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The Education Pipeline in the United States 1970–2000

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Contents

The Education Pipeline in the United States, 1970-2000

I Introduction

Close to 100 years ago, in a book titled *Laggards in our schools: A study of retardation and elimination in city school systems,* Leonard Ayres wrote:

> No standard which may be applied to a school system as a measure of accomplishment is more significant than that which tells us what proportion of the pupils who enter the first grade succeed in reaching the final grade. (Ayres, 1909, p. 8)

Nearly a century later, rates of student progress through elementary and secondary school have continued to be recognized as indicators of the quality of educational systems. In the Goals 2000 Act of 1994, the U.S. Congress and President Bill Clinton established as a national education goal that the United States should aspire to a high school graduation rate of 90%. In 2002, in the No Child Left Behind (NCLB) law, the Congress and President George Bush set out as a criterion for evaluating secondary education, "graduation rates for public secondary school students (defined as the percentage of students who graduate from secondary school with a regular diploma in the standard number of years)" [Sec 1111(b)(2)(D)(i)].

In this report we present results of analyses of data on grade enrollment and graduation over the last several decades both nationally and for all 50 states. The main reasons for these analyses are that state-reported dropout statistics are often unreliable

and most states do not regularly report grade retention data, that is data on the rates at which students are held back to repeat grades. Hence, the only way to study long-term rates of student progress through elementary-secondary educational systems is to examine data on grade enrollment and graduates over time. This project grew out of a study of education reform in Texas in which it was found that analyzing enrollment and graduation statistics could show what was really happening when reliable statistics on dropouts were unavailable (Haney, 2000).

These analyses allow us to show how graduation rates, both nationally and for the states, have been changing in recent decades. More generally, these analyses allow us to examine the education pipeline in the United States to identify key transition points through which students progress, or fail to progress, from kindergarten through the grades to high school graduation. Before presenting results of analyses, we explain sources of data used and the manner in which enrollment and graduation data have been analyzed.

II Data and Methods

The data used in the analyses presented in this report are numbers of students enrolled in public schools by grade for each academic year and the numbers of students graduating each academic year. These data are available from the *Digest of Education Statistics* (DES), a report issued by the National Center for Education Statistics (NCES) since 1962 and the Common Core of Data (CCD), a federal repository of education statistics available on-line at http://nces.ed.gov/ccd/.[1]

To examine patterns of student progress through the education pipeline, we have conducted cohort progression analyses. These analyses are used to address questions such as the following: If there were 1000 students enrolled in grade 9 in 1990-91, how many progressed to grade 10 in 1991-92? We have examined such year-to-year "grade-to-grade" rates of progress for thirteen transition points, from kindergarten through grade 12 and to graduation. We analyzed such year-to-year transitions nationally from 1968-69 to 2000-01, and for all 50 states from 1984-85 through 2000-2001. Additionally we examined rates of progress over more than one year, for example, by addressing the question of how many students enrolled in grade 9 in 1990-91 graduated in 1993-94. This is, of course, exactly the sort of high school graduation rate calculation rate suggested by the requirements of the 2002 NCLB law. Indeed, we will report such graduation rates, both nationally and for the 50 states. Nonetheless, as we explain, this simple and most obvious way of calculating high school graduation rate is not without its

[1] The appendix to this report describes discrepancies we have identified between the DES and CCD sources and explains how we make available to anyone interested the source data used in the analyses reported here.

weaknesses, so we also present results from alternative measures of high school graduation rates.

Before proceeding to present results, let us provide an example to make clear the approach we use more generally. Table 1 shows the enrollments for public schools in the United States for kindergarten through grade 12 for 1968-69 through 1972-73. The bottom half of Table 1 shows enrollments for grades 1 through 12 for 1969-70 through 1972-73 in terms of the percent increases or decreases as compared with enrollments in the previous grade the previous year. For example, in 1969-70 there were 3.86 million enrolled in grade 1 or 53% more than the 2.53 million enrolled in kindergarten in 1968-69.

We have conducted such cohort progression analyses for the U.S. and for all 50 states. Altogether, there were far in excess of 10,000 such calculations. As explained in the appendix, our source data and results of such calculations (both nationally and for all 50 states) are available in the data files released with this report. Subsequent portions of the report present four major findings from these analyses, relating to: 1) kindergarten attendance becoming much more universal; 2) an increasing attrition of students between grades 9 and 10, 3) an increasing bulge of students in grade 9; and, 4) declines in high school graduation rates, especially in the last decade, and especially in some states. The report ends with a discussion of causes and consequences of changes in the education pipeline in the United States over the last three decades.

Table 1:U.S Public School Enrollment, Kindergarten to Grade 12, 1968-69 to 1972-73 (in 1000s).

Grade/Year	68-69	69-70	70-71	71-72	72-73
K	2526	2601	2559	2483	2487
1st grade	3923	3858	3814	3570	3352
2nd grade	3765	3714	3654	3587	3383
3rd grade	3694	3721	3662	3612	3533
4th grade	3629	3660	3676	3623	3554
5th grade	3570	3619	3634	3662	3597
6th grade	3556	3565	3599	3622	3639
7th grade	3552	3665	3662	3710	3713
8th grade	3420	3515	3601	3635	3649
9th grade	3508	3567	3652	3781	3779
10th grade	3310	3408	3457	3571	3648
11th grade	2987	3051	3127	3200	3247
12th grade	2655	2733	2774	2862	2871

Percent increase or decrease from previous grade the previous year

	68-69	69-70	70-71	71-72	72-73
1st grade		52.7%	46.6%	39.5%	35.0%
2nd grade		-5.3%	-5.3%	-6.0%	-5.2%
3rd grade		-1.2%	-1.4%	-1.1%	-1.5%
4th grade		-0.9%	-1.2%	-1.1%	-1.6%
5th grade		-0.3%	-0.7%	-0.4%	-0.7%
6th grade		-0.1%	-0.6%	-0.3%	-0.6%
7th grade		3.1%	2.7%	3.1%	2.5%
8th grade		-1.0%	-1.7%	-0.7%	-1.6%
9th grade		4.3%	3.9%	5.0%	4.0%
10th grade		-2.9%	-3.1%	-2.2%	-3.5%
11th grade		-7.8%	-8.2%	-7.4%	-9.1%
12th grade		-8.5%	-9.1%	-8.5%	-10.3%

III Kindergarten Attendance More Universal

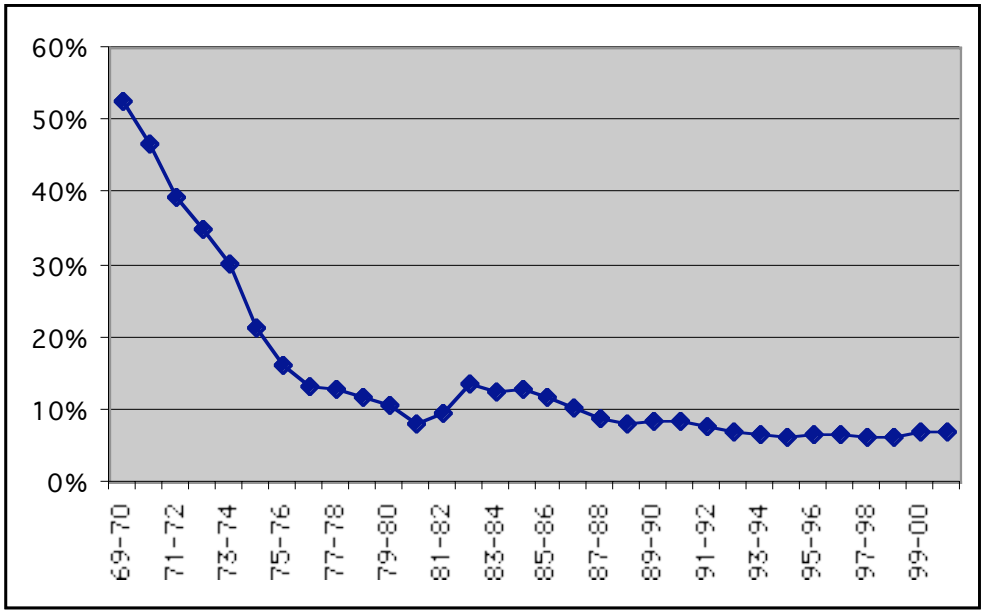
One striking finding from our cohort progression analyses is that the gap between enrollment in grade 1 one year and in kindergarten the previous year has fallen sharply over the last 30 years, most notably during the 1970s. Figure 1 shows, for example, the striking downward trend in the percent more students enrolled in grade 1 than in kindergarten the previous year. Nationally, around 1970 there were 40-50% more students enrolled in first grade than in kindergarten the previous year. This percentage fell sharply during the 1970s and after a slight upturn in the early 1980s, has continued to fall gradually since the mid-1980s. Since the early 1990s grade 1 enrollment has been only 6-7% more than kindergarten enrollments the previous year. This suggests that about 94% of children nationally are entering school in kindergarten. For example, if among every 100 school-aged children, 94 started kindergarten in 2000 and 6 did not start school until grade 1 in 2001, the percent increase in grade 1 enrollment in 2001 compared with the kindergarten enrollment in 2000 would be 6.4% (100-94=6 and 6/94 = 6.4%)). This simple example does not, of course, take migration into account. We postpone discussion of migration (and other factors that might affect apparent rates of cohort progress) until part VI where we summarize results of graduation rate calculations, because immigration from abroad, and domestic migration across states, potentially has much greater impact on cohort progression analyses when results are calculated across more than one year.

The decrease in the gap between grade 1 and kindergarten enrollments the previous year is surely a reflection of the fact that nationally kindergarten attendance has become much more universal over the last three decades (also, it should be noted that

grade1 enrollments in a particular year are influenced somewhat by numbers of students flunked to repeat grade 1 from the previous year, as discussed in part VII below). The pattern suggests that nationally by the 1990s around 90% of students start school in kindergarten rather than in grade 1. This finding is confirmed by sample surveys of U.S households showing that the rate at which 5-year-olds nationwide were enrolled in preprimary education programs rose from 60.6% in 1965 to 86.5% in 1970 and 88.8% in 1990.[2]

[2] National Center for Education Statistics, Digest of Education Statistics 2002 (NCES 2003-060). Table 43, p. 59. It is worth noting that enrollment in full-day programs as contrasted with half-day programs has increased more slowly, from 12.3%, 29.4%, 42.0% and 59.1% of all 5-year-olds enrolled in 1970, 1980, 1990 and 2000 respectively.

Figure 1: National Public School Enrollment in Grade1 as Percent Increase Above Kindergarten Enrollment the Previous Year



Analyses at the state level indicate there were relatively few states in which grade 1 enrollments in 2000-01 were more than 10% greater than kindergarten enrollments in 1999-2000. Results of analyses comparing grade 1 enrollments in one year with kindergarten enrollments the previous year show that over the last 15 years five states have made dramatic progress in boosting rates of kindergarten attendance, namely Mississippi, Oregon, Vermont, South Carolina, and Texas. The state with the worst record in the nation in terms of providing universal access to kindergarten is New Hampshire. In fall 1999, for example, New Hampshire had a kindergarten enrollment of 9,048, but a grade 1 enrollment in fall 2000 of 16,337. [3] This meant that there were 82% more in grade 1 in 2000-01 than in kindergarten in 1999-2000. This implies that only

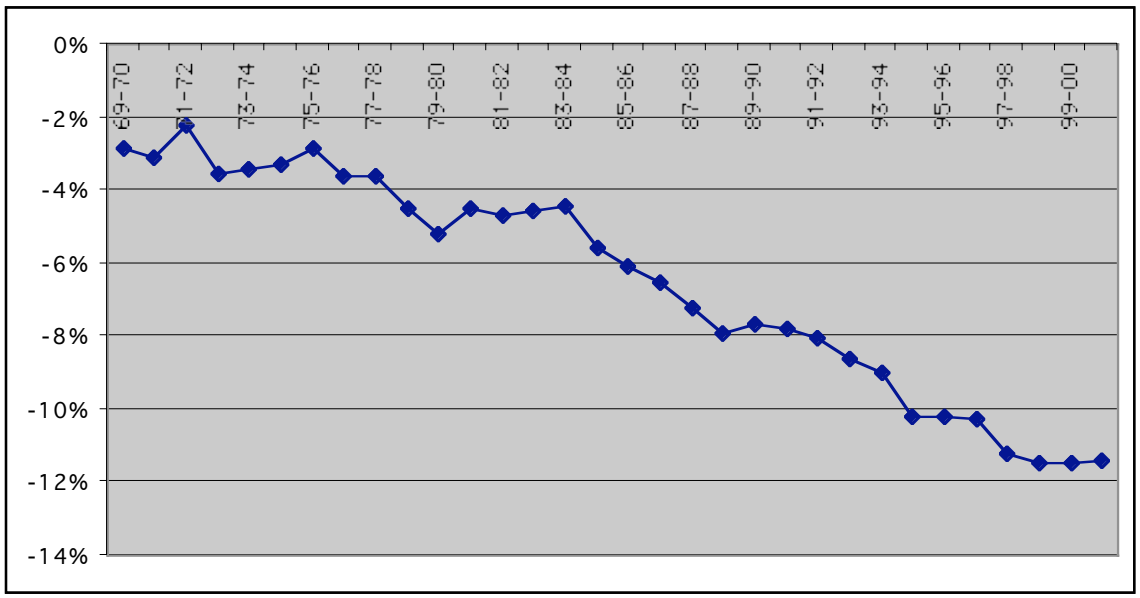
[3] National Center for Education Statistics, Digest of Education Statistics 2002 (NCES 2003-060). Table 38, p. 52. No other state had as large a gap, percentage-wise, between kindergarten and grade 1 enrollments.

about 55% of young children in New Hampshire attend kindergarten (100-55=45 and 45/55 = 0.82).

IV Attrition Between Grades 9 and 10 Increasing

A second major finding from our cohort progression analyses is that the rate at which students disappear between grades 9 and 10 has tripled over the last 30 years. Figure 2 shows the percent fewer students enrolled in grade 10 nationally than in grade 9 the previous year. As shown, during the first half of the1970s there were less than 4% fewer students enrolled in grade 10 than in grade 9 the previous year. Attrition between grades 9 and 10 started increasing in the late 1970s and accelerated from the mid-1980s onward. By the turn of the century there were nearly 12% fewer students enrolled in grade 10 than in grade 9 the previous year. To provide some sense of the numbers of students being lost between grades 9 and 10, in 1998-99, there were 3.86 million students enrolled in grade 9 in public schools in the U.S., but in 1999-2000, there were 3.42 million enrolled in grade 10. The difference, 440,000 students, means that 11.4% of ninth graders in 1998-99 did not show up as enrolled in grade 10 in 1999-2000. In short, by the end of the century the grade 9 to 10 transition was clearly the largest leak in the education pipeline. This was not the case 30 years ago. As the data in Table 1 indicate, three decades ago far more students were lost between grades 11 and 12 than between 9 and 10. In subsequent sections of this report we discuss what happened to these missing students, but first we summarize results of state-level analyses of student attrition between grades 9 and 10.

Figure 2: National Public School Enrollment, Percent Fewer Students in Grade 10 than in Grade 9 the Previous Year



Analyses of enrollment data at the state level reveals that there has long been substantial variation in rates of student attrition between grades 9 and 10. Between 1984-85 and 1985-86, when the rate of attrition between grade 9 and 10 nationally stood at a little less than 5%, six states had attrition rates of 10% or worse (Georgia 16.5%; Texas 14.9%, Louisiana 13.2%; South Carolina 11.5%; Kentucky 11.2% and Virginia 10.0%), but ten states showed grades 9 to 10 attrition rates of less than 2% (California, Minnesota, Nebraska, Nevada, Utah, Kansas, Wyoming, South Dakota, Hawaii, and Wisconsin).

By the end of the century, however, the list of states with attrition rates between grades 9 and 10 of more than 10% had more than tripled. Table 2 lists the 21 states with the worst rates of grade 9 to 10 attrition between 1999-2000 and 2000-01. Since the number of states with grade 9 to 10 attrition rates of more than 10% had more than tripled between the mid-1980s and the end of the century, it is hardly surprising that the grade 9 to 10 attrition rate nationally had more than doubled during the same interval, from less

than 5% to more than 11%. What is striking about the list of states shown in Table 2 is that it includes not just southern states (the only ones with such attrition rates of more than 10% in the mid-1980s), but also northern and Midwestern states such as New York, Massachusetts, Rhode Island, Ohio and Michigan.

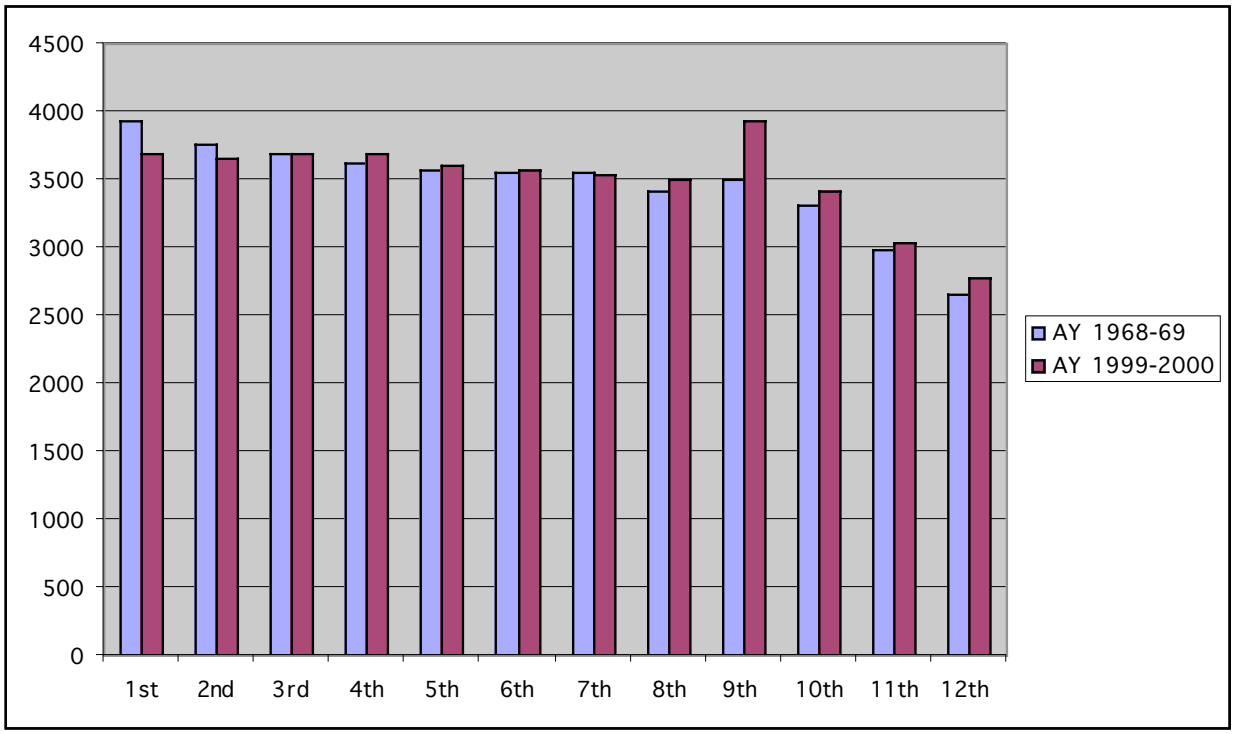
Table 2: States with Worst Attrition Rates between Grades 9 and 10, 1999-2000 to 2000-01

State	Grade 9 to 10 attrition 1999 –2000 to 2000-01
Florida	-23.8%
South Carolina	-22.7%
Georgia	-20.3%
Texas	-20.0%
Nevada	-18.8%
North Carolina	-18.0%
Louisiana	-17.3%
Hawaii	-15.9%
Alabama	-15.0%
Mississippi	-14.4%
New York	-13.9%
Tennessee	-13.9%
Kentucky	-13.4%
New Mexico	-13.1%
Alaska	-12.6%
Delaware	-12.4%
Maryland	-11.3%
Ohio	-11.0%
Massachusetts	-10.7%
Michigan	-10.6%
Rhode Island	-10.2%

V Bulge in Grade 9 Enrollments

A third key finding from our analyses of enrollment data is that there has been a sharp increase in the "bulge" of students enrolled in grade 9 in the last 30 years. As a simple way of showing the increasingly critical role of grade 9 in the education pipeline, we start with a simple graph. Figure 3 depicts the numbers of students in U.S. public schools nationwide enrolled by grade in each of two academic years; namely, 1968-69 and 1999-2000. Note that this figure provides a cross-sectional view of grade enrollments in these two years rather than results of cohort progression analyses. In 1968-69 and 1999-2000, there were similar numbers of students enrolled in grades 1-12 overall, about 42 million across the span of grades 1-12. From Figure 3 we see that there were between 2.5 and 4 million enrolled in each of the twelve grades in both 1968 -69 and 1999-2000. In general there were slight declines in both years in the numbers enrolled in grades 1 through 7, and with sharper declines in grades 9 through 12. Strikingly discrepant from this overall pattern is the grade 9 enrollment for 1999-2000 which is 440 thousand more than grade 8 enrollment in the same year, and 520 thousand more than grade 10 enrollment. This simple graph reflects how grade 9 has become an increasingly important valve in the education pipeline, as enrollments are "bulging up" in grade 9 and, as discussed in the previous section, attrition of students between grades 9 and 10 is increasing.

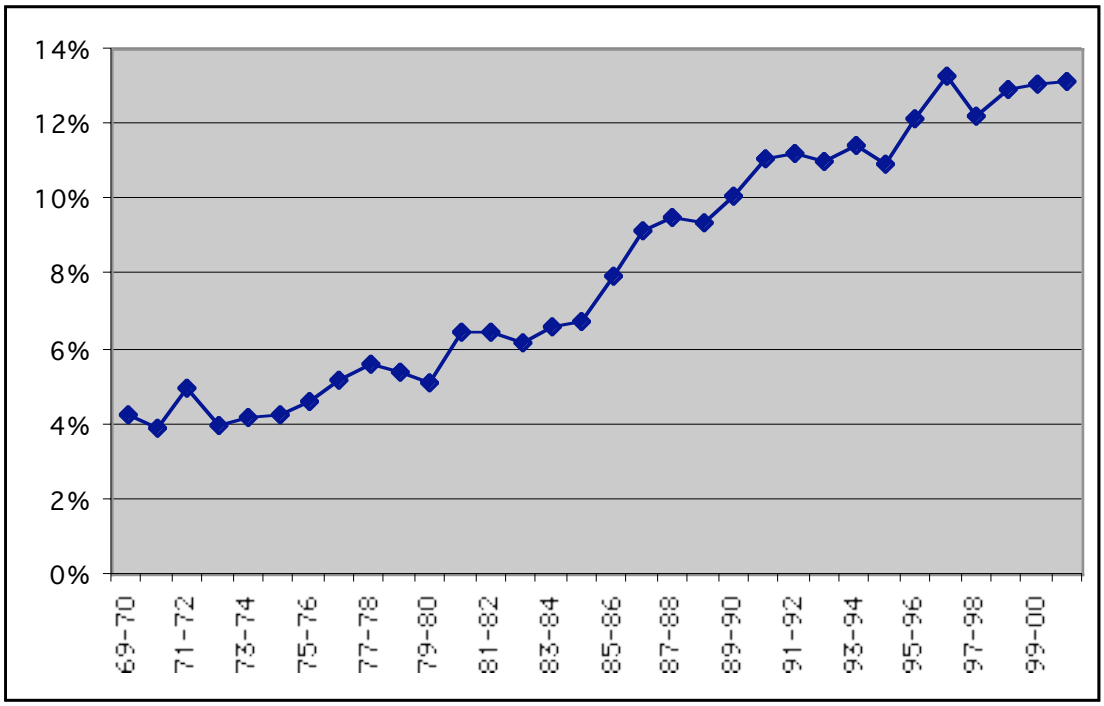
Figure 3: Number of students (in 1000's) enrolled in U.S. public schools, by grade, 1968-69 and 1999-2000



Source: National Center for Education Statistics, *Digest of Education Statistics 1981* (Washington, DC: National Center for Education Statistics) Table 30, p.40; *Digest of Education Statistics 2001* (Washington, DC: National Center for Education Statistics), Table 40, p. 56.

Figure 4 shows another view of how enrollments have been bulging up in grade 9. As this figure shows, during the 1970s there were only 4-6% more students enrolled in grade 9 than in grade 8 the previous year. However, beginning in the mid-1980s, this percentage began to climb sharply so that by the end of the century, in public schools nationally there were about 13% more students enrolled in grade 9 than in grade 8 the previous year. This means that in the last 30 years, the bulge of students in grade 9 has more than tripled, from around 4% to 13%.

Figure 4: Percent More Students Enrolled in Grade 9 than in Grade 8 the Previous Year, U.S. Public Schools, 1969-70 to 2000-01.



This combination, of increasing attrition of students between grades 9 and 10, and increasingly more students enrolled in grade 9 relative to grade 8, is surely a reflection of the fact that more students nationally were being flunked to repeat grade 9. This pattern bodes ill for future graduation rates because research suggests that flunking students to repeat a grade is not a sound educational strategy (Shepard & Smith, 1989). Indeed, recent evidence from Texas and other states indicates, that 70-80% of students who are flunked to repeat grade 9 will not persist in school to high school graduation (Haney 2001). In the next section we present direct evidence on what has been happening to graduation rates, both nationally and among the states, but first we pause to summarize evidence from state-level analyses of the grade 9 "bulge."

Analyses of state-level enrollment data from 1984-85 to 2000-01 indicate that the grade 9 bulge, like attrition between grades 9 and 10, has long varied across the states.

As of 1985-86, one state, New York, had 20% more students enrolled in grade 9 than in grade 8 the previous year, and seven states (CA, DE, FL GA, HI, MI and WI) had a grade 9 bulge of 10-13%. In contrast, in 1985-86, twenty-two states had grade 9 bulges of less than 5%.

By the end of the century, however, this pattern had changed dramatically. By 2000-01 more than half the states had 10% or more students enrolled in grade 9 than in grade 8 the previous year and seven states had grade 9 bulges of 20% or more. Table 3 lists the 26 states with the largest grade 9 "bulges" as of 2000-01.

Table 3: States with Largest Bulges in Grade 9 Enrollments 2000-01 Relative to Grade 8 Enrollment 2000-01

State	Percent More Students in Grade 9 in 2000-01 than in Grade 8 in 1999-2000
Florida	32%
South Carolina	24%
Nevada	24%
New York	21%
Hawaii	21%
Kentucky	20%
Texas	20%
Georgia	19%
Delaware	19%
North Carolina	16%
Virginia	16%
Wisconsin	15%
New Mexico	14%
Maryland	14%
Washington	13%
California	13%
Colorado	12%
Ohio	11%
Pennsylvania	11%
Illinois	11%
Rhode Island	11%
Connecticut	10%
Tennessee	10%
Massachusetts	10%
Michigan	10%
Alaska	10%

In contrast, by the end of the century just eight states (MI, SD, MT, ND, UT, WY, AR, and ME) had a grade 9 bulge of less than 5%. This sharp reversal – the number of

states with grade 9 bulges of more than 10% more than doubled, and the number of states with bulges of less than 5% fell from twenty-two to eight – is a clear sign that far more states are flunking far more students to repeat grade 9 by the end of the century than had been true in the mid-1980s.

VI Falling Graduation Rates

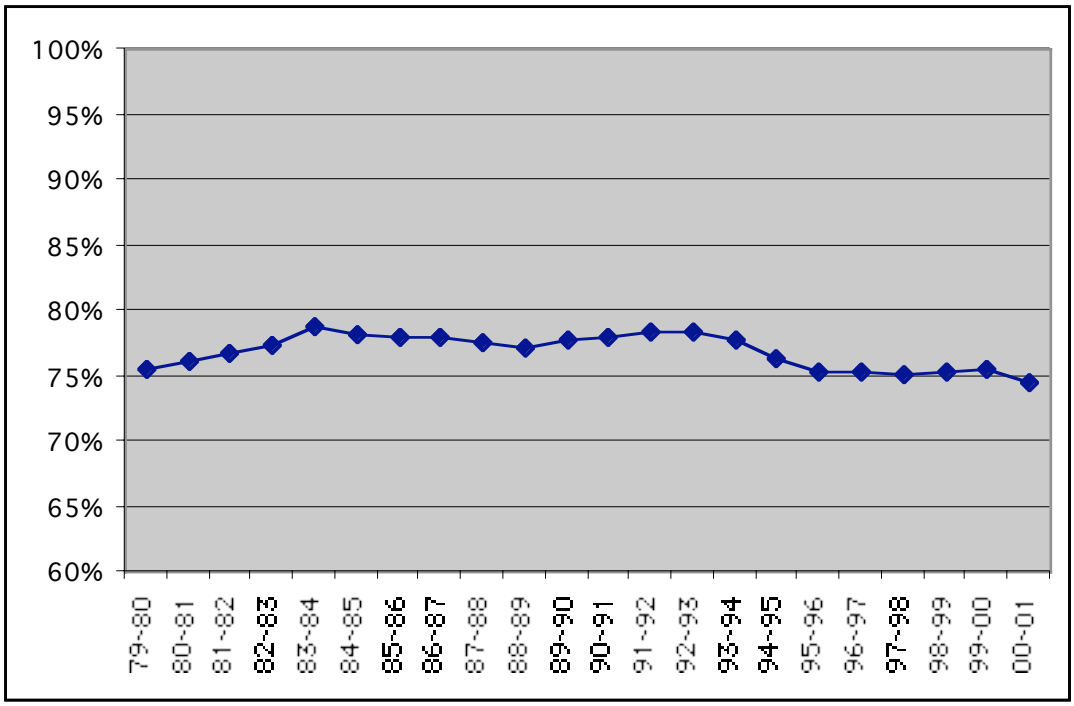
The combination of findings presented in the last two sections should make our fourth finding come as no surprise: high school graduation rates have been falling in the United States in recent years. To illustrate this unfortunate development, we begin as usual with a summary of national results, followed by a recap of state-level results.

As mentioned previously, the most obvious way to calculate high school graduation rates is simply to divide the number of high school graduates by the numbers of students enrolled in grade nine three and a half years earlier. However, as shown in the last section of this report, as more students are being flunked to repeat grade 9, such simple calculations, will be affected not just by changes in the numerator (the numbers of graduates), but also by changes in the denominator (the increasing bulge of students enrolled in grade 9). In an effort to disentangle changes in graduation rates from the increasing bulge in grade 9 enrollments, in this section we start by focusing on rates of graduation from grade 8 to graduation four years later. Later we compare our results with a number of other methods of calculating high school graduation results.

Figure 5 shows what has been happening at the national level to high school graduation rates defined in terms of grade 8 to graduation four years later. As shown, graduation rates climbed slightly in the early 1980s and dipped slightly during the late 1980s. Since the early 1990s, however, the grade 8 to graduation rates have fallen quite steadily, from 78.4% in 1991-92 to 74.4% in 2000-01. In other words, since a high school graduation rate of 90% was set out as a national education goal in the early 1990s, actual graduation rates have been going in exactly the wrong direction, falling from a little more than 78% in the early 1990s to less than 75% in 2000-01. A decline in

graduation rate from 78.41% in 1990-91 to 74.40% in 2000-01 may not seem like a huge drop, but three facts help to put the 4.01% decline in graduation rate in perspective. First, since there were 3.4 million students enrolled in grade 8 in 1996-97, a graduation rate of 74.4% means that 871,000 of these students did not graduate in 2000-2001. Second, if the graduation rate for the class of 1992 had merely persisted another decade, 135,000 more students would have graduated in 2000-01. Third, if the national education goal of a 90% graduation rate by the year 2000 had been achieved, an additional 531,000 students would have graduated with their class in 2000-01 "in the standard number of years." In the concluding section of this report we discuss the implications of this loss of 100s of thousands of students from school prior to graduation. But first, we drop down from the national level, to examine graduation rates at the level of the 50 states.

Figure 5: National High School Graduation Rate, No. of Graduates Divided by Grade 8 Enrollment Four Years Earlier, 1979-80 to 2000-01

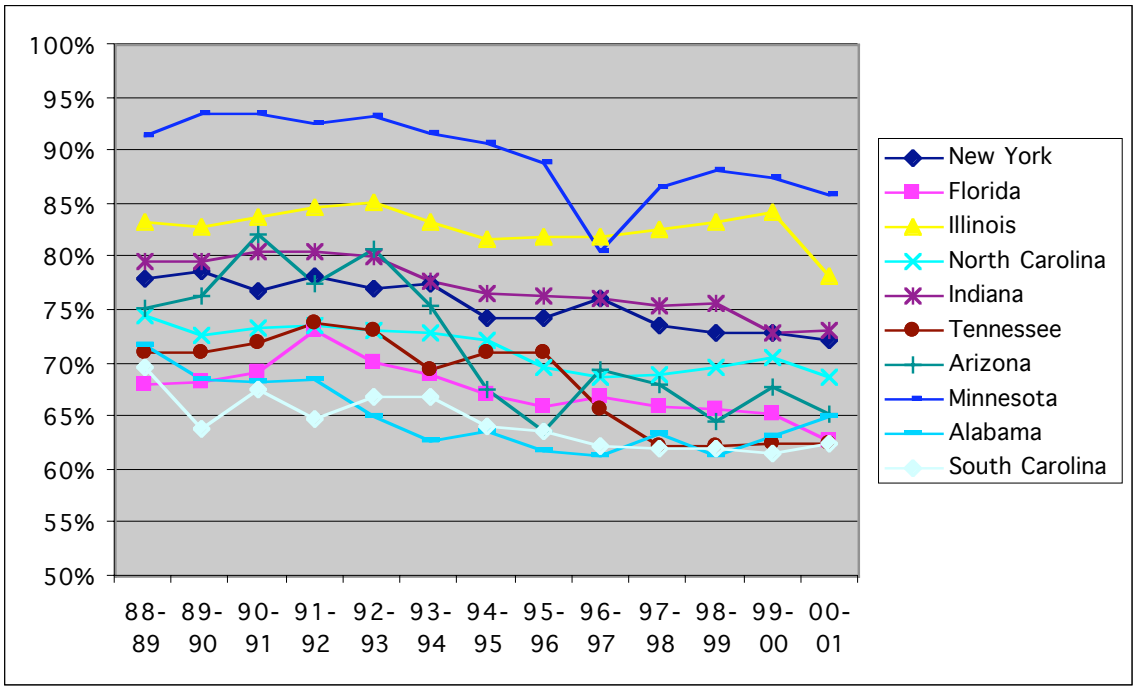


Graduation rate results for the 50 states, from 1988-89 through 2000-01 are shown in Table 4. There are many numbers in this table, so let us summarize here in words. Only two of the fifty states – New Jersey and Wisconsin – appear to have achieved the national education goal of a graduation of 90% as of the turn of the century. As of 2000-01, just fifteen states (WI, NJ, IA, MN, ND, UT, PN, NE, MD, VA, MT, CT, MA, VT and ID) had graduation rates of 80% or more. On the other end of the graduation spectrum, there were thirteen states with graduation rates of 70% or less (DE, NM, ME, OR, NC, LA, GA, AZ, AL, FL, TN, SC and MS). As of 1990-91, only five states (LA, MS, SC, AL and FL) had graduation rates of 70% or less. So in the last decade the number of states with graduation rates of 70% or less has more then doubled (from five to thirteen). The states with the largest declines in graduation rates since 1988-89 – all with declines of 5% or more – were HI, ME, AZ, DE, TN, NM, SC, AL SD, IN, NY, NC, MN, FL and IL. Figure 6 shows a graph of how graduation rates have declined in the ten largest of these states (each with a total public school enrollment of more than half a million) over the 1988-89 to 2000-01 interval.

Table 4: State High School Graduation Rates, Grade 8 to Graduation Four Years Later, 1988-89 to 2000-01

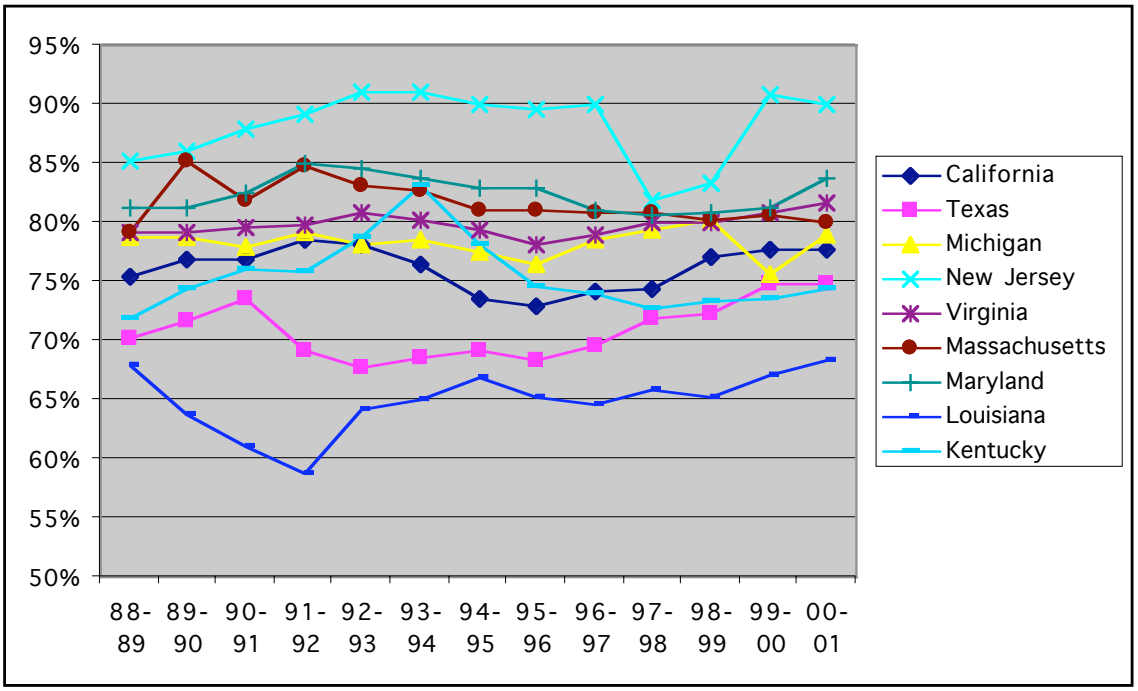
	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Data Source	2,16	3,17	4,18	5,19	6,20	7,21	8,22	9,23	10,24	11,23	12,25	13,26	14,26
Alabama	72%	69%	68%	68%	65%	63%	64%	62%	61%	63%	61%	63%	65%
Alaska	68%	69%	75%	76%	77%	76%	72%	71%	70%	71%	72%	69%	71%
Arizona	75%	76%	82%	78%	81%	75%	68%	64%	69%	68%	65%	68%	65%
Arkansas	76%	76%	75%	76%	77%	75%	72%	73%	70%	74%	74%	74%	73%
California	75%	77%	77%	79%	78%	76%	73%	73%	74%	74%	77%	78%	78%
Colorado	79%	79%	78%	81%	81%	80%	79%	77%	76%	75%	75%	76%	75%
Connecticut	81%	81%	85%	85%	85%	85%	82%	80%	80%	80%	79%	85%	80%
Delaware	79%	76%	76%	79%	80%	75%	72%	75%	74%	78%	76%	71%	70%
Florida	68%	68%	69%	73%	70%	69%	67%	66%	67%	66%	66%	65%	63%
Georgia	69%	71%	72%	71%	70%	68%	66%	64%	64%	60%	60%	63%	68%
Hawaii	90%	96%	85%	84%	83%	84%	83%	83%	76%	73%	71%	76%	73%
Idaho	77%	78%	80%	82%	82%	82%	82%	82%	82%	81%	80%	80%	80%
Illinois	83%	83%	84%	85%	85%	83%	82%	82%	82%	83%	83%	84%	78%
Indiana	80%	80%	81%	81%	80%	78%	77%	76%	76%	75%	76%	73%	73%
Iowa	89%	90%	89%	92%	92%	91%	90%	89%	89%	89%	88%	88%	87%
Kansas	83%	84%	84%	83%	84%	84%	82%	81%	80%	78%	78%	79%	79%
Kentucky	72%	74%	76%	76%	79%	83%	78%	75%	74%	73%	73%	74%	74%
Louisiana	68%	64%	61%	59%	64%	65%	67%	65%	65%	66%	65%	67%	68%
Maine	84%	88%	86%	86%	81%	75%	73%	74%	76%	73%	71%	71%	70%
Maryland	81%	81%	82%	85%	84%	84%	83%	83%	81%	81%	81%	81%	84%
Massachusetts	79%	85%	82%	85%	83%	83%	81%	81%	81%	81%	80%	81%	80%
Michigan	79%	79%	78%	79%	78%	78%	77%	76%	78%	79%	80%	76%	79%
Minnesota	91%	94%	94%	93%	93%	92%	91%	89%	81%	87%	88%	87%	86%
Mississippi	60%	66%	64%	65%	65%	65%	63%	61%	61%	62%	61%	61%	61%
Missouri	79%	80%	80%	80%	80%	80%	80%	79%	78%	78%	80%	79%	78%
Montana	84%	82%	84%	85%	87%	88%	88%	86%	85%	83%	83%	82%	81%
Nebraska	87%	87%	87%	89%	89%	89%	89%	87%	87%	87%	89%	88%	84%
Nevada	73%	79%	80%	74%	73%	72%	69%	68%	76%	73%	74%	73%	72%
New Hampshire	79%	80%	81%	82%	83%	82%	80%	78%	77%	77%	75%	76%	77%
New Jersey	85%	86%	88%	89%	91%	91%	90%	90%	90%	82%	83%	91%	90%
New Mexico	78%	75%	77%	76%	76%	75%	73%	73%	72%	66%	68%	70%	70%
New York	78%	79%	77%	78%	77%	77%	74%	74%	76%	74%	73%	73%	72%
North Carolina	74%	73%	73%	74%	73%	73%	72%	70%	69%	69%	70%	71%	69%
North Dakota	87%	87%	87%	88%	86%	88%	88%	90%	88%	88%	87%	87%	85%
Ohio	82%	81%	81%	80%	83%	84%	83%	78%	78%	79%	78%	78%	79%
Oklahoma	76%	79%	77%	78%	78%	78%	79%	77%	76%	76%	78%	77%	75%
Oregon	72%	74%	74%	76%	76%	75%	76%	70%	70%	70%	70%	72%	70%
Pennsylvania	85%	86%	86%	88%	88%	88%	87%	87%	86%	85%	85%	84%	84%
Rhode Island	77%	76%	78%	82%	81%	79%	79%	76%	77%	76%	76%	77%	78%
South Carolina	70%	64%	68%	65%	67%	67%	64%	64%	62%	62%	62%	62%	62%
South Dakota	84%	84%	84%	85%	88%	91%	88%	87%	88%	80%	75%	80%	78%
Tennessee	71%	71%	72%	74%	73%	69%	71%	71%	66%	62%	62%	62%	63%
Texas	70%	72%	74%	69%	68%	69%	69%	68%	70%	72%	72%	75%	75%
Utah	82%	79%	78%	81%	81%	81%	80%	79%	84%	83%	84%	85%	84%
Vermont	76%	85%	77%	78%	77%	80%	86%	83%	86%	86%	83%	83%	80%
Virginia	79%	79%	80%	80%	81%	80%	79%	78%	79%	80%	80%	81%	82%
Washington	79%	82%	78%	82%	81%	83%	80%	79%	77%	76%	76%	77%	76%
West Virginia	76%	77%	77%	77%	79%	79%	77%	79%	79%	79%	79%	77%	76%
Wisconsin	93%	96%	94%	94%	95%	93%	92%	91%	91%	89%	89%	89%	90%
Wyoming	76%	76%	79%	84%	86%	86%	80%	78%	79%	78%	77%	78%	73%

Figure 6: Large States with Declines of 5% or More in High School Graduation Rates, 1988-89 to 2000-01



In contrast to the states just mentioned, there were sixteen states whose graduation rates either stayed level or increased over the same interval (NJ, TX, VT, AK, KY, VA, MD, ID, CA, UT, RI, MA, MS, LA, MI and WV). Figure 7 shows how rates have changed in the largest of these states (again, ones with total public school enrollment of more than half a million as of fall 2000) over the 1988-89 to 2000-01 interval.

Figure 7: Large States with No Declines in High School Graduation Rates, 1988-89 to 2000-01



In sum, at the state level, decrease in graduation rates are more apparent than increases between 1988-89 and 2000-01. Over this interval there were just five states that consistently showed graduation rates of 85% or better (WI, NJ, IA, MN, and ND). On the other end of the graduation rate spectrum, by 2000-01 there were nine states with graduation rates of less than 70% (NC, LA, GA, AZ, AL, FL, TN, SC and MS). Among these states, Arizona posted the largest decline in graduation rate, falling from 75% in 1988-89 to 65% in 2000-01. The other states showing large declines in graduation rate over the same interval were Tennessee (71% to 63%), Alabama (72% to 65%), South Carolina (70% to 62%) and Florida (68% to 63%).

Why have high school graduation rates been falling, in effect going opposite of the direction suggested in the Goals 2000 legislation in 1994? This is a question we address in the next section of this report. Before proceeding to that discussion we pause

here to discuss possible weaknesses in our graduation rate calculations based on numbers of graduates divided by grade 8 enrollment four years earlier.

Cohort progression analyses of the sort discussed so far do not take into account four ways students may disappear from their cohorts or classes other than being held back in grade or dropping out of school. First, they may die. Second, they may move out of the state or country. Third, they may move out of public schools into non-public schools. Fourth, they may be withdrawn from public schools to be schooled at home via what has come to be called "home-schooling." In subsequent portions of this section we discuss each of these possibilities.

Mortality. At least in theory, one possible cause for students disappearing from one grade one year and the next grade the next year is that they may die. However, statistics on mortality rates indicate that death of young people could have only a very small impact on results of cohort progression analyses. Death rates in the U.S. have been falling for some decades. As of 2000 the rate of death for the general population was 873 per 100,000, or 0.87%. For school age populations, however, death rates are much, much lower: For those aged 5-9 years in 2000, it was 16 per 100,000; for those aged 10-14 years, 21 per 100,000 and those aged 15-19, 68 per 100,000. Since the mortality rates for the school aged population are so low – all less than one tenth of one percent – outright death, even over a four year period is clearly not a major source of leaks in the education pipeline. Moreover, given that death rates for school-aged children in the U.S. have dropped substantially over the last 20 years, this decreasing death rate for young people

would, if anything, have been decreasing the leakage from the education pipeline over this interval.[4]

Migration. A second possible influence on results of cohort progression analyses is migration. For example, instead of progressing from grade 9 to grade 10, or on to graduation, young people might leave the U.S. (or in the case of state-level analyses, move from one state to another). Regarding this possibility we are fortunate to have a special tabulation by the U.S. Census Bureau Census 2000 results showing patterns of gross and net migration by age of the U.S. population by region and state. Since results for the total U.S. are simpler to explain, we start with the U.S. as a whole before dealing with migration at the state level.

Table 5 shows Census 2000 results for the total population of the U.S. aged 5 years and older. Specifically, the table shows the population by age span and whether individuals were immigrants from abroad within the previous five years. As shown, the total population 5 years and older in 2000 was 262 million. Of these, 7.5 million, or 2.9%, were immigrants from abroad within the previous five years. Immigration rates clearly vary substantially by age, with the highest rates evident for the young adult age ranges of 20 to 24 years and 25 to 29 years (both more than 6%). For the elementary-secondary school age ranges of 5 to 9, 10 to 14, and 15 to 20 years, immigrants as percentages of the age group population were 2.8%, 2.5% and 3.9%, respectively. The latter we suspect is slightly higher because it includes 18- and 19-year-olds, many of whom were taking up residence in the U.S. to attend college.

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[4] This discussion is based on National Vital Statistics Reports Volume 50, No. 15, September 16, 2002 Death: Final Report for 2000. Available at: http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/50/50-16.htm#currentpro

Table 5: U.S. Population 5 years and older, by age group and immigrants status within previous 5 years

Geographic Area	Population 5 years and over	Immigrants from Abroad	Immigrants as % of Age Group
U.S. Total	**262,375,152**	7,495,846	2.86%
5 to 9 years	20,608,282	569,242	2.76%
10 to 14 years	20,618,199	514,990	2.50%
15 to 19 years	19,911,052	784,080	3.94%
20 to 24 years	19,025,980	1,214,932	6.39%
25 to 29 years	19,212,244	1,213,628	6.32%
30 to 34 years	20,365,113	905,299	4.45%
35 to 39 years	23,083,337	700,685	3.04%
40 to 44 years	22,822,134	499,774	2.19%
45 to 49 years	20,181,127	337,732	1.67%
50 to 54 years	17,397,482	231,635	1.33%
55 to 59 years	13,383,251	154,925	1.16%
60 to 64 years	10,787,979	124,796	1.16%
65 to 69 years	9,569,199	89,483	0.94%
70 to 74 years	8,931,950	63,233	0.71%
75 to 79 years	7,385,783	39,762	0.54%
80 to 84 years	4,931,479	25,289	0.51%
85 years and over	4,160,561	26,361	0.63%

Source: U. S. Census Bureau, Census 2000 PHC-T-23. Migration by Sex and Age for the Population 5 Years and Over for the United States, Regions, States, and Puerto Rico: 2000, special tabulation. Internet release date: August 6, 2003 (http://www.census.gov/population/cen2000/phc-t23/tab03.xls)

So let us assume that the 2.5% rate is a reasonable estimate for immigration in the elementary-secondary school-aged population between 1995 and 2000. Presuming that the immigration for the age group was spread out evenly over the 1995-2000 period, this would imply an annual net immigration of 0.5% for elementary-secondary school-aged children during the last half of the 1990s. What this implies is that immigration from abroad would have been contributing to increases, rather than leakage in the education pipeline over this interval.

To illustrate, let us consider the high school class of 2001. When this cohort was in grade 8 in the fall of the 1996-97 school year, it numbered 3.403 million. When this class graduated in 2000-01, graduates numbered only 2.532 million, for a graduation rate

(from grade 8 to graduation four and a half-years later) of 74.4%. Yet if the annual rate of immigration of high school aged young people into the U.S. over this period was 0.5% per year, this implies that the cohort ought to have increased in size by at least 2% over the interval. Even if only half of these immigrant children entered public high schools and proceeded to graduation, this would have increased the graduation rate over the interval by 1% or more. This suggests that the real "immigration-adjusted" graduation rate for children in grade 8 in 1996-97 may have fallen by the end of the millennium not just to 74.4% but to something like 73%.

Dealing with migration in analyses at the level of the states is slightly more complex, because here we must deal not just with international, but also domestic migration, that is with migration across states. Again, we are fortunate to have a special tabulation by the U.S. Census Bureau of results of the Census 2000 showing patterns of gross and net migration by age both from abroad and across the states. These data are quite voluminous, but following the logic outlined above regarding foreign migration for school-age people, let us examine patterns of migration for individuals aged 10 to 14 as of Census 2000.

Table 6 shows the numbers of children aged 10-14 as of April 2000, by state, plus the number who were immigrants to the state either domestically (that is from within the U.S. from another state) or from abroad within the five years preceding the April 2000 Census. The table also shows the 5-year rate in percent of total migration (that is, the net domestic and foreign migration of 10 to 14 year olds into each state).

As shown in Table 6, for most states there was a small positive net in-migration of children aged 10 to 14 between 1995 and 2000. However there were seven states that

had in-migrations of more than 5% (NV +14.6%, AZ, +7.6%, GA +7.0%, FL +6.8%, CO +6.5%, and NC +6.3%). Also, one state showed a net out-migration of more than 5%, namely Hawaii at –5.3%. The latter finding may help explain why in Table 4 Hawaii appears to have had a falling grade 8 to graduation rate over the last decade. If school aged children are moving out of Hawaii at the rate of 5% between 1995 and 2000, the out-migration may help explain a sizable portion (i.e. 4-5%) of the 24% of Hawaii youngsters in the class of 2000 who did not graduate in the standard numbers of years. Conversely however, for the majority of states with net in-migration of school age children, and especially for the seven states mentioned above with high rates of in-migration, migration cannot explain the low, and in many cases declining, graduation rates.

Table 6: Census 2000 Population Aged 10 to 14, by States and Immigration Status

State	Population 10 to 14 years	5-Year Net Domestic migration	5-Year Foreign Migration	Total Migration (%)
Alabama	321,569	3,792	3,092	2.1%
Alaska	56,962	-2,599	1,219	-2.4%
Arizona	378,451	15,774	12,968	7.6%
Arkansas	192,450	5,419	2,212	4.0%
California	2,593,337	-85,497	92,896	0.3%
Colorado	311,835	10,942	9,243	6.5%
Connecticut	244,079	-1,640	8,387	2.8%
Delaware	55,703	673	1,056	3.1%
Florida	1,060,724	23,871	48,434	6.8%
Georgia	612,358	27,758	15,401	7.0%
Hawaii	83,316	-7,628	3,221	-5.3%
Idaho	104,807	4,146	1,487	5.4%
Illinois	906,678	-25,049	22,573	-0.3%
Indiana	444,320	7,054	4,014	2.5%
Iowa	210,825	1,378	2,627	1.9%
Kansas	203,606	43	3,406	1.7%
Kentucky	280,178	2,928	2,937	2.1%
Louisiana	351,072	-6,282	3,093	-0.9%
Maine	92,776	1,036	560	1.7%
Maryland	395,472	-174	11,643	2.9%
Massachusetts	431,562	-3,831	14,019	2.4%
Michigan	747,157	-93	10,843	1.4%
Minnesota	375,047	5,286	5,820	3.0%
Mississippi	219,488	2,310	1,349	1.7%
Missouri	413,358	6,779	4,807	2.8%
Montana	69,455	497	493	1.4%
Nebraska	128,215	492	2,010	2.0%
Nevada	139,656	14,904	5,466	14.6%
New Hampshire	93,080	3,295	1,219	4.8%
New Jersey	592,401	-8,291	21,862	2.3%
New Mexico	149,462	-4,013	3,479	-0.4%
New York	1,336,043	-62,955	49,471	-1.0%
North Carolina	556,658	22,617	12,462	6.3%
North Dakota	47,602	-1,892	570	-2.8%
Ohio	831,032	-2,964	8,181	0.6%
Oklahoma	253,488	2,895	3,309	2.4%
Oregon	241,529	5,114	5,248	4.3%
Pennsylvania	867,276	-1,528	11,416	1.1%
Rhode Island	71,811	-71	1,835	2.5%
South Carolina	293,460	8,558	3,540	4.1%
South Dakota	59,883	307	761	1.8%
Tennessee	397,496	12,410	4,911	4.4%
Texas	1,642,973	12,717	53,430	4.0%
Utah	192,204	2,244	4,291	3.4%
Vermont	44,829	526	463	2.2%
Virginia	499,166	5,662	14,607	4.1%
Washington	435,598	3,140	13,278	3.8%
West Virginia	115,042	225	451	0.6%
Wisconsin	403,421	5,705	3,550	2.3%
Wyoming	38,847	-351	304	-0.1%

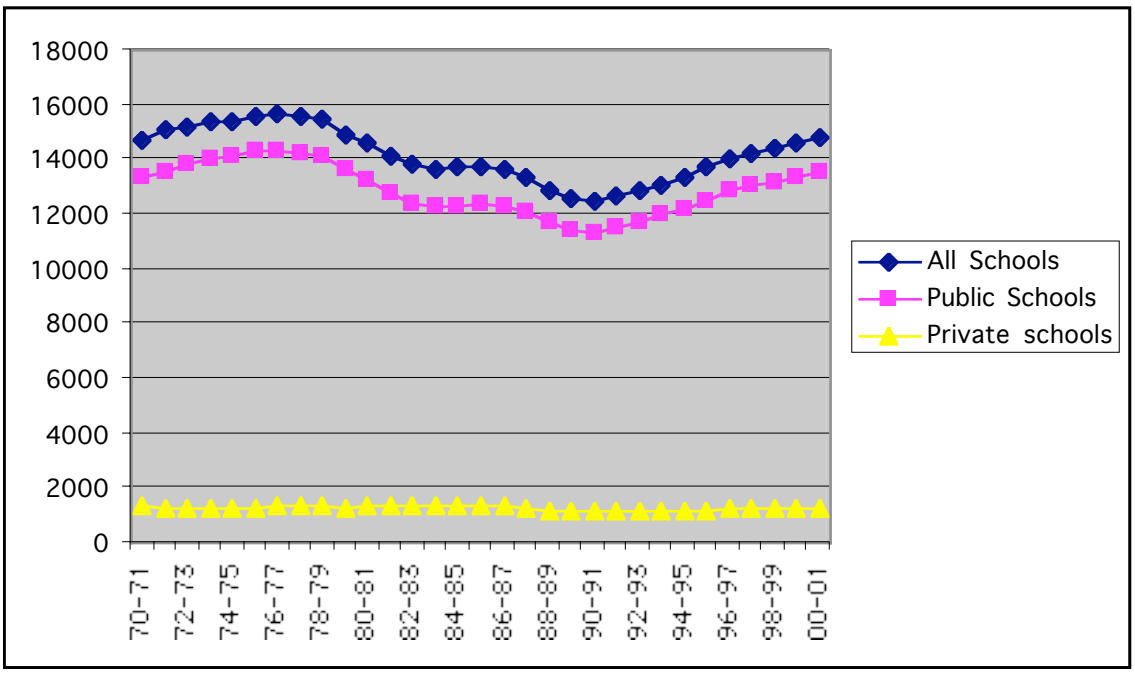
Private School Enrollments. A third possible cause of increasing leakage from the public education pipeline (specifically sharp increases in attrition between grade 9 and 10, and falling graduation rates) is that some students might be leaving public schools to enroll in private schools. By private schools we refer to all non-public schools including Catholic schools, other religious schools and nonsectarian private schools. In 1999, for example there were about 8000 Catholic schools, 13,000 other religious schools, and 6,000 nonsectarian schools in the United States.[5]

One way of examining whether flows through the public school pipeline have been affected by patterns of enrollment in non-public schools is to look at enrollments in public versus private schools in grade 9 through 12 over the last three decades. Figure 8 shows a graph of total enrollments in grades 9-12 in all schools, public schools and private schools from 1970 to 2000. As may be seen, total enrollments in grades 9-12 have ebbed and flowed somewhat over the last three decades – from close to 15 million in 1970, ebbing to about 12.5 million in 1990 and increasing back up to almost 15 million in 2000. Enrollments in grades 9-12 in public schools have very closely paralleled these totals. This is hardly surprising since over the last three decades 90-92% of all students in grades 9-12 have been enrolled in public as opposed to private schools. In contrast, enrollments in private schools have been remarkably stable over the last 30 years, varying only between 1.15 and 1.40 million. As a percentage of total enrollments in grades 9-12, private school enrollments were at a high of just over 10% in the early 1980s, but since then have declined to just under 9% in the late 1990s. This means that leakage from the

[5] NCES, Digest of Education Statistics 2002, Table 59, p. 71.

public education pipeline clearly has not been caused by sharp increases in private school enrollments.

Figure 8: Enrollments (in 1000s) in Grades 9– 12, All, Public and Private Schools, 1970-2000



Source: National Center for Education Statistics (2003). *Digest of Education Statistics 2002* (Washington, DC: National Center for Education Statistics). Table 56, p. 69.

Home schooling. A fourth and final possible way in which students may leave the public school pipeline is that they leave public schools for home schooling, that is, children being schooled at home instead of in either public or private schools. Unfortunately statistics on the home schooling phenomenon are very hard to find. Rudner (1999) estimates that in 1998 there were between 700,000 and 1.2 million students enrolled in home schools. More recently a home schooling advocacy organization, the Home School Legal Defense Association has reported that the annual rate of growth in numbers of students being schooled at home in the last decade has been 7% to 15%. The same source estimates that as of the 2001-02 school year there were

between 1.7 and 2.2 million children in the U.S. being schooled at home.[6] Independent analysts, however, indicate that these estimates are somewhat inflated. Citing national survey data, Henke, Kaufman, & Broughman (2000) report that the number of home-schooled children in the U.S. was estimated at 345,000 in 1994 and 636,000 in1996. Bielick, Chandler and Broughman (2001) report that in spring 1999 an estimated 850,000 students nationwide were being homeschooled. They noted however that about 20% of homeschoolers were enrolled in public or private schools part-time. More recently, Bauman (2002) of the U.S. Census Bureau reports that the number of home schooled children was well under 1 million in 1999 and the growth rate of from 1996 to 1999 was unlikely to have exceeded 15 percent per year. Both Bauman (2002) and Bielick, Chandler and Broughman (2001) report data indicating that the number of homeschooled children is relatively evenly divided across the school age years of 6 to 17 years.

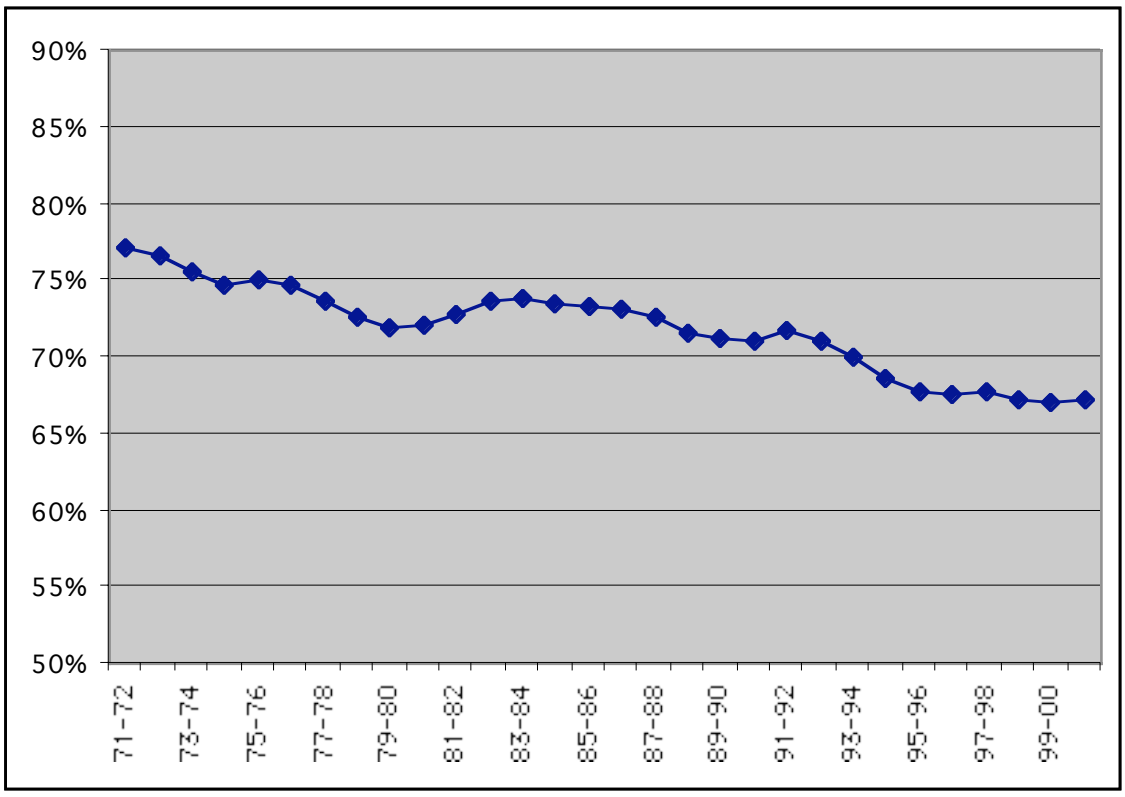
Thus, overall it seems clear that less than 3% of children nationwide are being homeschooled (1 million divided by 42 million enrolled in public schools = 2.4%). There is some evidence that homeschooling has been increasing over the last decade so as a liberal estimate let us suppose that homeschooling had been increasing by 150,000 per year during the late 1990s. Assuming that this number was evenly distributed across the 13 grade levels of kindergarten through grade 12. This would imply an outflow from the public school system of only about 11.5 thousand per year per grade 150,000/13 = 11,538). Between 1999-2000 and 2000-01, attrition between grades 9 and 10 was 448 thousand. This indicates that increases in home schooling – even given the most liberal estimates – could account for only a very tiny share of the attrition between grades 9 and 10 (11,500/448,000 = 2.6%).

[6] http://www.hslda.org/research/faq.asp#1, accessed November 14, 2003.

In sum, it is clear that high school graduation rates from public schools have been falling, rates of attrition between grades 9 and 10 increasing, and the grade 9 bulge (that is, the number of students flunked to repeat grade 9) increasing over the last two decades. In this section we have reviewed evidence on possible alternative explanations of these trends, namely mortality, migration, private school enrollments, and home schooling. Overall, none of these possibilities can explain the broad trends in public school enrollments and graduates previously recounted.

Grade 9 to Graduation Rates. To examine the combined effects of the three trends previously described – namely increasing attrition between grades 9 and 10, increasing bulge in grade 9 enrollments, and the falling rate of graduation – let us return to examine evidence on the most obvious manner of calculating high school graduation rates, namely the numbers of graduates divided by the numbers enrolled in grade 9 three and a half years earlier. Figure 9 shows the national pattern of results in high school graduation defined in this way. To be clear, we note that this manner of calculating high school graduation rates confounds, or in other words, shows the combination of the broad trends previously identified, specifically falling graduation rates, increasing rates by which students are flunked to repeat grade 9 and increased attrition between grades 9 and 10.

Figure 9: National High School Graduation Rate, No. of Graduates Divided by Grade 9 Enrollment Three and a Half Years Earlier, 1971-72 to 2000-01



What Figure 9 shows is that high school graduation rates, defined in this manner, have fallen dramatically in the last thirty years, from about 77% in 1971-72 to only 67% in the late 1990s. This means that only two out of three young people in the late 1990s were progressing normally from grade 9 to high school graduation.

Table 7 shows high school graduation rates defined in this manner for the fifty states have fallen in 44 of the 50 states over this interval. Graduation rates have fallen most sharply, over 10 percent, in this 13-year interval in eight states – HI, SD, AL, SC, NM, TN, MS, and IN.

Table 7: State High School Graduation Rates, Grade 9 to Graduation Three and a Half Years Later, 1987-88 to 2000-01

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01
Alabama	74%	68%	65%	66%	66%	62%	60%	60%	58%	57%	60%	56%	59%	60%
Alaska	70%	64%	68%	72%	74%	73%	71%	68%	65%	64%	65%	66%	62%	64%
Arizona	67%	69%	73%	72%	73%	72%	69%	63%	58%	62%	61%	60%	59%	59%
Arkansas	79%	78%	77%	77%	78%	78%	76%	73%	75%	70%	73%	73%	74%	73%
California	69%	67%	68%	68%	69%	68%	66%	64%	65%	66%	67%	68%	69%	69%
Colorado	76%	76%	74%	74%	75%	75%	75%	73%	72%	72%	71%	70%	70%	69%
Connecticut	82%	83%	75%	79%	80%	81%	79%	75%	74%	74%	73%	72%	77%	73%
Delaware	70%	72%	68%	68%	70%	70%	66%	65%	66%	67%	68%	64%	61%	61%
Florida	63%	61%	61%	61%	65%	61%	59%	59%	58%	58%	57%	56%	55%	52%
Georgia	63%	62%	63%	64%	64%	62%	59%	57%	55%	55%	51%	50%	52%	57%
Hawaii	82%	82%	87%	76%	78%	75%	76%	75%	75%	63%	62%	60%	64%	61%
Idaho	77%	78%	79%	80%	81%	82%	80%	80%	80%	79%	78%	78%	77%	78%
Illinois	78%	78%	77%	78%	79%	78%	77%	75%	76%	77%	77%	75%	71%	71%
Indiana	78%	76%	75%	74%	76%	75%	71%	70%	70%	70%	71%	71%	68%	68%
Iowa	87%	86%	88%	86%	88%	88%	87%	85%	85%	85%	84%	83%	83%	83%
Kansas	83%	82%	82%	81%	81%	80%	79%	77%	76%	74%	73%	75%	74%	75%
Kentucky	69%	67%	69%	70%	70%	73%	75%	70%	68%	68%	67%	65%	66%	64%
Louisiana	61%	58%	58%	55%	54%	57%	56%	58%	55%	53%	55%	55%	59%	60%
Maine	78%	77%	78%	79%	81%	74%	72%	72%	72%	72%	79%	75%	77%	72%
Maryland	76%	74%	73%	73%	76%	76%	75%	74%	74%	71%	71%	72%	73%	75%
Mass.	74%	75%	80%	77%	79%	78%	78%	76%	76%	76%	76%	75%	75%	74%
Michigan	73%	71%	70%	70%	71%	70%	70%	69%	70%	71%	72%	73%	65%	75%
Minnesota	90%	89%	90%	90%	89%	89%	88%	87%	85%	77%	84%	85%	84%	82%
Mississippi	68%	60%	64%	62%	62%	64%	62%	60%	57%	56%	56%	56%	56%	57%
Missouri	75%	73%	73%	73%	73%	73%	73%	73%	71%	71%	72%	72%	73%	72%
Montana	85%	85%	83%	85%	85%	87%	84%	86%	83%	81%	80%	78%	78%	77%
Nebraska	86%	86%	86%	86%	87%	87%	85%	84%	83%	82%	85%	86%	84%	78%
Nevada	73%	72%	77%	77%	71%	70%	67%	65%	65%	73%	70%	71%	69%	69%
NH	81%	74%	74%	76%	78%	78%	78%	75%	75%	75%	74%	73%	74%	75%
New Jersey	80%	80%	80%	82%	84%	86%	85%	84%	83%	86%	78%	80%	85%	86%
NM	73%	71%	68%	69%	68%	68%	67%	64%	63%	58%	58%	59%	60%	61%
New York	66%	65%	65%	64%	67%	65%	64%	62%	61%	63%	61%	59%	59%	58%
N. Carolina	68%	69%	68%	68%	69%	68%	66%	66%	62%	61%	61%	60%	59%	59%
N. Dakota	88%	88%	88%	87%	87%	86%	88%	87%	89%	87%	85%	84%	84%	84%
Ohio	76%	76%	74%	72%	72%	75%	75%	75%	70%	71%	73%	70%	70%	70%
Oklahoma	74%	74%	78%	75%	76%	76%	76%	75%	73%	72%	72%	73%	73%	73%
Oregon	72%	71%	72%	72%	73%	73%	73%	69%	67%	67%	67%	67%	67%	66%
Penn.	81%	79%	79%	79%	82%	81%	79%	77%	76%	76%	75%	75%	75%	76%
RI	72%	72%	69%	72%	77%	75%	73%	73%	71%	71%	70%	69%	70%	70%
S. Carolina	65%	65%	59%	61%	58%	59%	57%	55%	54%	52%	52%	52%	51%	51%
S. Dakota	87%	86%	86%	84%	85%	89%	91%	87%	87%	82%	76%	72%	74%	72%
Tennessee	69%	69%	68%	68%	69%	67%	63%	64%	63%	58%	55%	55%	55%	57%
Texas	65%	64%	64%	66%	61%	59%	60%	60%	58%	59%	61%	61%	62%	62%
Utah	81%	82%	79%	79%	81%	81%	80%	79%	78%	83%	82%	83%	84%	83%
Vermont	81%	81%	92%	81%	82%	82%	85%	89%	90%	82%	81%	80%	79%	75%
Virginia	75%	75%	74%	74%	74%	74%	72%	72%	76%	75%	74%	74%	74%	75%
Washington	78%	76%	77%	73%	76%	76%	77%	73%	72%	71%	71%	71%	71%	69%
W. Virginia	77%	77%	77%	78%	77%	78%	78%	75%	76%	75%	75%	76%	75%	73%
Wisconsin	83%	82%	84%	82%	82%	84%	82%	82%	80%	80%	79%	78%	78%	79%
Wyoming	78%	76%	79%	82%	84%	87%	84%	78%	78%	78%	77%	77%	75%	73%

Another way of interpreting these results is simply to look at the distribution of rates in the late 1980s and at the turn of the century. In 1987-88, not a single state had a graduation rate of less than 60% and fifteen had graduation rates of 80%or more. By 2000-01, ten states had graduation rates of 60% or less – SC, FL, TN, MS, GA, NY, NC AZ, AL and LA. Two of these states had suffered such large declines in graduation rates, defined in this way, as to be approaching only 50% – SC with 51%, and FL with 52%. This means that in these states only about 1 out of 2 students were progressing normally from grade 9 to graduation three and a half years later in the late 1990s.

In contrast, in 2000-01, there were just five states with graduation rates of 80% or greater – MN, IA, UT, ND and NJ. This means that between 1987-88 and 2000-01, the list of states with grade 9 to graduation rates of 80% or more had fallen by two-thirds, from fifteen to a mere five. By the end of the century, there was just one state – New Jersey – that was even with five percentage points of the national education goal of a 90% graduation rate.

In the next sections of this report we discuss causes and consequences of these precipitously falling graduation rates. But first, before moving to that discussion, we pause here to show that our simple and direct methods of calculating state high school graduation rates correspond closely with more complex methods of calculating such statistics.

Since the enactment of the No Child Left Behind (NCLB) law in 2002, with its requirement for evaluating public schools in terms of "graduation rates for public secondary school students (defined as the percentage of students who graduate from secondary school with a regular diploma in the standard number of years)," there have

been a number of reports issued on different ways of calculating graduations rates (Greene & Forster, 2003; Swanson & Chaplin, 2003; Warren 2003). We do not attempt here to discuss all the different ways in which high school graduation rates may be calculated (and the pros and cons of different approaches). Rather we simply show that our simple and direct approach to doing so correspond very well to results derived from a more complex and theoretically complete method.

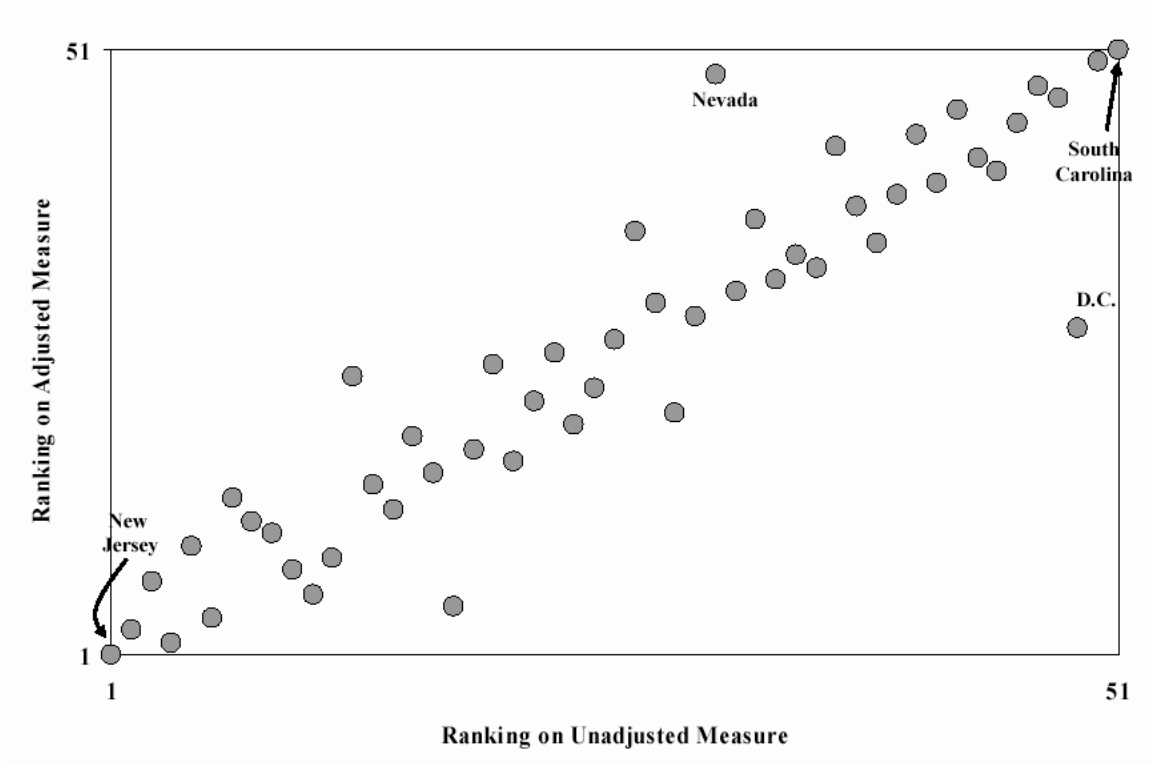
Specifically we refer to the work of John Robert Warren of the University of Minnesota (2003). In a paper discussing the pros and cons of different ways of calculating graduation rates, Warren proposed a new measure of graduation rate, one that uses CCD enrollment data but that also uses Census 2000 data to adjust for migration patterns, and data from Current Population Surveys to adjust for retention in grade between grades 9 and 12. Warren could apply his technique on data only from 1992 to 2000 because the data on which he sought to adjust for migration and grade retention were not available prior to 1992. His adjusted state-level high school graduation rate produces "estimates of the percentage of incoming public school 9th graders in a particular state and in a particular year who obtain a regular public high school diploma within four or five years of first starting 9th grade" (p. 16).

How well do Warren's adjusted graduation rates compare with the simple grade 9 to graduation three and a half years later rates? (Warren calculated these grade 9 to graduation rates for all the states rates from 1992 to 2000, as did we, except we also calculated then for the longer 1988 to 2001 period of years.) Warren found that his adjusted graduation rates did not vary dramatically from results using simple grade 9 to graduation rates. "New Jersey had the highest public high school graduation rate in 2000 using either measure, while South Carolina had the lowest" (p. 17). Warren found that among 51 state units (Warren included Washington D.C. as a state unit), graduation rates

went up or down by less than 5% when changing from the simple to the adjusted graduation rate. The state for which the year 2000 adjusted graduation rate varied most from the simple graduation rate was Nevada because it "experienced extraordinarily high rates of in-migration by high school students in the 1990s" (p. 18). Thus, the simple graduation rate of 68.8% for Nevada in 2000 fell to 53.6% once in-migration was taken into account. Conversely, Washington D.C. had unusually high rates of out-migration of high school aged youth during the 1990s. So the simple grade 9 to graduation rate for the District of Columbia in 2000 of 54.4% rises to 70.8% once Warren adjusted for out-migration.

But with few exceptions like these, the simple grade 9 to graduation rate provides a good approximation to the more complex adjusted rate calculated by Warren. Figure 9 shows a scatter plot of how rankings of the states on the simple or unadjusted graduation rate for 2000 compare with Warren's adjusted graduation rates. Though not reported by Warren, the correlation between the 2000 simple graduation rates and his adjust rate is 0.903. And when the two outlying cases of District of Columbia and Nevada are excluded, the correlation rises to 0.960. This indicates that the simplest and most straightforward way of calculating high school graduation rates – as the numbers of graduates divided by the numbers enrolled in grade 9 three and a half years earlier – is, under most circumstances, a very good proxy for more complex calculations like those of Warren which seek to adjust for migration and retention in grade. And in any case, the sort of data Warren uses to adjust for these factors are simply not available back into the1980s. So the simpler grade 8 to graduation and grade 9 to graduation approaches afford straightforward and consistent ways of examining changes in the education pipeline of the U.S. for the last three decades.

Figure 9: State Rankings on High School Graduation Rates, 2000, Unadjusted Grade 9 to graduation Rate vs. Warren's Adjusted rate.



Source: Warren (2003), Figure 4.

The Education Pipeline 1970 vs. 2000. Before going on in the next sections to discuss some of the causes and consequences of changes in the education pipeline in the U.S. in recent decades, let us pause to examine in more detail what has happened to the education pipeline in the U.S. in the past three decades years.

Table 8 shows public school enrollments by grade in the U.S. for two four-year intervals 1968-69 to 1971-72 and 1997-98 to 2000-01. The bottom half of Table 8 shows cohort progression rates, that is the percent more or less students in one grade in one year compared with those in the previous grade the previous year.

Table 8:U.S Public School Enrollment, Kindergarten to Grade 12, 1968-69 to 1971-72 and 1997-98 to 2000-01 (in 1000s).

Grade/Year	68-69	69-70	70-71	71-72	97-98	98-99	99-00	2000-01
K	2526	2601	2559	2483	3503	3443	3397	3382
1st grade	3923	3858	3814	3570	3755	3727	3684	3635
2nd grade	3765	3714	3654	3587	3689	3681	3655	3633
3rd grade	3694	3721	3662	3612	3597	3696	3690	3673
4th grade	3629	3660	3676	3623	3507	3592	3686	3708
5th grade	3570	3619	3634	3662	3458	3520	3604	3703
6th grade	3556	3565	3599	3622	3492	3497	3564	3658
7th grade	3552	3665	3662	3710	3520	3530	3541	3624
8th grade	3420	3515	3601	3635	3415	3480	3497	3532
9th grade	3508	3567	3652	3781	3819	3856	3935	3958
10th grade	3310	3408	3457	3571	3376	3382	3415	3487
11th grade	2987	3051	3127	3200	2972	3021	3034	3080
12th grade	2655	2733	2774	2862	2673	2722	2782	2799

Percent increase or decrease from previous grade the previous year

	68-69	69-70	70-71	71-72	97-98	98-99	99-00	2000-01
1st grade		52.7%	46.6%	39.5%		6.4%	7.0%	7.0%
2nd grade		-5.3%	-5.3%	-6.0%		-2.0%	-1.9%	-1.4%
3rd grade		-1.2%	-1.4%	-1.1%		0.2%	0.2%	0.5%
4th grade		-0.9%	-1.2%	-1.1%		-0.1%	-0.3%	0.5%
5th grade		-0.3%	-0.7%	-0.4%		0.4%	0.3%	0.5%
6th grade		-0.1%	-0.6%	-0.3%		1.1%	1.3%	1.5%
7th grade		3.1%	2.7%	3.1%		1.1%	1.3%	1.7%
8th grade		-1.0%	-1.7%	-0.7%		-1.1%	-0.9%	-0.3%
9th grade		4.3%	3.9%	5.0%		12.9%	13.1%	13.2%
10th grade		-2.9%	-3.1%	-2.2%		-11.4%	-11.4%	-11.4%
11th grade		-7.8%	-8.2%	-7.4%		-10.5%	-10.3%	-9.8%
12th grade		-8.5%	-9.1%	-8.5%		-8.4%	-7.9%	-7.7%

There is a number of striking contrasts in cohort progression rates across the last three decades. Perhaps most striking is the change in progression between kindergarten and grade 1. Around 1970 there were 40-50% more children enrolled in grade 1 than in kindergarten the previous year. By around 2000 this number had fallen to 6-7%. This change, as discussed in part III of this report, is due to the fact that in the last three decades kindergarten attendance has become more universal in the U.S.

A second notable change, not previously discussed is the grade 1 to 2 progression rate. Around 1970 there was 5-6% fewer students in grade 2 than in grade 1 the previous year. By the end of the millennium this number had fallen to 1-2%. We surmise that thirty years ago, before kindergarten attendance had become near universal, more children were held back to repeat grade 1. By around 2000, when the vast majority of students started school in kindergarten rather than grade 1, a larger proportion of students were prepared to succeed in grade 1 and did not have to be held back to repeat the grade.

A second notable difference in the education pipeline over the last thirty years is the grade 6 to 7 progression rate. Around 1970 there were 3% more students in grade7 than in grade 6 the previous year. Around 2000 this number had fallen to less than 2%. In the next section of this report, we discuss the possibility that that this change may be related to changes in the organization of schooling over the last three decades.

Compared with grade 6 to 7 transition rates, those from 8 to 9 and 9 to 10 have changed much more sharply over the last three decades. Around 1970 there was 4-5% more students in grade 9 than in grade 8 the previous year. Thirty years later this number had more than doubled to about 13%. Correspondingly, around 1970 there were only about 3% fewer students in grade 10 than in grade 9 the previous year. By 2000, as discussed in part IV of this report, attrition between grades 9 and 10 had mushroomed to about 11%. In the next part of this report we discuss possible cause and consequences of this change. Before doing so, we stop to point out that, as shown in Table 8, that although attrition between grades 9 and 10 has tripled over the last three decades, attrition

in the upper grades of high school has not diminished. Around 1970 attrition between grades 10 and 11 was in the range of 7.4% to 8.2% and between grades 11 and 12, 8.5% to 9.1%. By around 2000, corresponding rates were 9.8%to 10.5%. This means that the large increase in attrition between grades 9 and 10 has not been accompanied by a diminution in attrition rates across the higher high school grades.

To get a sense of the cumulative impact of attrition between grades 9 and 10, 10 and 11, and 11 and 12, we may simply add up the bottom three attrition rates for the years shown in Table 8. Doing so yields the following cumulative attrition across the last three grades of high school: 1969-70 –19.2%, 1970-71 –20.4% 1971-72 –18.1%, 1998-99, -30.4%, 1999-2000 –29.6% and 2000-01. –28.9%. It should be noted that these cumulative attrition rates are not based on cohort analyses but are simply the sums of grade to grade attrition for adjacent grades shown in Table 8 for the particular school years listed in that table 8. (Grade-to-grade attrition rates are available in the data file released with this report for all years in the range of 1968-69 for total U.S. public school enrollments and for the 50 states from 1984-85 to 2000-01.) Nonetheless, these results indicate that attrition rates of students across the high school grades have increased sharply over the last from around 20% to about 30%.

VII Causes and Consequences

What has been causing these changes in the education pipeline in the U.S. over the last 30 years and what are their likely consequences?

As to causes the following questions occur. Why did kindergarten attendance increase so sharply in the 1970s? Why were fewer students being flunked to repeat grade 1 in 2000 than in 1970? Why has attrition between grades 9 and 10 increased in the 1980s and 1990s? Why have high school graduation rates from grade 8 to graduation four years later decreased in the 1990s, from 78% in 1991-92 to 74% in 200-01? Why have graduation rates defined in terms of grade 9 enrollments to graduation three years later fallen from about 77% in 1971-72 to only 67% in the late 1990s?

Before presenting a discussion of these questions we offer a disclaimer. Politicians, researchers, and ordinary citizens often try to make judgments about whether a certain change (such as a piece of federal legislation, or an increase in atmospheric carbon dioxide) caused a particular development (such as an economic boom or global warming). But as with the two examples just offered, it is often difficult to make cause and effect inferences about complex systems, be they social or physical, with absolute certainty. Indeed, there is no way to prove cause and effect regarding historical matters with absolute certainty. Thus, we readily acknowledge that some of what we suggest in this section about probable causes and consequences of changes in the education pipeline of the U.S. over the last three decades is somewhat conjectural. Nonetheless, we argue, as did Leonard Ayres a century ago, that rates of student progress through elementary and secondary school are one of the best measures of the health of an educational system. While the news from our analysis of the education pipeline is not altogether bleak,

evidence suggests that constrictions in the secondary school pipeline are likely leading to unfortunate negative consequences not just for young people but for society as a whole.

Kindergarten attendance. As shown in part III of this report, only about 60% of 5-year-olds attended kindergarten during the 1960s. Kindergarten attendance grew rapidly during the 1970s, and after varying slightly in the early 1980s, has continued to climb since the mid-1980s. Both results of our cohort progression analyses and independent survey evidence indicate that by the 1990s kindergarten attendance rates were 90% or more. A number of broad social developments have been associated with the increasing tendency for children to begin school in kindergarten rather than first grade. One is the women's rights movement and the dramatic increase over the last thirty years in women's labor force participation rate, increasing from 43% in 1970 to 60% in 2000 (Wright, 2002, p. 333). A more direct cause likely was the increasing recognition of the importance of early childhood education. Recall, for example, that the Head Start program of preschool education for disadvantaged students was begun in 1965 as part of President Lyndon Johnson's War on Poverty. These were surely some of the distal causes of the increasing tendency for children to start school in kindergarten rather then first grade, but a more proximate cause in some places, surely were changes in compulsory school attendance laws. In 1965 not a single state had compulsory school attendance laws requiring school attendance for children as young as age five. By 1997, seven states had instituted laws requiring school attendance of 5-year-olds.[7]

Grade 1 flunk rate. As noted in the previous section, around 1970 there were 5-6% fewer students in grade 2 than in grade 1 the previous year, but by 2000 this number

[7] On this point compare Table 30, p. 27 of the *Digest of Education Statistics 1970 Edition* (NCES, 1970) with Table 150, p. 171 of the *Digest of Education Statistics 2003* (NCES, 2003).

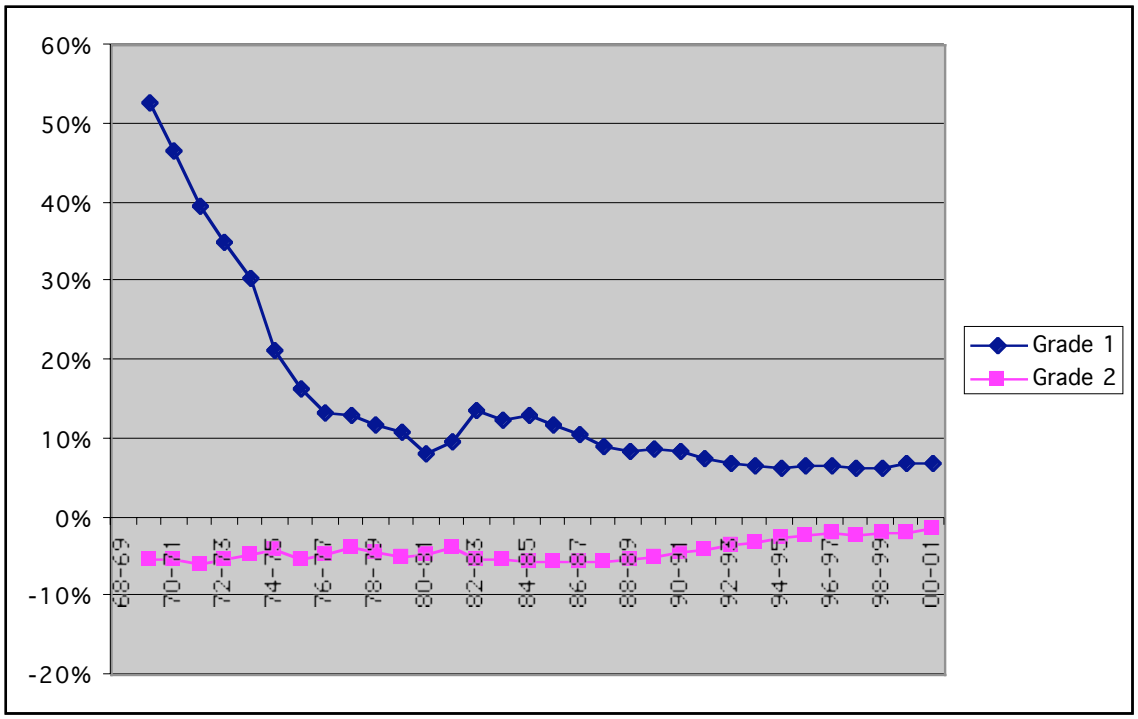
had fallen sharply to 1-2%. These findings of fewer students in grade 2 than in grade 1 the previous year are a reflection of rates at which students have been "flunked" or retained to repeat grade 1. It seems clear then that the rates at which children are being flunked to repeat grade 1 have fallen sharply in the last 30 years. Certainly this interpretation is consistent with trends in retention rates for the relatively few states for which grade retention data are available from the 1970s and 1990s.[8]

Why have grade 1 flunk rates been declining over the last three decades? One is that as more children start school in kindergarten rather than first grade a larger proportion, given their kindergarten experience, are prepared to succeed in first grade.

Time trend data show modest support for this proposition. Figure 10 shows the percent increase or decrease in grade 1 and 2 enrollment relative from 1969-70 to 2000-01 to kindergarten and grade 1 enrollments the previous year. As may be seen, as the top line dropped during the 1970s, reflecting increases in kindergarten attendance, the bottom line inched up, reflecting a diminution in grade 1 flunk rates. When the top line went up in the early 1980s the bottom dipped slightly. And from around 1985 onward as the top line declines, indicating the trend for universal kindergarten, the bottom line, representing grade1 flunk rates goes up toward zero (or to be more specific, from more than –5% to less than - 2%).

[8] For a study on high stakes testing, a committee of the National Research Council contacted all state education agencies in the U.S. seeking data on grade retention, but only 22 provided data on retention at any grade level. And even for states which did provide data, coverage across grades and years was

Figure 10: Percent increase or decrease in grade 1 and 2 enrollment, 1969-70 relative to enrollment in previous grade the previous year..



The other apparent cause for the decrease in rates at which student were flunked to repeat grade 1 was the by the mid- 1970s, evidence became available questioning the educational value of flunking to students to repeat grades. In 1975, for example, Jackson published an influential study in the *Review of Educational Research* in which he concluded that "*educators who retain pupils in a grade do so without valid research evidence to indicate that such treatment will provide greater benefits to students with academic or adjustment difficulties than will promotion to the next grade*" (Jackson, 1975, p. 627, italics in original). Apparently in part because of such findings, some states began to institute policies discouraging schools from flunking students to repeat grades.

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extremely spotty. But of the thirteen states proving time trend data on grade 1 retention, all showed a decline between the late 1970s or early 1960s and the late 1990s (Heubert & Hauser, 1999, pp. 138-147)

Indeed according to the 1999 National Research Council report mentioned earlier, "Iowa and, until recently, California have taken strong positions against grade retention, based on research or on the reported success of alternative intervention" (Heubert & Hauser, 1999, p. 116).

Transition from elementary to high school. Another relatively minor change in the education pipeline in the U.S. over the last 30 years concerns the transition from elementary to secondary school. As previously reported, around 1970 there were 3% more students in grade 7 than in grade 6 the previous year, but by around 2000 this number had fallen to less than 2%. This is indicative, we think, that the rates at which students are flunked to repeat grade 7 has decreased over the last 30 years. This trend may be due to research evidence and policies, just mentioned, discouraging schools from flunking students to repeat grades. But we would also like to suggest that it may also be associated with a major structural change in the way in which schools are organized to promote students' transition from elementary to high school. The organization form through which almost all students move from elementary to high school is the junior high school or the middle school. But over the last three decades, the relative prevalence of these two types of transition schools has changed dramatically. In 1970-71 there were 3.7 times as many junior high schools as middle schools, but by 2000-01 the proportion had nearly reversed, with 3.5 time as many middle schools as junior high schools.[9] Middle schools tend to be organized more like elementary schools, while junior high schools tend to be organized more like high schools. Thus is seems possible that the move from the junior high school to middle school model of transition from elementary to high school has proceeded, the transition from grade 6 to 7 has become easier for students and fewer students are now flunked to repeat grade 7. In suggesting this

[9] In 1970-71 there were2,080 middle schools and 7,750 junior high schools. In 2000-01, there were11,696 middle schools and 3,318 junior high schools. NCES, *Digest of Education Statistics 2002*, Table 93, p. 119.

possibility, we readily acknowledge that this is merely a possibility because the organizational change from three times as many junior high schools as middle schools in 1970, to the reverse in 2000 has been far more dramatic than the minor change grade 6 to 7 transition rates.

Constriction of the high school pipeline. Far more dramatic than changes in the education pipeline just discussed has been evidence of what might be called constriction in the high school pipeline. By this we refer to the changes discussed in parts IV, V and VI above, namely increasing rates of attrition between grades 9 and 10, an increasing bulge of students in grade 9 and falling graduation rates. What has been causing such constriction in the high school pipeline?

As stated previously, proving cause and effect regarding historical developments is no easy matter, but what seems clear is that constriction in the education pipeline has been associated with three waves of education reform over the last three decades, namely minimum competency testing, academic standards movement and high stakes testing.

As shown in Figure 4 above, attrition between grades 9 and 10 was low and relatively stable at around 3% during the first half of the 1970s. However during the late 1970s attrition between grades 9 and 10 increased to around 5%. This coincided with the rise of the so-called minimum competency testing movement (Haney & Madaus, 1978). By the late 1980s, studies showed that there was a relationship between state implementation of minimum competency testing and dropout rates (Kreitzer, Madaus & Haney, 1989). In a study of effects of grade retention, Shepard & Smith observed that "the percentages of overage students [that is, student older than the modal age for particular grades] began to climb . . . in the late 1970s in response to the minimum competency testing movement" (Shepard & Smith, 1989, p. 6).

As shown in Figure 4, attrition between grades 9 and 10 was relatively stable in the early 1980s, but began a steady increase, from less than 5% in 1983-84 to 8% in 1988-89. This happened following publication in 1983 of one of the last century's most publicized education reform reports, *A Nation at Risk.* In this report, the National Commission on Excellence in Education ominously warned, in a much quoted phrase, that "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people" (p. 5). To remedy what it saw as declining academic standards (caused in part by what it saw as low-level minimum competency tests having the perverse effect of minimum expectations becoming maximum expectations), the Commission called for increased academic course requirements in high school and for the use of standardized tests at "major transition points from one level of schooling to another" (p. 8).

In a follow-up study to *A Nation at Risk,* entitled *Meeting the Challenge*, the staff of the Commission surveyed the 50 states and the District of Columbia on their recent efforts to improve education. Though acknowledging that many reform initiatives were under way prior to the release of *A Nation at Risk*, the follow-up report recounted that among the reform efforts nationwide, "action has been taken or proposals made" with regard to "student evaluation/testing" by 35 states, and with regard to "graduation requirements" by 44 states (p.6). Thus it seems clear that what might be called the academic standards movement of the 1980s was a likely cause of the constriction in the high school pipeline during this period.

Referring again to Figure 4, it is apparent that the third period of increase in attrition between grades 9 and 10 started about 1990 and lasted until the end of the

decade. During this period attrition between grades 9 and 10 increased nationally almost 50% from about 8% to nearly 12%. During the same interval, the grade 9 to graduation rate fell from about 71% (already down from about 77% in 71-72) to only 67% (see Figure 9). This further constriction in the high school pipeline has been associated with the rise of so-called standards based reform and high stakes testing. Others such as Shepard (2002) have lumped the education reform movement of the 1990s in with that following the 1983 *Nation at Risk* report (in what she calls the excellence movement). Nonetheless, we think what happened in the 1990s was fundamentally different than what was going on earlier for one key reason, namely that in the 1990s test results started being used to make decisions not just about students but also about schools.

There is no way in a short report such as this that we can describe all that has happened in terms of standards-based education reform in the U.S. over the last decade. Hence, let us simply describe what is meant by this term and what we see as wrong with this reform movement. Standards-based reform refers to a process by which states have been encouraged to develop grade level academic "standards," then to develop tests based on those standards, and finally to use results of those tests to make decisions about bother students and schools based on test results. For example, it is often advocated that decisions about whether to promote students from one grade to the next or to award them high school diplomas should be made based on results of such standards based tests. Similarly, it if often recommended that ratings of schools be based on such test results (indeed, such ratings of schools are now mandated in the NCLB law).

Though the idea of such a reform strategy is seductively simply, there are a number of things wrong with it. First, even brief reflection ought to make clear that the

aims of public education in the U.S. extend far beyond merely academic learning (much less merely raising scores on a small number of tests of academic subjects).

Second, to base high school graduation decisions on standardized test results in isolation, irrespective of other evidence about student performance in high school, is contrary to recognized professional standards regarding appropriate use of test results. (See for example the statement of American Educational Research Association, http://www.aera.net/about/policy/stakes.htm). A simple way of communicating this point is to note how college admissions test results are used. There is not a single college anywhere in the nation that accepts all applicants who score above a particular point on the SAT (say a combined score of 1000) and rejects all applicants who score below that point. Instead colleges make admissions decisions flexibly using test scores, grades and other information rather than making decisions mechanically based on test scores alone. It is worth adding also that decades of research on college admissions testing show that it is far more sound (more valid and with smaller adverse impact on minorities and females) to use test scores in this way (in what might be called a sliding scale approach so that students with high grades may be considered with lower test scores, but students with low grades need higher test scores to be considered for admission).

Third, documentation of widespread errors in test scoring, scaling, and reporting in the testing industry should make clear how unwise it is to make important decisions mechanically based on test scores in isolation (Henriques & Steinberg, May 20, 2001; Steinberg & Henriques, May 21, 2001, Rhoades & Madaus, 2003). Indeed, in Minnesota, one large testing company was forced into a $10 million settlement after it was shown that hundreds of students had been wrongfully denied high school diplomas.

Fourth, recent research has demonstrated conclusively that "low-tech" tests like those being used in all the states (that is, paper-and-pencil tests in which students answer multiple-choice questions or write answers on paper long hand) seriously underestimate the skills of students used to writing with computers (Haney & Russell, 2000; Russell & Plati, 2001). A number of states are beginning to experiment with ways of administering tests via computer, but it will be a long time before 21st century testing (e.g. allowing use of keyboards rather than just long-hand composition, and rapid feedback of results) becomes available in most schools. And in any case, the aims of education in our society extend way beyond what can be measured via computer, much less via paper and pencil.

Finally, however, it is clear that when the same fallible technology (and all bureaucratic accountability systems and high stakes testing systems are such fallible technologies, Madaus, 1990), is used to make decisions about children and social institutions, the latter will always be in a better position to protect their interests than the former. For example, when schools are under intense pressure to increase test score averages, and are not given the resources or tools for doing so in an educationally sound manner, the easiest way to make test pass rates (or score averages) appear to increase in the grade at which high stakes tests are administered is to exclude "low achieving" students from being tested. One way to exclude them, at least temporarily, is to flunk them to repeat the grade before the grade tested. Another is to push students out of school altogether.

There is ample historical evidence of this phenomenon. In the payment by results era of school accountability in the Britain the latter part of the 19th century, when grants to schools were based on examination results, weaker pupils were often kept back or told

to stay away from school on the exam date (Rapple, 1994). And when Ireland used a primary school leaving exam during the mid-20th century and schools' reputations were strongly influenced by student pass rates, teachers would flunk students at higher rates in the grades before the high stakes exam grade (Madaus & Greaney, 1985).

So as the stakes of test results for schools in the U.S. increased during the 1990s, it is not surprising, though regrettable, that such practices of student exclusion have reappeared, but often in ways so that excluded students are not counted as dropouts. , As dismaying as it may be to believe, there is now evidence of such practices from three different states (Texas, Alabama and New York).

In Texas, it is now clear that some school officials have been actively pushing students out of school, but using contrivances so that such students are not officially be counted as drop outs (see Bainbridge, April 16, 2003, for example, or the sad story of Crystal Gonzalez, Associated Press, September 10, 2003, or even more recently, the expose of fraud in reporting on dropouts in the Houston Public schools broadcast on 60 Minutes II January 6, 2004).[10]

From Alabama comes the troubling story of Steve Orel and the "Birmingham 500." Orel was a teacher in an adult education program in Birmingham, Alabama, in the spring of 2000 when he discovered that many "low-achieving" students (that is, students who had scored low on the Stanford Achievement Test, 9th Edition or SAT-9) had been had been administratively dismissed from the Birmingham Public Schools, ostensibly because of "lack of interest." Upon investigation, Orel learned that a total of 522 students had been pushed out of school in this manner in an effort to make school test

[10] A transcript of the 60 Minutes II broadcast "Texas miracle" is available at http://www.cbsnews.com/sections/60II/main3475.shtml. Last retrieved January 11, 2004.

results look better. Six Birmingham high schools had been placed on "academic alert status," and were thereby threatened with takeover by the state if SAT-9 score averages did not improve (Orel, 2003). Because of his efforts to bring the "push-out" policy to public attention and to end it, Orel was fired from his public school teaching job, but with support from a local charity went on to help organize an adult education program for the students pushed out of Birmingham public high schools.

And from New York, a recent report from Advocates for Children (Gotbaum, 2002) documents the fact that tens of thousands of students are being "discharged" from New York city high schools, but in ways so that they are not counted as dropouts. According to the report, "school officials are encouraging students to leave regular high school programs even though they are of school age or have a right to receive appropriate literacy, support, and educational services through the public school system" (Gotbaum, 2002, p. 2). In 2001, according to Gotbaum, thirty-one New York City high schools "discharged" more students than they graduated. The number of students discharged was more than triple the number officially counted as dropouts. The real number of dropouts may be masked, according to the report, by counting discharged students as transferring to GED preparation program students. In such cases students were not counted as dropouts.

VIII Conclusion

Our analysis of the enrollment data concerning the U.S. public school pipeline over the last 30 years has been based on a simple proposition. It is that in the absence of reliable data on dropouts and rates of student retention in grade (the latter is not available at all for most states over the last 30 years), one reasonable way of studying what has been happening to flows of students through public schools in the U.S. over the last three decades is to analyze annual enrollments by grade, both for public schools nationally and for public schools in all fifty states. Most of our analyses focused on the simple question of how student enrollment in one grade in one year compares with enrollment in the previous grade the previous year. When considering high school graduation rates we also examined numbers of regular high school graduates in particular years compared with numbers enrolled in grade 9 three and a half years previously and with numbers enrolled in grade 8 four and a half years previously. Such cohort progression rates, especially when considered over longer periods of time, may be affected not just by rates at which students are promoted or not promoted from grade to grade but also by other factors. Hence in part VI we digressed to discuss how mortality, migration, private school enrollments and homeschooling might affect cohort progression rates. In sum, what we found was that these factors do not affect rates much at the national level, but that migration may affect rates somewhat for a few states.

Before summarizing and discussing our substantive findings, we pause to address an alternative to the sorts of cohort progression analyses presented here that has sometimes been advanced as necessary before accurate state graduation rates can be calculated. It has sometimes been argued that states will not be able to calculate accurate

graduation rates until they develop longitudinal data bases that track individual students over their entire K-12 educational careers – or at least grade 8 through 12. We have substantial experience with such longitudinal databases, collectively going back more than half a century. Repeatedly we have seen that even with ample funding and vast computer power, it is extremely difficult for even trained researchers, backed up with numerous field workers, to track large numbers of children over periods of more than four or five years. Thus, with no disparagement toward the staffs of state education agencies intended, we seriously doubt that anytime in the foreseeable future will all 50 state education agencies have the capacity to track children through their grade 8 to 12 educational careers (and certainly not for at least for five years, since many SEAs do not now have even the rudiments of such longitudinal tracking systems in place). And for anyone who doubts this judgement, consider this. In Table 6 above we showed that net migration of the school aged population (both domestic and foreign) for the 50 states over just a five year period (as judged from results of Census 2000) ranged from a low of –5.3% for Hawaii to a high of +14.6% for Nevada. This means that at least for some states, even if every state did have a fully functioning system for tracking all current grade 8 and grade 9 students right now, we would not be able to get high school graduation rates four or five years hence accurate within plus or minus 5 to 10% unless we had an integrated tracking system across all 50 states. Putting aside the matter of desirability, the prospects for such a national system for tracking all children across the 50 states and the 90,000 public and 27,000 private schools (not to mention home schools and death) seem extremely remote. Hence the argument that states will not be able to calculate accurate graduation rates until they have in place longitudinal databases for

tracking students across their high school careers rates seems to us a real red herring (or maybe even a scarlet mackerel).

The main substantive findings from our analyses of state and national grade enrollment and graduation data over the last 30 years are four. The somewhat old, good news, recounted in part II, is that kindergarten attendance in the U.S. increased rapidly over the last three decades, from only around 60% in 1965 to about 90% by 2000. Analyses of state level enrollment data indicate that five states have made dramatic progress in boosting rates of kindergarten attendance over the last 15 years, namely Mississippi, Oregon, Vermont, South Carolina, and Texas. The state with the lowest rate of kindergarten attendance is New Hampshire, which as late as the end of the century still had less than 60% of children starting school in kindergarten. In discussing causes and consequences of changes in the education pipeline in part VII we found further good news in that historically the increases in percentages of students starting school in kindergarten is associated with decreases in students being flunked to repeat grade 1 (though, as noted the latter may also be due to other factors.)

The other three major findings from our analyses may be summarized, in contrast to the first finding, as less old, and far less good: Over the last 30 years the public high school education pipeline in the U.S. has been constricted in three respects. As recounted in part IV of this report, the rate at which students disappear between grade 10 one year and grade 9 the previous year has tripled over the last 30 years from less than 4% to nearly12%. States with the worst attrition between grade 9 in 1999-00 and grade 10 in 2000-01 (as listed in Table 2) are Florida, South Carolina, Georgia, Texas, Nevada, North Carolina, Louisiana, Hawaii (perhaps in part due to out-migration of school age children),

Alabama, Mississippi, New York, and Tennessee – all with attrition rates of about 14% or more.

Further evidence of constriction in the high school pipeline is that there has been an increasing bulge of students in grade 9, as recounted in part V of this report. Nationally, during the 1970s there were only about 4% more students in grade 9, than in grade 8 the previous year. However by the late 1990s there were more than 12% more students nationally in grade 9 than in grade 8 the previous year. Bulges in grade 9 enrollments in 2000-01, as compared with grade 8 enrollments the previous year were particularly severe in Florida (32%), South Carolina (24%), Nevada (24%, though in this instance, this finding may be partially due to in-migration of school age children), New York (21%), Hawaii (21%), Kentucky (20% and Texas (20%). Other states with grade 9 bulges as of 2000-01 of between 10% and 19% are listed in Table 3.

This combination of an increasing bulge of students in grade 9 relative to grade 8 the previous year is clear evidence that there has been a sharp increase nationally over the last 20 years in the percentage of students who are being flunked to repeat grade 9. Since being flunked to repeat a grade is a strong predictor of students dropping out of school prior to graduation, it is hence not surprising that, as discussed in part VI, high school graduation rates have been falling nationally, especially in the last 10 years or so. As of 2000-01, the national graduation rate stood at about 75% if calculated on the basis of numbers of graduates compared with enrollments in grade 8 four and a half years earlier, and at only about 67% if calculated on the basis of numbers of graduates compared with enrollments in grade 9 three and a half years earlier. Either result is, of course, appallingly short of the national education goal of a graduation rate of 90%.

In part VII of the report we discussed some of the apparent causes and consequences of these changes in the education pipeline in the U.S. over the last 30 years. Regarding the constriction in the high school pipeline, we noted that increases in attrition between grades 9 and 10 have been associated with the minimum competency testing movement in the 1970s, the academic standards movement in the 1980s, and so-called standards-based reform and high stakes testing in the 1990s. In the closing portions of part VII we summarized our reservations about high stakes testing.

In closing, we should acknowledge that in recent years there has been considerable debate about the merits of high stakes testing. We do not try to review that debate here (though our position on the matter should by now be clear). Rather what we wish to emphasize is that whatever has been causing the constriction in the high school pipeline – the increasing rate at which students are being flunked to repeat grade 9 and the falling rate at which students are graduating from high school – this development should be viewed as a real national emergency. When students are squeezed out of the high school pipeline and do not even graduate from high school, this has dire consequences not just for these young people but for society as a whole. The reason we say this is that recent research shows that there is an increasingly strong link between people's failing to graduate from high school and their ending up in prison.

A recent report from the Bureau of Justice Statistics reports, for example,. "About 41% of inmates in the nation's State and Federal prisons and local jails in 1997 and 31% of probationers had not completed high school or its equivalent. In comparison, 18% of the general population age 18 or older had not finished the 12th grade" (Harlow, 2003, p. 1). In other words, failure to graduate from high school (or its equivalent) appears to

double the likelihood of being imprisoned. Moreover, if we discount high school equivalency degree recipients[11] and consider only those who actually graduate from high school, 68% of state prison inmates (and 59% federal and 62% of local prisoners) did not graduate from high school (Harlow, 2003, p. 1). This suggests that failure to graduate from high school is associated with a tripling of likelihood of being imprisoned. Moreover, less educated inmates are more likely than the more educated to be recidivists (Harlow, 2003, p. 10).

Pettit and Western (2002) have recently studied the likelihood of imprisonment by race, cohort of birth, and educational background using life table techniques. This has allowed them to estimate cumulative risks of imprisonment among black and white men from teenage years through their early thirties. Among other things they concluded:

> Incarceration rates and cumulative risks of incarceration are, on average, 6 to 8 times higher for young black men compared to young whites. Levels of imprisonment for young high school dropouts are 2 to 4 times higher than for those who have completed high school. The likelihood of going to prison is extremely high for young black male high school dropouts. Around 60 percent of those born 1965–69 had served time in prison by their early thirties.
> . . .
>
> These findings help sharpen the claim that shifts in criminal justice policy have disproportionately burdened low-education minority men. There is strong evidence that the penal system is a ubiquitous presence in the lives of low-skill black men. Still, the relative risk of black imprisonment did not significantly change. Large black-white disparities that characterized the penal system in the 1970s persisted, but did not increase in the 1990s. Instead, risks of imprisonment are becoming more sharply drawn along the lines of education, rather than race. (Pettit & Western, 2002, p. 23)

In short, failure to graduate from high school dramatically increases the odds that young people, especially black males, will end up in prison at least once and even more

[11] Haney (2001) discusses recent evidence indicating that in terms of employment opportunities, recipients of GED high school "equivalency" diplomas are more like high school drop outs than like high school graduates.

than once. Hence in closing we simply observe that it is far less costly to keep young people in schools than in prisons – and not incidentally, much better for them.

References

Ayres, Lenoard P. (1909). *Laggards in our schools: A study of retardation and elimination in city school systems* NY: Charities Publication Committee.

Associated Press, September 10, 2003. Are Texas schools nudging out low performing students? http://www.khou.com/news/local/education/stories/khou030905_mh_dropouts.77b521f2.html. Retrieved September 16, 2003.

Bainbridge, W. L. (2003) Texas model for school achievement doesn't hold up. *Columbus Dispatch*. April 16, 2003.

Balfanz, R. & Letgers, N. (2001). How many central city high schools have a sever dropout problem, where are they located and who attends them? Paper presented at the "Dropout Research: Accurate Counts and Positive Interventions" Conference Sponsored by Achieve and the Harvard Civil Rights Project, January 13, 2001, Cambridge MA.

Bielick, Stacey, Kathryn Chandler and Stephen P. Broughman. 2001. Homeschooling in the United States: 1999. (NCES 2001-033) Washington, DC: National Center for Education Statistics.

Bauman, K. J. (2002, May 16). Home schooling in the United States: Trends and Characteristics. Education Policy Analysis Archives, 10(26). Retrieved November 12, 2003 from http://epaa.asu.edu/epaa/v10n26.html.

Gotbaum, B. (2002, November 21). *Pushing out at-risk students: An analysis of high school discharge figures*. (Report by the Public Advocate for the City of New York and Advocates for Children). New York: Advocates for Children. (http://www.advocatesforchildren.org/ Accessed April 5, 2003).

Greene, J. P. & Forster, G. (2003, September 17). Public high school graduation and college readiness rates in the United States. (Working paper No. 3). New York, New York: The Manhattan Institute. (http://www.manhattan-institute.org/ewp_03_embargoed.pdf, accessed 9/15/2003)

Haney, W. (2000).The myth of the Texas miracle in education. *Education Policy Analysis Archives* Volume 8 Number 41, August 19, 2000. Published on the WWW at: http://epaa.asu.edu/epaa/v8n41/. (A printed version of this monograph is distributed by the Harvard Education Publishing group.)

Haney, W. (2001). Revisiting the Myth of the Texas Miracle in Education: Lessons about Dropout Research and Dropout Prevention. paper prepared for the "Dropout Research: Accurate Counts and Positive Interventions" Conference Sponsored by Achieve and the Harvard Civil Rights Project, January 13, 2001, Cambridge MA. (Available at: http://www.civilrightsproject.harvard.edu/research/dropouts/call_dropoutpapers.php

Haney, W. & Madaus, G. (1978). Making sense of the minimum competency testing movement. *Harvard Educational Review*, 48:4, 462-484.

Harlow, C. W. (2003, January, revised 4/15/03). *Education and correctional populations*. Bureau of Justice Statistics Special report. Washington, D.C.: U.S Department of Justice Statistics, Office of Justice Programs.

Hartocallis, A. (June 30, 2001). Math test needed for high school graduation had confusing errors, State officials say. *New York Times*, p. B2.

Henke, R. Kaufman, P. & Broughman. (2000). Issues related to estimating the home-schooled population in the United States with household survey data. . (NCES 2000-311) Washington, DC: National Center for Education Statistics.

Henriques, D. & Steinberg, J. (May 20, 2001). Right answer, wrong score: Test flaws take toll, *New York Times*, p. 1. Available at http://www.nytimes.com/2001/05/20/business/20EXAM.html.

Heubert, J. & Hauser, R. (Eds.) (1999). *High Stakes: Testing for Tracking, Promotion, and Graduation*. A Report of the National Research Council, Washington, D.C.: National Academy Press.

Home School Legal Defense Association. http://www.hslda.org/research/faq.asp#1, accessed November 14, 2003.

Jackson, G. (1975). The research evidence on the effects of grade retention. *Review of Educational Research*, 45-4, 613-635.

Kreitzer, A., Madaus, G., & Haney, W. (1989). Competency testing and dropouts. In Weis, L. & Petrie, H. (Eds). *Dropouts from school: Issues, dilemmas and solutions*. (Albany, NY: State university of New York Press), pp. 129-152

Madaus, G (1990) Testing as a social technology. Boisi Lecture in Education and Public Policy, December 6, 1990. Chestnut Hill, MA: Boston College.

Madaus, G. and Greaney, V. (1985). The Irish experience in competency testing. *American Journal of Education*, 93:2, 268-294.

National Commission on Excellence in Education. (1983a). *A nation at risk*. Washington, DC: U.S. Government Printing Office.

National Commission on Excellence in Education. (1983b). *Meeting the Challenge: Recent efforts to improve education across the nation*. Washington, DC: U.S. Government Printing Office.

Orel, Steve (2003). Left behind in Birmingham: 522 pushed out students. In Lent, R. C. and Pipkin, G. *Silent no more: Voices of courage in American schools*. (Portsmouth, NH: Heinemann) pp. 1-14.

Pettit, B. & Western, B. (2002). Inequality in lifetime risks of imprisonment. Retrieved January 28, 2003, from http://www.princeton.edu/~wstern

Rapple, B. (1994). Payment by results: An example of assessment in elementary education from nineteenth century Britain. *Education Policy Analysis Archives, 2:1* http://epaa.asu.edu/epaa/v2n1, Retrieved September 21, 2003.

Rhoades, K., & Madaus, G. (2003, May). *Errors in standardized tests: A systemic problem*. (Report of the National Board on Educational Testing and Public Policy.) Chestnut Hill, MA: Boston College Center for the Study of Testing, http://www.bc.edu/research/nbetpp/reports.html#monographs

Rudner, L. (1999). Scholastic Achievement and Demographic Characteristics of Home School Students in 1998. Education Policy Analysis Archives, 10(26). Retrieved November 12, 2003 from http://epaa.asu.edu/epaa/v10n26.html.

Russell, M. & Haney (2000). Bridging the gap between technology and testing. *Education Policy Analysis Archives* Volume 8 Number 41, March 28, 2000. Available on the WWW at: http://epaa.asu.edu/epaa/v8n41/

Russell, M. & Plati, T. (2001). Effects of Computer Versus Paper Administration of a State-Mandated Writing Assessment. Teachers College Record On-line. Available at http://www.tcrecord.org/Content.asp?ContentID=10709.

Shepard, L. (2002). The contest between large-scale accountability testing and assessment in the service of learning. Paper prepared for the Spencer Foundation's 30th Anniversary Conference, "traditions of Scholarship in Education," Chicago, January 24-25, 2002.

Shepard, L. A. & Smith, M.L. (1989). *Flunking grades: Research ad policies on retention*. New York: Falmer Press.

Swanson, Christopher B. and Duncan Chaplin. 2003. "Counting High School Graduates when Graduates Count: Measuring Graduation Rates under the High Stakes of NCLB." (February 25, 2003 Version) Washington, D.C.: Education Policy Center, The Urban Institute.

Warren, J. R. (2003, August). State-level high school graduation rates in the 1990s: Concepts, measures and trends. Paper prepared for presentation at the annual meetings of the American Sociological Association, Atlanta, August 2003.

Wheelock, A., Bebell, D., & Haney W. (2000). What can student drawings tell us about high-stakes testing in Massachusetts (November 2000). TCRecord.org (Teachers College Record On-line). http://www.tcrecord.org/Content.asp?ContentID=10634

Wright, J (Ed.) (2002). *The New York Times Almanac*. New York: Penguin.

Appendix

As described in part II of this report, the grade level enrollment data used were from the *Digest of Education Statistics* (DES), a yearly report issued by the National Center on Education Statistics, and the Common Core of Data (CCD), a federal repository of education statistics available on-line at http://nces.ed.gov/ccd. The annual publication of the *Digest of Education Statistics* dates back to 1962 and is considered the "gold standard" for statistical information about American education from pre-kindergarten through graduate school. For example, the *Digest of Education Statistics* 2002 reports enrollment data for the 1998,1999 and 2000 academic years and provides enrollment estimates for 2001 (US DOE, 2003, p.51). Considering the time-lag in the years for which data are available in the DES relative to the publication date, use of data available electronically from the CCD is becoming more common.

The Common Core of Data is a comprehensive database that includes information on schools, school districts, students, staff and expenditures for public elementary and secondary education in the United States. The CCD State Non-fiscal Public Elementary/Secondary Education Survey Data file has been compiled annually from 1986 to the present; and included data for the 2001-02 academic year. This CCD file contains membership counts by grade and counts of high school completers, which is also disaggregated by race/ethnicity and is available for most states beginning with the 1992 data files. It is possible to use CCD and DES in combination to obtain the most recent statistical information; however, this requires that the data from these two sources are comparable.

Education Pipeline, p. 68.

During the course of the data collection process and rteview, and thanks in part to a suggestion from Rob Warren at the University of Minnesota, we realized that there were discrepancies between the state grade level enrollment data reported in the DES and in the CCD. We compared grade level enrollment data from more recently published DES sources with CCD data contained in the State Non-fiscal Public Elementary/Secondary Education Survey Data files for the years 1986-2000. Of the approximate 10,000 comparisons there were seven discrepancies, most of which were small – differences of 1%. However, there was one discrepancy in excess of a 10 % difference between the DES and CCD sources. This large discrepancy was found for the reported graduates in CA for the 1996-97 academic year. Table 1 presents the discrepancies we found between the DES and CCD sources.

Table 1. Discrepancies in Enrollment and Numbers of Graduates Reported by the Digest of Education Statistics and the Common Core of Data, 1986-2000

State	Academic Year	Data	CCD Data	CCD Year (file version)	DES Data	DES year, table
CA	1996-97	Graduates	311,818	1997 (v.1b)	269,071	2000, T102
IN	1992-93	Graduates	56,982	1993 (v.1b)	57,559	1997, T100
NY	1997-98	Graduates	139,529	1998 (v. 1b)	138,531	2001, T104
PA	1987-88	Grade 12 enrollment	130,812	1987 (v.1b)	130,830	1990, T39
TX	1992-93	Graduates	162,270	1993 (v.1b)	160,546	1997, T100
VT	1992-93	Graduates	5,697	1993 (v.1b)	5,215	1997, T100
WY	1992-93	Graduates	5,953	1993 (v.1b)	6,174	1997, T100

The discrepancies presented in Table 1 were brought to the attention of several individuals at the National Center for Education Statistics (NCES). Personal

communications indicated small differences might possibly be attributed to rounding error while the larger discrepancies may be the result of updated information that appeared in the DES but had not yet been updated in the CCD files. Where differences between the two data sources were found, we decided to use the figure reported in the *Digest of Education Statistics*. This decision rule is similar to guidelines employed by staff at NCES (personnel communication with Lee Hoffman, October 3, 2003). We describe these differences to document our data as thoroughly as possible and to alert those who rely on these sources of these minor discrepancies. We note that the differences between the DES and CCD sources are few and small; and do not affect broad trends across the national and state enrollment patterns for 1968-69 to 2000-01 and 1984-85 to 2000-01 respectively.

In addition to documenting data sources for graduates and grade level enrollment we also note a change in definition or reporting classification implemented by the Common Core of Data project. As illustrated in the previous table most of the differences between the DES and CCD data involved the number of reported graduates. Since the inception of the CCD in 1986, there has been a change in the reporting strategy with regard to high school completers. Up to CCD 1996, four categories of high school completers were reported in the CCD state non-fiscal data files[12]: regular high school diploma completers (REGDIP), other diploma recipients (OTHDIP)[13], high school equivalency recipients (EQUIV) and other high school completers (OTHCOM).

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[12] This is based on state excel files downloaded from http://www.nces.ed.gov/ccd/stnfis.asp, the layout of the text (.txt) files are slightly different.

[13] For survey year 1986, the second category is OTHPRG, which refers to completers of other programs such as GED's adult evening school, etc. (layout file for 1986-87 st861b.dat retrieved from http://www.nces.ed.gov/ccd/data/txt/stNfis86lay.txt)

Education Pipeline, p. 70.

According to the documentation for the state non-fiscal survey for school year 1996-97 (NCES, n/d), the definitions for the four categories are as follows:

- A Regular Diploma Recipient is a graduate of regular day school who received a high school diploma during the previous school year or subsequent summer school; the diploma is based upon completion of high school requirements through traditional means.
- An Other Diploma Recipient is a student who received a diploma through other than a regular school program during the previous school year or subsequent summer.
- An Other High School Completer is a student who has received a certificate of attendance or other certificate of completion in lieu of a diploma during the previous school year and subsequent summer school.
- A High School Equivalency Recipient is an individual age 19 years or younger who received a high school equivalency certificate during the previous school year or subsequent summer.

Since CCD 1997, "other diploma" recipients are no longer reported separately, but are combined with "regular diploma" recipients as one category[14] (NCES, n/d). Therefore state non-fiscal files include three categories of high school completers for the survey years 1997 to 2001.

High school graduate/completer counts are reported in the Local Education Agency (School District) Universe Survey Data for the survey years 1987 to 2001. For the survey years 1987 to 1990, four categories of high school completers were reported

[14] The State Nonfiscal files continue to label this new category as REGDIP although TOTDPL (used in district files) seems to be more appropriate.

(REGDIP, OTHDIP, EQUIV, and OTHCOM). Starting for the survey years 1991, the EQUIV variable is no longer reported, although it is still collected in the state Nonfiscal survey (NCES, n/d). Since CCD 1998, only the total diploma recipients (TOTDPL) and total other high school completers (TOTOHC) have been reported. Total diploma recipients include "both regular and other diploma recipients, comparable to adding REGDIP and OTHDIP from previous year's agency file" (CCD Local Agency Record Layout files 1998-99).

High school graduate/completer counts are not reported by the CCD at national level (namely the 50 states plus the District of Columbia), but are available from the Digest of Education Statistics (DES) back to school year 1968-69. The DES counts include "graduates of regular day school programs, but exclude graduates of other programs and persons receiving high school equivalency certificates" (US DOE, 2003, p. 128). Since the comparison of DES and CCD data at state level only identified a small number of discrepancies for 1986-87 to 2000-01, it is reasonable to speculate that the number of graduates reported in DES experienced the same change as in the CCD state Nonfiscal survey. In other words, only regular diploma recipients are reported as graduates in DES before the class of 1997, while both regular diploma and other diploma recipients are counted as graduates in DES since the class of 1997.

Finally, we note that with this report, we also release all of the source data used in the study reported here. The data are contained in two Microsoft Excel files titled "State Enrollment 84-00" and "US Enrollment 68-00." Internal to each file is documentation on data sources. Both files are available through the following URL:

http://www.bc.edu/research/nbetpp/

References

National Center for Education Statistics (n.d.). Documentation for the State Nonfiscal Survey of Public Elementary and Secondary Education: School Year 1996-97(Revised). Retrieved December 2, 2003 from http://www.nces.ed.gov/ccd/pdf/stNfis96genr.pdf.

United States Department of Education, National Center for Education Statistics (2003). *Digest of Education Statistics* 2002 (NCES 2003-060). Washington, DC: Author.