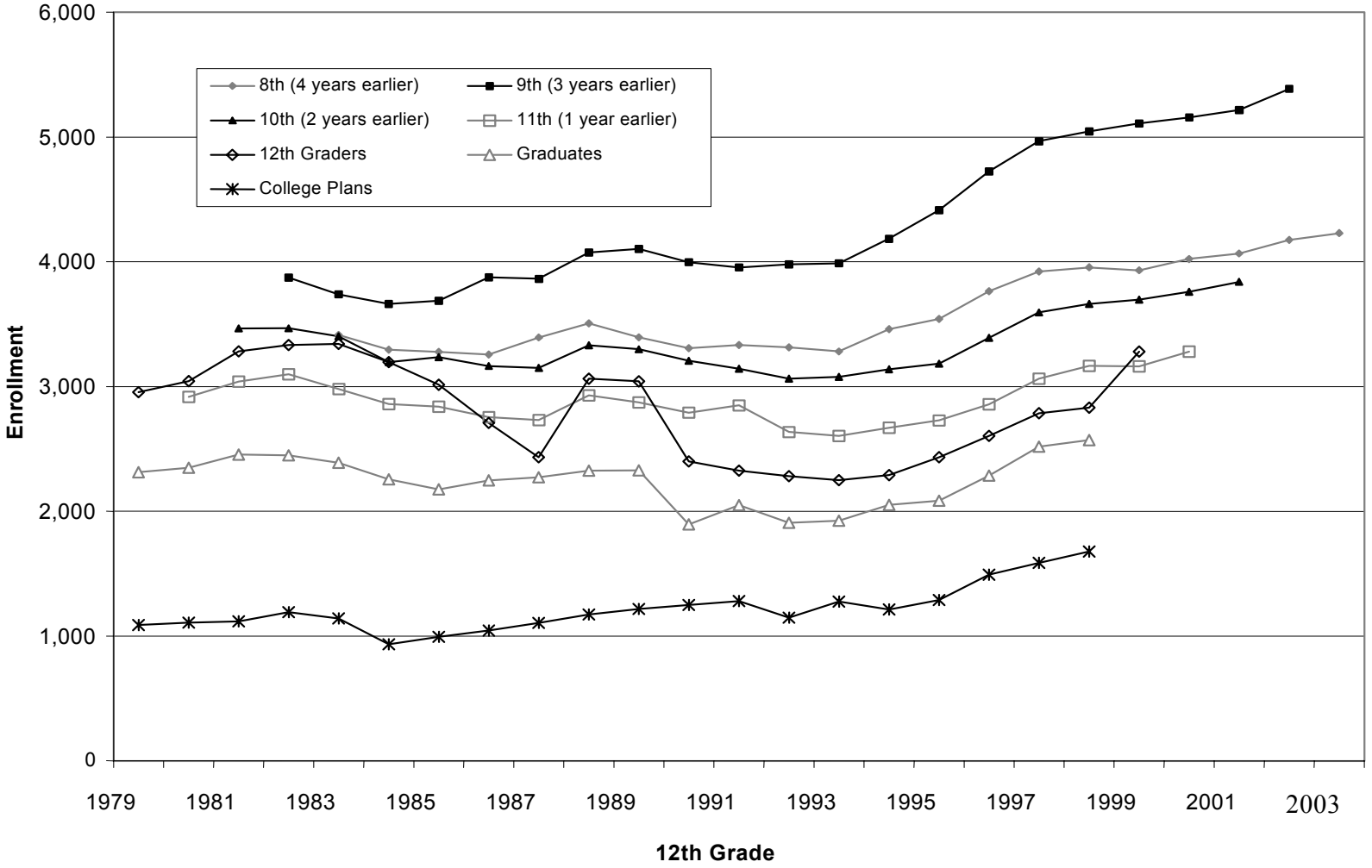


Figure 4. Texas: Latino Enrollment Trends by Grade

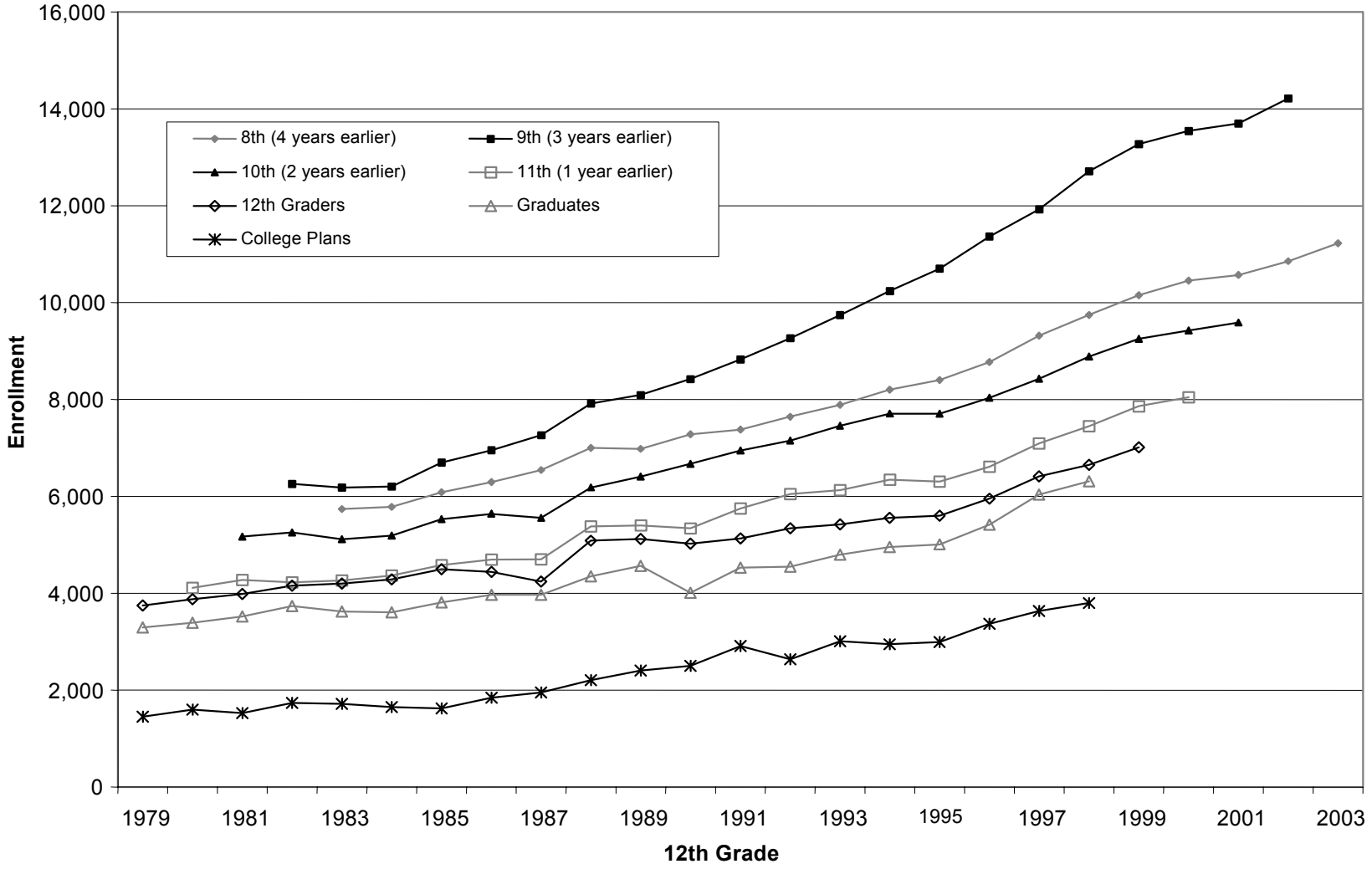


Figure 5. Texas: High School Graduates Compared to Ninth Grade Three Years Earlier, Three-year Rolling Averages, by Race/Ethnicity, 1983-1997

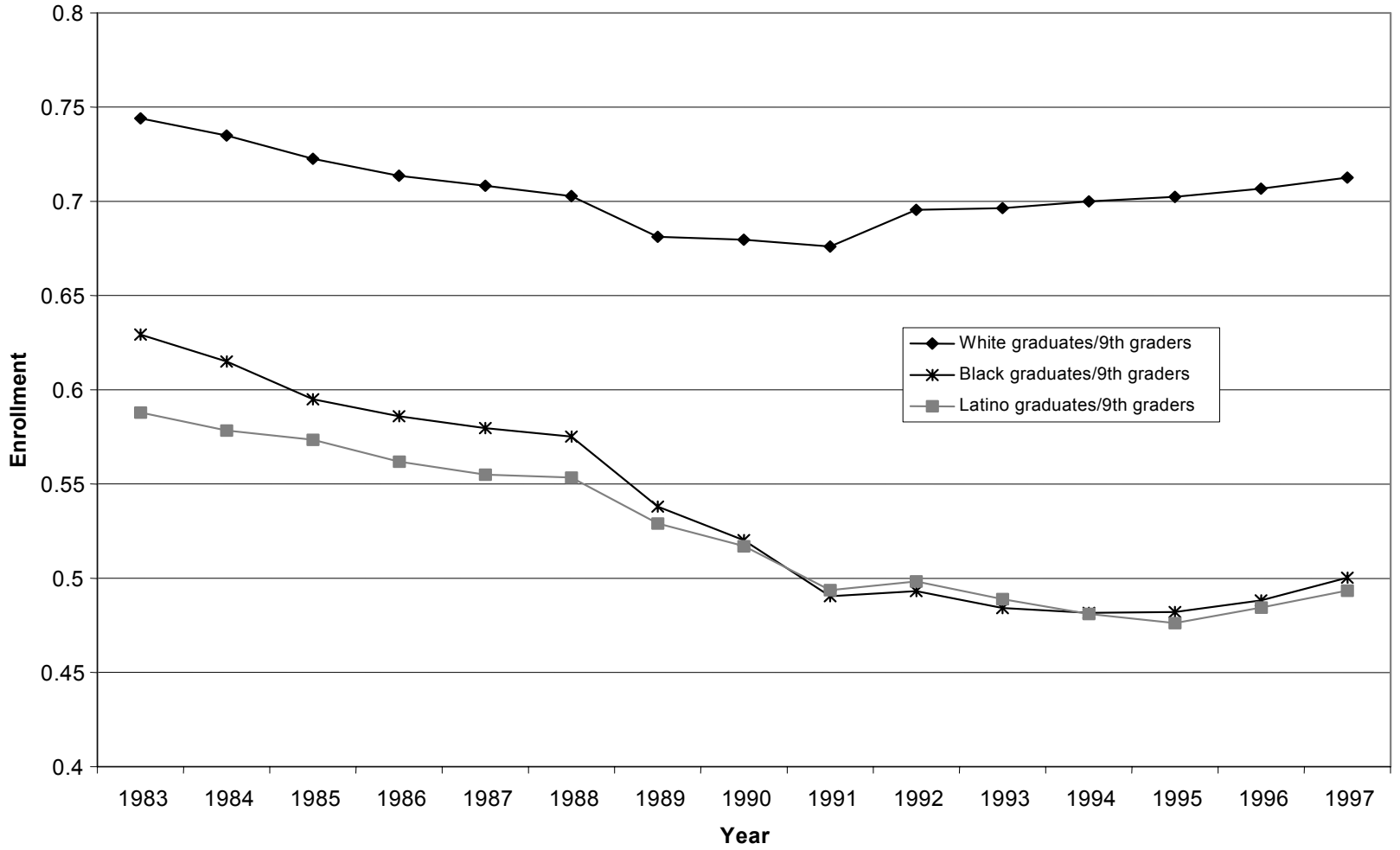
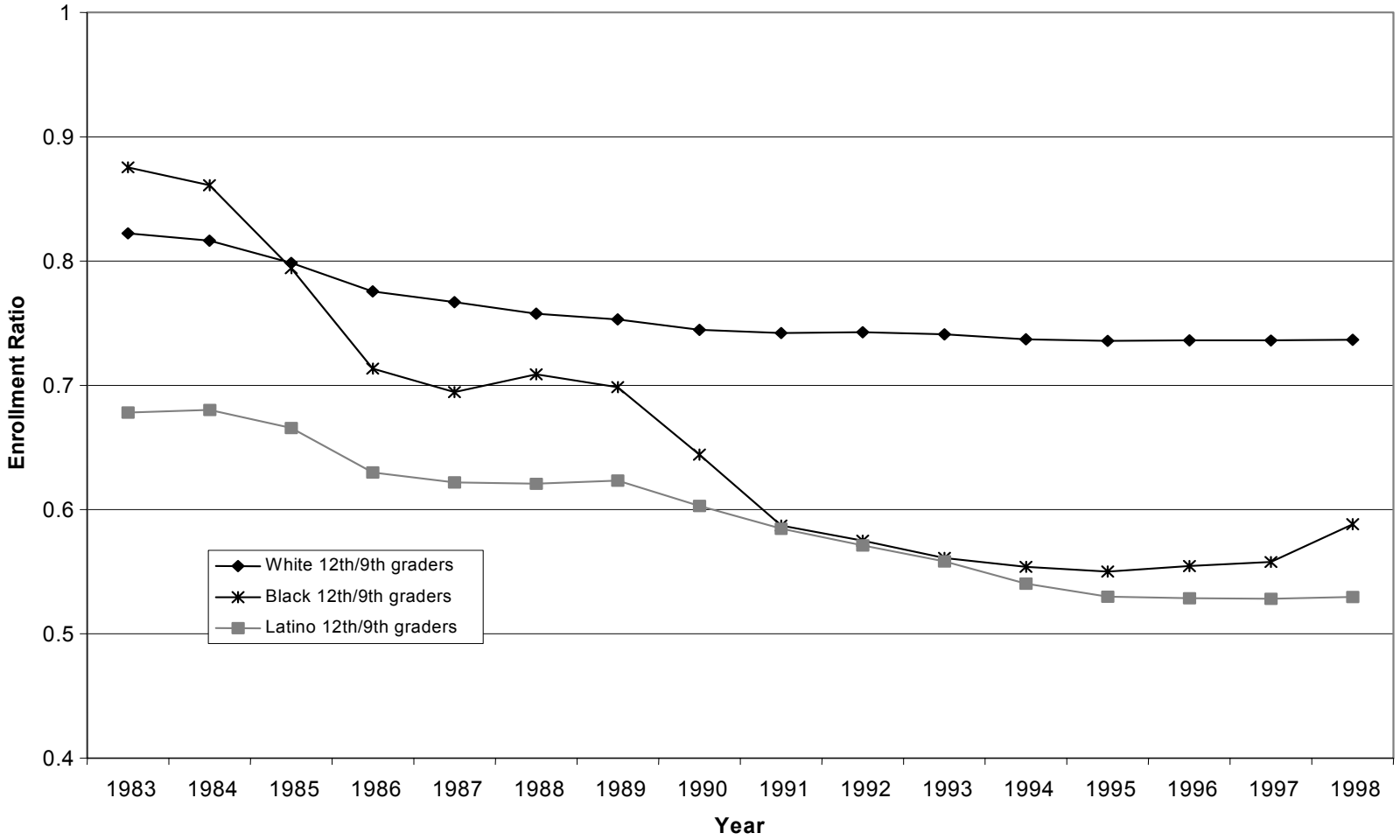


Figure 6. Texas: Twelfth Grade Enrollment Compared to Ninth Grade Three Years Earlier, Three-year Rolling Averages, by Race/Ethnicity, 1983-1997



three-year rolling average of the ratio of high school graduates to ninth grade enrollment three years earlier in Figure 5 and the ratio of twelfth grade enrollment to ninth grade enrollment three years earlier in Figure 6. The ratios fell from the early 1980s to the early 1990s. Our estimates, however, suggest that the downward trend ended shortly after the implementation of the tenth grade TAAS in the early 1990s. Tenth grade students in the first year of the test would not have been in twelfth grade until 1992. Almost all of the decrease in high school completion had occurred by 1992. Introduction of the TAAS clearly did not cause these declines.

Ninth grade retention. The decreases that we saw in ninth to twelfth grade progression were caused either by a decrease in the relative size of the twelfth grade or by an increase in the relative size of the ninth grade. In order to assess which of these changes was driving the results, we plotted three-year rolling averages of the ratio of ninth grade enrollment to eighth grade enrollment one year earlier (Figure 7). Our results confirm Haney's conclusion (2000, see Figure 5) that retention of African American and Latino students has been rising rapidly since the early 1980s. Retention rates for Whites have also increased, but at a much slower pace. Again, these trends began before the implementation of the TAAS, so there is little compelling evidence that the implementation of the tenth grade TAAS in 1990-1991 was responsible for rising retention rates.

Other educational progression measures. A third measure of attrition, twelfth grade enrollment compared to eighth grade enrollment four years earlier, avoids much of the problem of rising enrollment in the ninth grade year. The rolling average ratio remains virtually constant for White students at 0.8 from 1987 to 1998, and for Latino students at 0.7. Attrition increases substantially only for African American students, and that was during the 1980s, not the 1990s (Figure 8).[6] In Figure 1, a plot of the ratio of twelfth grade enrollment to tenth grade enrollment two years earlier, shows a decline for all groups, but especially for African American and Latino students in the 1980s. This ratio has increased for African Americans since 1993.

The intention to go to college is another important measure of student success. The proportion of high school seniors who take the SAT or ACT standardized tests used in college admissions, their SAT or ACT scores, and the rates at which Texas high school graduates go to college all rose sharply in the 1980s, but have slowed in recent years. Figure 9 shows the proportion of Texas high school graduates with college plans, which is reported by the Texas Education Agency, along with enrollment data. The percentage fell for White and Latino students in the 1990s, but rose slightly for African Americans. For high school graduates, the gap between White students having college plans and African American and Latino students with college plans fell by roughly half, from 17 percent in 1985 to about eight percent in 1997. Overall enrollment in Texas colleges rose six percent between 1990 and 1996. White enrollment fell in these years, so the entire increase was due to increased college enrollment among African American and Latino students (NCES, 2000, see tables 193 and 213).

Summary of enrollment trends. The bottom line is that, statewide, about 30 percent of African American and Latino eighth grade students and about 20 percent of White eighth grade students do not finish

Figure 7. Texas: Ninth Grade Enrollment Compared to Eighth Grade, Three-year Rolling Averages, by Ethnicity, 1981-1998

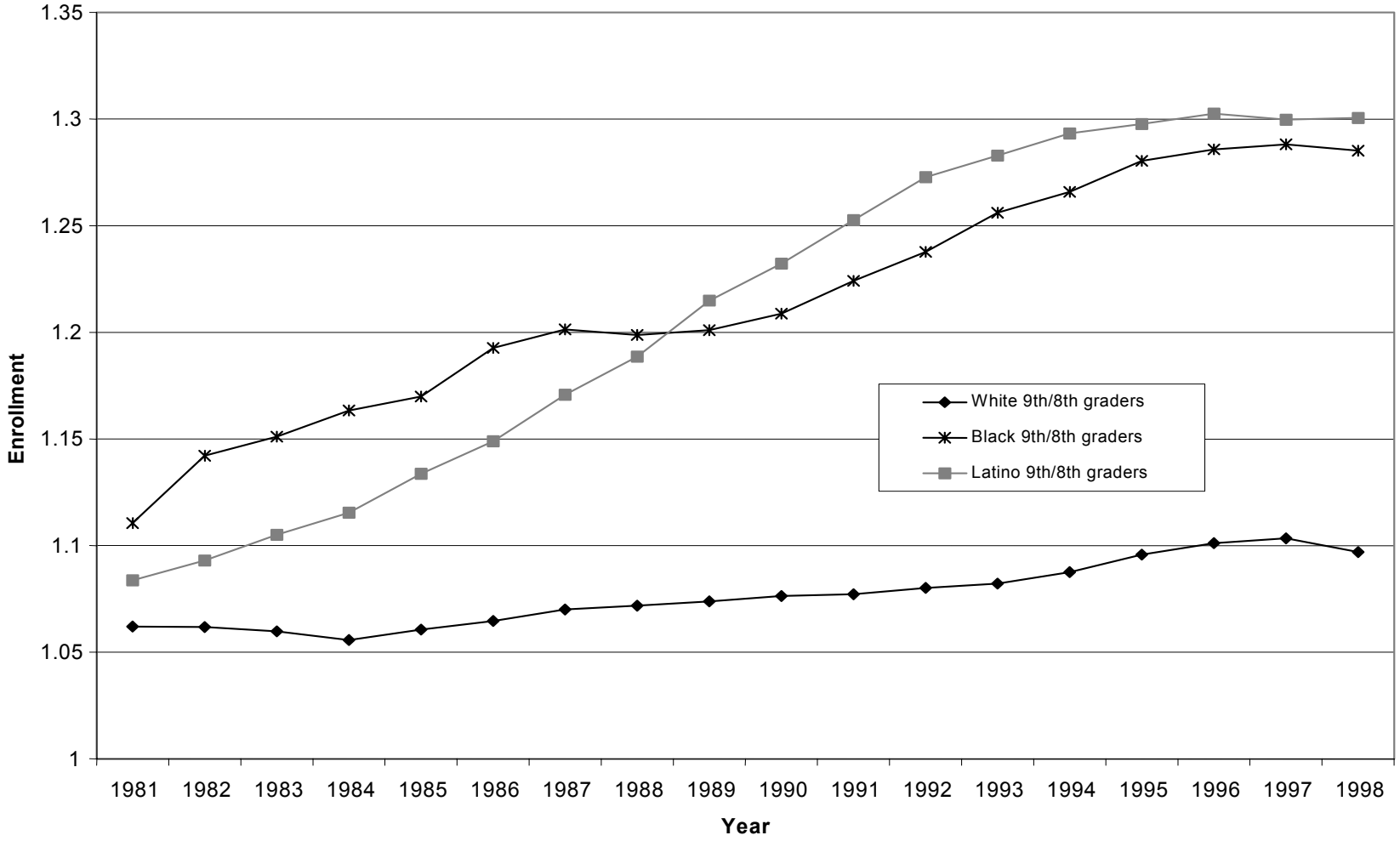


Figure 8. Texas: Twelfth Grade Enrollment Compared to Eighth Grade Three Years Earlier, Three-year Rolling Averages, by Race/Ethnicity, 1983-1997

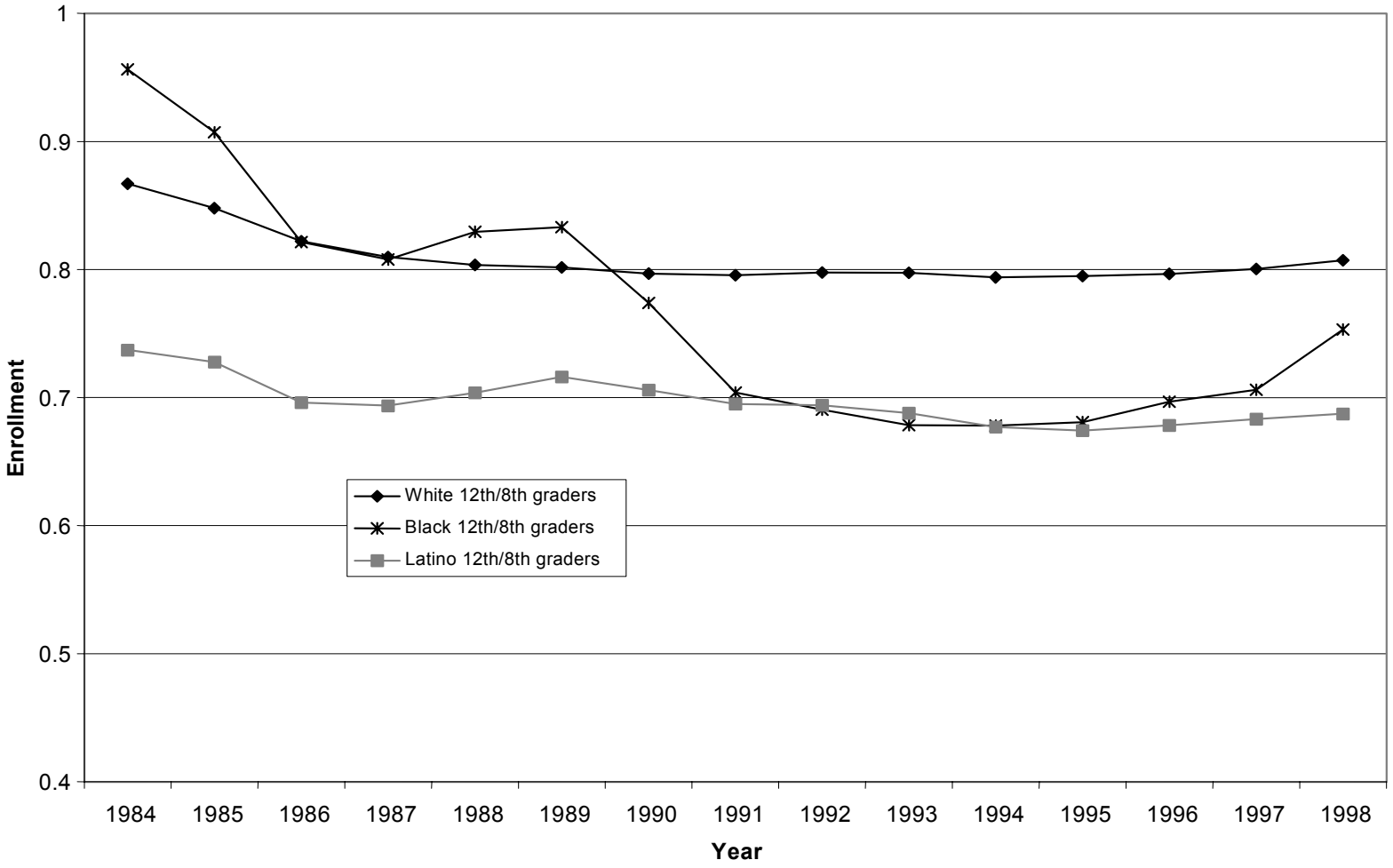
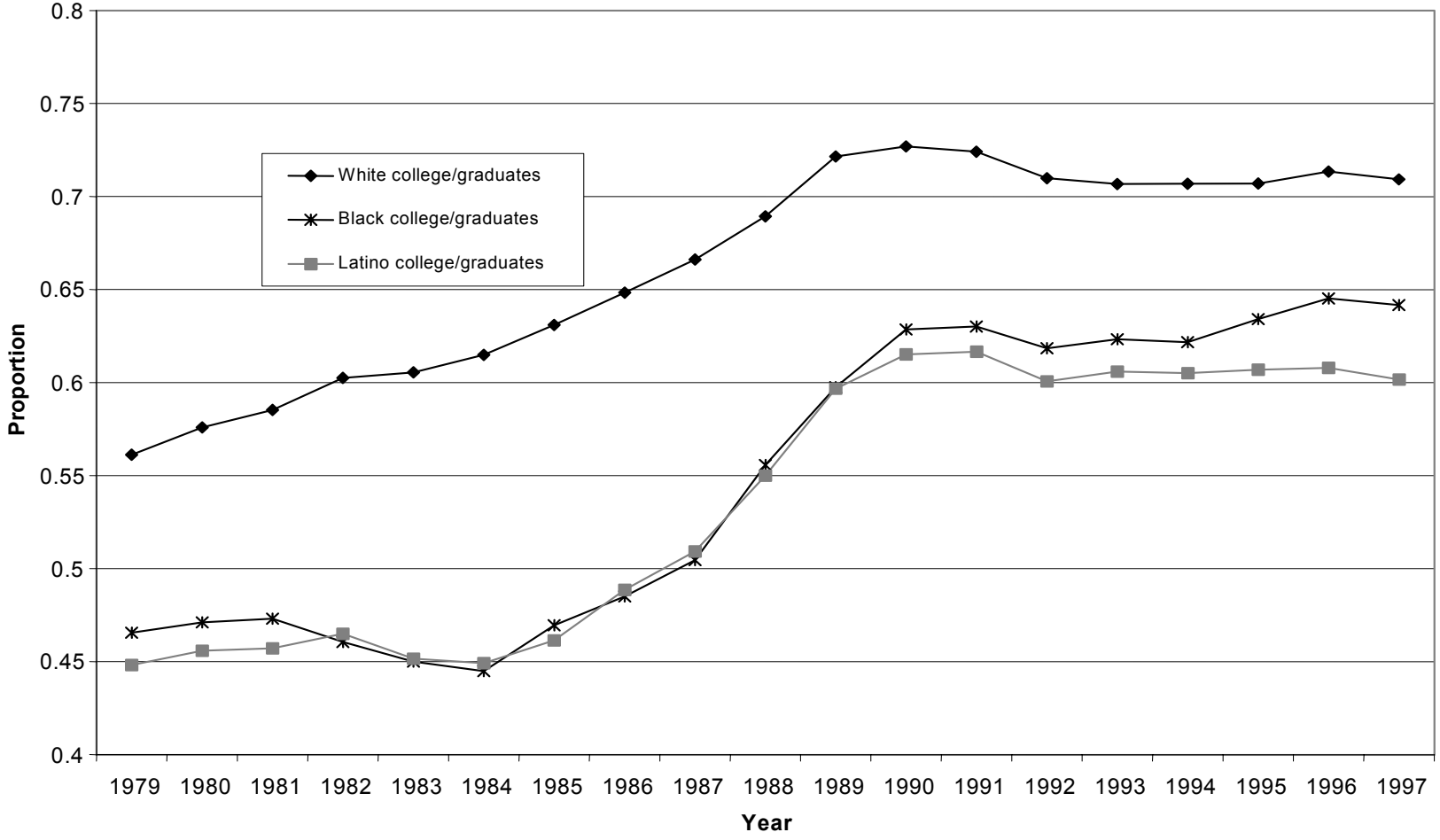


Figure 9. Texas: Proportion of High School Graduates with College Plans, by Race/Ethnicity, 1979-1998



high school with their cohort. About 15 percent of White tenth grade students, about 20 percent of African American tenth grade students, and about 25 percent of Latino tenth grade students do not reach the twelfth grade with their cohort. However, it is difficult to argue that the tenth grade TAAS, in and of itself, is to blame for either higher retention rates in ninth grade or for higher attrition rates for eighth and tenth grade students.

Overall, it appears that the TAAS has had relatively little effect in improving other high school outcomes or, for that matter, making them worse. Yet, the TAAS may have had differential effects across schools. To explore this further, we used school-level data to test whether there was a relationship across schools between gains in the TAAS passing rate and other student outcomes. We now turn to these estimates.

Model and Data for School-level Analysis

At the individual level, educational achievement is strongly correlated with educational attainment (Carnoy and DeAngelis, 2000). When compulsory education laws no longer require students to attend high school, however, the relationship between average achievement and average attainment is more complicated. Imagine two possible scenarios. In the first, an emphasis on increasing Texas Assessment of Academic Skills (TAAS) scores increases the overall quality of schooling, leading to gains in student learning on multiple dimensions and decreases in the dropout rate. In an alternative scenario, increased emphasis on TAAS comes at the expense of other learning or leads to efforts to screen students *before* they take the TAAS. This scenario may lead to increases in the dropout rate as low-performing students are forced out to increase school average TAAS scores or as students choose to leave because they fear that they will do poorly on TAAS, because they were retained in earlier grades, or because the learning environment has deteriorated. In the first scenario, rising achievement is positively related to rising completion rates; in the second scenario, rising achievement is negatively related to high school completion rates. In a third scenario, where neither effect dominates, they may offset each other.[7]

The relationship between rising TAAS scores and student attainment is thus an empirical question and one that can shed light on the welfare implications of TAAS gains. In this section, we look across schools to examine the relationship between changes in TAAS scores and changes in student attainment and ask whether schools that have experienced an increase in average scores have also seen an increase in student attainment.

We examined the population of Texas high schools that have all four (ninth through twelfth) grades. Information about these schools is available from the Texas Education Agency. About 1,000 of the more than 2,000 high schools in Texas meet this criterion. The other schools are generally smaller rural and suburban schools that enroll either only the first two or last two or three grades. Students feed into one of these smaller schools or into the larger schools, which makes it difficult to calculate survival rates. The 1,000-plus high schools we studied were distributed across urban, suburban, and rural settings.

Unfortunately, a good measure of student attainment is not available so we had to use proxies. We considered three measures: the school reported dropout rate, the tenth-to-

twelfth grade progression rate, and the ninth-to-twelfth grade progression rate.[8] We defined the tenth-to-twelfth grade progression rate as the number of students in the twelfth grade in one year divided by the number of students in the tenth grade two years earlier. The ninth-to-twelfth grade progression rate was defined similarly.

In order to determine which measure to use, we ran some simple correlations. The correlation between dropout rate and tenth-to-twelfth grade progression was -0.23 for 1998-1999, indicating that the two measures might be picking up similar trends, but that at least one of these measures had large error. Consistent with measurement problems, differencing made the correlations even lower (likely a result of substantial measurement error) so that the correlation between the change in tenth-to-twelfth grade progression and the change in the dropout rate was -0.065. The ninth-to-twelfth grade measure, however, appeared to have even greater flaws. Surprisingly, the tenth-to-twelfth grade progression rate was not correlated with the ninth-to-twelfth grade progression rate (r=-0.033 for 1998-1999) and the dropout rate was, in fact, positively correlated with ninth-to-twelfth grade progression (r=0.18).

One check on the usefulness of our attainment measures was to look at the correlation between the measures and the socioeconomic status of the school. In general, we would expect a positive correlation between attainment and status. We found that the percent of students who were enrolled in the free and reduced-price lunch program was essentially equally correlated with both the dropout rate and with the tenth-to-twelfth grade progression rate (0.16 and -0.17 respectively), but was not correlated with the ninth-to-twelfth grade progression rate (-0.014).[9] This was a further indication that the ninth-to-twelfth grade measure may not have been a good measure. We eliminated it from our choice of attainment measures. We looked at the two remaining measures, but we concentrated on the dropout rate because we had data for the longest time period, 1994 to 1999. We could construct the tenth-to-twelfth grade retention rate only from 1996 to 1999.

Table 2 describes our sample, providing means, standard deviations, and sample sizes for the main variables that we used. The table presents these descriptives for the full sample of high schools, as well as separately for urban, suburban, non-metropolitan, and rural schools. In addition, we separated urban schools into those where less than 40 percent of students were eligible for the free or reduced-price lunch program and those where greater than or equal to 40 percent of students were eligible for the lunch program.

We saw that urban schools performed considerably lower on the TAAS than other schools and that poor urban schools had the lowest average performance. In keeping with the overall state trend, average TAAS scores have improved over time in all groups. We also saw that dropout rates were particularly high in poor urban districts even though they improved dramatically over this time period. As a comparison, the retention rates were lower in poor urban schools and improved the most in this set of schools. However, the extent of improvement was small and less than the decline in dropout rate.

Table 2. Sample Statistics for Key Analysis Variables

	Overall	Urban	Suburban	Non-metro	Rural	Urban <40% Free Lunch	Urban >40% Free Lunch
TAAS 10th grade pass rate 1998-1999	78.89 (12.02) *1134*	70.12 (12.84) *175*	78.45 (9.82) *208*	80.38 (10.26) *416*	81.90 (12.70) *335*	76.96 (10.69) *82*	64.08 (11.52) *93*
TAAS 10th grade pass rate 1993-1994	55.57 (16.37) *1134*	44.26 (16.95) *175*	57.43 (14.66) *208*	56.90 (13.76) *416*	58.66 (17.60) *335*	56.42 (14.53) *82*	33.53 (10.45) *93*
Dropout rate 1998-1999	1.33 (1.32) *1134*	1.66 (1.03) *175*	1.40 (0.95) *208*	1.39 (1.52) *416*	1.03 (1.32) *335*	1.50 (0.89) *82*	1.80 (1.12) *93*
Dropout rate 1993-1994	2.55 (2.32) *1132*	4.61 (3.28) *174*	2.84 (1.83) *207*	2.53 (1.88) *416*	1.34 (1.57) *335*	3.25 (2.51) *82*	5.82 (3.42) *92*
Ratio 12th grade enrollment 1998-1999 to 10th grade 1996-1997	0.83 (0.12) *1134*	0.74 (0.11) *175*	0.80 (0.10) *208*	0.84 (0.09) *416*	0.88 (0.14) *335*	0.78 (0.09) *82*	0.70 (0.11) *93*
Ratio 12th grade enrollment 1995-1996 to 10th grade 1993-1994	0.83 (0.13) *1129*	0.72 (0.10) *174*	0.81 (0.11) *208*	0.83 (0.10) *416*	0.89 (0.16) *331*	0.77 (0.10) *81*	0.68 (0.09) *93*
% African American enrollment 1998-1999	10.68 (16.50) *1134*	22.49 (26.51) *175*	11.46 (16.14) *208*	8.79 (11.90) *416*	6.39 (11.12) *335*	18.44 (21.00) *82*	26.06 (30.23) *93*
% Latino enrollment 1998-1999	28.75 (28.15) *1134*	47.61 (31.31) *175*	28.37 (30.44) *208*	24.52 (25.79) *416*	24.40 (23.45) *335*	29.40 (19.32) *82*	63.66 (31.13) *93*
% lunch program enrollment 1998-1999	37.46 (20.78) *1134*	44.39 (22.17) *175*	29.03 (24.52) *208*	33.09 (17.49) *416*	44.49 (17.70) *335*	24.76 (9.85) *82*	61.69 (14.07) *93*

Note: Standard deviations are in parentheses and sample sizes are in italics.

Regression Results

Table 3 presents bivariate regression results for the relationship between the change in the Texas Assessment of Academic Skills (TAAS) score from 1994 to 1999 and the change in the dropout rate from 1994 to 1999. The coefficient measures the percentage change in the dropout rate associated with a one percent increase in the TAAS score. We found that, on average, in schools where TAAS scores increased by 10 percent, the dropout rates fell by 0.24 percent. This relationship was driven by poor urban schools. In urban schools where greater than 40 percent of the students were eligible for the free or reduced-price lunch program, a 10 percent increase in the TAAS was associated with an almost 12 percent decrease in the dropout rate. These results suggest that schools that experienced increases in the TAAS also experienced increases in student attainment.

There are a number of possible explanations for these findings. It may be that schools with increasing TAAS scores have actually improved and thus the dropout rate has fallen. However, there were a number of other hypotheses worth checking. First, schools that see a rise in the economic situation of their students may see a gain in both TAAS scores and other outcomes even if an effort to increase the TAAS score hurts student attainment. In other words, changing economic situations tend to have a similar effect on test scores and on attainment; changing economic situations may overshadow the possible negative effect that increased emphasis on the TAAS may have on student attainment. In order to assess this possibility, we reran the above analysis, but this time included controls for changes in the percent of students eligible for the free and reduced-price lunch program at both the campus and district levels, as well as controls for changes in the percent of African American and Latino students. These results are presented in Table 4a. The same trends were evident. Increases in the TAAS score were associated with decreases in the dropout rate. This was particularly true for poor urban schools where a 10 percent increase in the TAAS was associated with an 11 percent decrease in the dropout rate.

Table 3. Bivariate Regression Results of the Change in Log Dropout Rates on the Change in Log TAAS Score

	Overall	Urban	Suburban	Non-metro	Rural	Urban < 40% Lunch	Urban > 40% Lunch
Coefficient	-0.024	-0.104	-0.030	-0.014	-0.010	0.437	-1.178
Std Error	(0.005)	(0.019)	(0.011)	(0.008)	(0.005)	(0.565)	(0.275)
R-Square	0.024	0.151	0.035	0.008	0.011	0.009	0.162

Table 4. Specification Checks

4a. Controls for Change in Free Lunch (Campus and District), in % African American, and in % Latino

	Overall	Urban	Suburban	Non-metro	Rural	Urban < 40% Lunch	Urban > 40% Lunch
Coefficient	-0.398	-0.890	-0.423	-0.208	-0.237	0.699	-1.145
Std Error	(0.119)	(0.232)	(0.310)	(0.221)	(0.217)	(0.560)	(0.306)
R-Square	0.026	0.164	0.037	0.009	0.058	0.117	0.183

4b. Controls for Change in Free Lunch (Campus and District), in % African American, and in % Latino plus Change in the Retention Rate Between Ninth and Tenth Grade

	Overall	Urban	Suburban	Non-metro	Rural	Urban < 40% Lunch	Urban > 40% Lunch
Coefficient	-0.406	-0.930	-0.449	-0.188	-0.248	0.783	-1.153
Std Error	(0.120)	(0.234)	(0.324)	(0.223)	(0.217)	(0.538)	(0.307)
R-Square	0.030	0.194	0.038	0.009	0.081	0.188	0.197

4c. Controls for Change in Free Lunch (Campus and District), in % African American, and in % Latino Plus Instrument for 1994-1999 Changes in TAAS with 1995-1998 Changes in TAAS

	Overall	Urban	Suburban	Non-metro	Rural	Urban < 40% Lunch	Urban > 40% Lunch
Coefficient	-0.714	-0.804	-0.312	0.041	-0.062	0.302	-0.677
Std Error	(0.243)	(0.338)	(0.606)	(0.467)	(0.761)	(0.737)	(0.569)
R-Square	0.022	0.193	0.037	0.005	0.077	0.176	0.175

A second hypothesis to consider was that students may drop out before the tenth grade because they know they will need to pass the TAAS in order to graduate. In order to check whether this phenomenon was driving our results, we added a control for the change in the ninth-to-tenth grade retention rate. This measure was calculated as the ratio of tenth grade students in 1998-1999 to ninth grade students in 1997-1998 minus the ratio of tenth grade students in 1994-1995 to ninth grade students in 1993-1994. Table 4b presents these results. This addition makes little difference. In poor urban schools, a 10 percent increase in the TAAS again was associated with a 12 percent decrease in the dropout rate.

There were two more factors worth considering. The first was effects of *regression to the mean*. If we have a school that just happened to have a high-performing class in 1993-1994, they would have a low dropout rate and a high TAAS score in that

year. If we compare this with a normal class in 1998-1999, then we would see that the TAAS scores and the dropout rate have moved together. That is, in this school the TAAS went down and the dropout rate increased. Usually we count on regression to eliminate this problem because some school is likely to have had a particularly low-performing class in 1993-1994. In this case, however, this low-performing class in another school would only worsen the bias. In this second school we would see a gain over time in TAAS and a decrease in the dropout rate. The TAAS and student attainment would again be moving together and we would overestimate the relationship between attainment and test score. Regression to the mean, then, leads to an upward bias in our estimates. Luckily, it is not difficult to adjust for this problem. We instrumented for the change in the TAAS score from 1993-1994 to 1998-1999 with the change in the TAAS score from 1994-1995 to 1997-1998. This process, essentially, used only the variation across schools in the change in test score that was consistent between the two periods, and thus eliminated the change due to particularly good or bad cohorts.

The same technique also helped alleviate our second concern, *measurement error*. The test score is likely to be an imperfect measure of any class's ability on the test. This imperfection would lead to a bias toward zero in the estimated relationship between the dropout rate and the test score. Instrumenting reduced this bias by using variation in the test score change that was consistent over the two time periods. Table 4c presents the instrumented results that adjusted for regression to the mean and measurement error. We found a slightly smaller effect in poor urban areas, but still, a 10 percent increase in TAAS was associated with a seven percent decrease in the dropout rate both overall and in urban schools.

While we believe these results are informative, it is also useful to look at alternative outcome measures. Tables 5 and 6 present the results using changes in the tenth-to-twelfth grade progression rate, changes in the ninth-to-tenth grade progression rate, changes in the percent of students taking the SAT examinations, and changes in mean SAT scores (controlling for changes in the percent taking the tests). The results for the alternative outcomes did not show a consistent relationship between TAAS scores and other student outcome measures. We did find a positive and statistically significant relationship between change in TAAS score and change in the tenth-to-twelfth grade progression rate for the full sample in the bivariate regression. The point estimate for poor urban schools indicated a stronger effect, consistent with the trends for the dropout rate observed above; however, this result was not statistically significant at conventional levels. We found no other statistically significant effects in the simple regressions. We also ran full regressions that instrumented for the change in TAAS score from 1994 to 1999 with the change from 1995 to 1998 and included controls for changes in district and campus free and reduced-price lunch eligibility, percent of Latino students, and percent of African American students. These results are summarized in Table 6. None of the estimates was significant at conventional levels.

Table 5. Bivariate Regression Results for Alternative Outcome Measures

Full Sample

	Tenth to Twelfth Retention	Ninth to Tenth Retention	Percent taking SAT*	Mean SAT*
Coefficient	0.00078	-0.0056	0.029	-0.213
Std Error	(0.00036)	(0.0215)	(0.036)	(0.165)
R-Square	0.004	0.000	0.005	0.006

Urban Schools with > 40% of Students Enrolled in Free Lunch Program

	Tenth to Twelfth Retention	Ninth to Tenth Retention	Percent taking SAT	Mean SAT
Coefficient	0.0017	0.00087	-0.0014	-0.113
Std Error	(0.0016)	(0.0023)	(0.146)	(0.304)
R-Square	0.011	0.001	0.022	0.031

Percent taking the SAT includes additional control for the change in the dropout rate and mean SAT includes additional controls for percent change in the dropout rate and change in percent taking the SAT.

Table 6. Full Regression Results for Alternative Outcome Measures

Full Sample

	Tenth to Twelfth Retention	Ninth to Tenth Retention	Percent taking SAT*	Mean SAT*
Coefficient	0.0011	0.0127	0.0501	-0.244
Std Error	(0.0010)	(0.0607)	(0.0975)	(0.164)
R-Square	0.010	0.004	0.006	0.029

Urban Schools with > 40% of Students Enrolled in Free Lunch Program

	Tenth to Twelfth Retention	Ninth to Tenth Retention	Percent taking SAT	Mean SAT
Coefficient	0.0010	-0.0060	-0.0143	-0.178
Std Error	(0.0019)	(0.0045)	(0.309)	(0.912)
R-Square	0.018	0.137	0.084	0.115

Percent taking the SAT includes additional control for the change in the dropout rate and mean SAT includes additional controls for both percent change in the dropout rate and change in percent taking the SAT. Mean SAT analysis for the first sample and tenth to twelfth retention for the urban sample include controls but are not IV, because of convergence difficulties.

Discussion

The explicit objective of the Texas school accountability system is to improve educational outcomes among the state's four million public elementary and secondary students. Rising pass rates on the Texas Assessment of Academic Skills (TAAS) suggest that this objective is being met. Texas students have also made substantial gains on some of the National Assessment of Educational Progress (NAEP) tests, specifically in fourth and eighth grade mathematics. This would appear to validate claims that rising pass rates on the TAAS may, indeed, indicate real learning gains.

Nevertheless, as we have shown, other important indicators of educational success—namely high school progression and graduation rates—rose just slightly in the 1990s, and then only in the past few years. It appears that rising TAAS scores on the high-stakes tenth grade test have had at best a small impact on educational outcomes that count, namely high school completion and the likelihood of attending college. This is particularly troubling because high school graduation rates are relatively low in Texas. Only about 65 percent of African American and Latino eighth grade students and about 78 percent of White eighth grade students graduate four years later.

Our results suggest that claims of rapidly increased retention of African American and Latino students in the ninth grade since the implementation of the Texas education reform in 1984 are absolutely true. However, claims that increasing retention is directly attributable to the new tenth grade TAAS exam that students must pass to graduate are not supported by the data. Neither does statewide grade-by-grade enrollment data support claims that statewide dropout rates increased after 1990.

We have shown, using school-level data, that there was a positive relation between lower dropout rates and higher TAAS scores on the tenth grade TAAS in the 1990s. That is, those high schools that had larger increases in their students' pass rates on the tenth grade TAAS also had larger declines in dropout rates. The relationship is largest among urban high schools serving low-income students, and continues to be significant and large even when we correct for possible sources of bias in the coefficient of test score increase on dropout rate. But, our results also show that there is a much weaker relationship between increases in the tenth grade TAAS pass rate and the proportion of tenth grade students reaching twelfth grade two years later. The corresponding relationship for urban high schools serving low-income students was positive but not significant. We also did not find a relationship between increasing TAAS score on the tenth grade test and either the proportion of a high school's SAT or ACT test-takers or the high school's average SAT score.

There are a number of possible explanations for the weakness of the relationship we found between TAAS scores and other outcomes. First, the data simply may be too inaccurate to capture any effects that exist. The low correlation among our various high school progression and completion measures raises serious concern about the estimation of dropout rates by high schools. Much of our analysis depends on the reliability of our outcome measures. The data on high school enrollment comes directly from the Texas Education Agency but there are evident anomalies in both the aggregate data and the data on individual schools.

Still, let us assume that these data anomalies are such that our results remain valid: rising

TAAS pass rates have not had much impact on educational attainment. The TAAS may simply have been set at a level that would not substantially influence the prevailing dropout rate. The proportion of students statewide who can not pass it (after repeated tries) may be synonymous with the proportion that would have dropped out anyway. This is not an unlikely scenario, given the political sensitivity of high school completion rates. Another possibility is that not enough time has passed to observe consequences of the TAAS. If we are currently viewing the full effect of the test, however, it appears that it has not been successful in improving educational outcomes with high social value, such as high school completion or college attendance.

Enrollment data for recent years hint at a possible turning point in high school progression trends. Ninth grade retention has leveled off in the past three years and graduation rates relative to ninth and eighth grade enrollment have increased. This could mean that high retention rates in ninth grade and high attrition rates in eighth to twelfth grade are relatively short-term investments in raising the quality of Texas' high school graduates. Retention and attrition rates, however, are still very high, particularly among minority groups. If they remain so, critics may be correct in claiming that the Texas accountability system is not an effective way to improve learning opportunities for minority students.

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End Notes

[1] The Texas Assessment of Basic Skills was administered from 1980 through 1985 in grades five and nine and from 1981 through 1985 in grade three. If students did not pass the test, they were required to retake the ninth grade test in grades ten, eleven, and twelve. The Texas Educational Assessment of Minimum Skills was administered 1986 through 1989 in grades one, three, five, seven, and nine (in math, reading, and writing) and in grades eleven and twelve (in math and English/language arts).

[2] The state legislature had passed the Equal Opportunities Act in 1979 to begin addressing financial inequities, but the Reform Act of 1984 was the major educational reform of the period.

[3] These schools teach both the elements of the curriculum that will appear on the test and techniques for taking the test. Our observations suggest that the majority of the time is spent on the curriculum material and not on test-taking skills.

[4] Information available on the internet: www.tea.state.tx.us/perfreport/aeis/hist/state/html. Dropout rates are the total number of students reported as dropouts during a single academic year, expressed as a percent of the total number of students in grades seven through twelve. The TEA deletes from the count any students found enrolled in another district, reported as graduates by another district, or students who have received GED certificates. This measure is used as a base indicator in the Texas accountability system.

[5] When African Americans and Latinos graduate from high school, they are much more likely than in the past to go to either two- or four-year colleges. Yet, their likelihood of graduating from high school with their eighth grade class or even getting a regular high school degree remains about 15 percent below that for Whites—at a low 0.65, compared with almost 0.8 for Whites.

[6] The rapid decline in twelfth grade enrollment relative to eighth and ninth grade enrollment four and three years earlier for African Americans is probably an artifact of errors in enrollment statistics for that group in the 1980s. Considering the data on graduates relative to ninth and eighth grade enrollment, where the ratio is only somewhat higher for African Americans than for Latinos in the 1980s, the error is probably in the twelfth grade enrollment for African Americans.

[7] The same complexity pervades the relationship between rising achievement and the proportion of students taking the SAT or ACT examinations.

[8] Our school-level data do not extend over a long enough period to examine eighth-to-twelfth grade progression.

[9] The results were similar, though slightly stronger, if we looked only at urban schools: the tenth-to-twelfth grade retention rate was not correlated with the ninth-to-twelfth grade retention rate (r=-0.016 for 1998-1999); the correlation between dropout rate and tenth-to-twelfth grade retention was -0.28; the percent of students who were eligible for the lunch program was essentially equally correlated with both the dropout rate and the tenth-to-twelfth grade retention rate (0.28 and -0.35 respectively) and uncorrelated with the ninth-to-twelfth grade retention rate (0.06).