

## Who is in this place called school?

*Prepared for the 84th Arizona Town Hall on Education: Choices for Arizona's Future, June 2004*

Public schools exist in a broader societal context. As American society has changed, so have its public schools. The most dramatic changes during the latter half of the twentieth century involve the maturation of electronic technology. Computers are changing classroom instruction and assessment. In addition to classroom-level changes, technology has also shaped how we understand public schools. In contrast to classrooms in the 1950s, it is commonplace in today's education environment to collect, compare and make academic achievement data available for public discussion at speeds that were unfathomable 50 years ago.

Despite all the available information, what does the general public really know about Arizona's public schools and their students? The sheer volume of information about public schools is overwhelming. The purpose of this chapter is to synthesize the plethora of data about Arizona public education and introduce the general public to the students in this place called school. The chapter will focus on the shifting demographics of Arizona public schools, the student academic achievement and college participation rates.

### Arizona's Population Composition and Public School Enrollment Trends

The demographic makeup of the United States is undergoing considerable changes. Minority populations, led largely by Hispanics, are accelerating at a substantial rate in comparison to the White, non-Hispanic population. States like Arizona are leading the way in accelerated minority growth, with the state's minority population now at 34.6%, a 6.3% increase from 1990 to 2000.<sup>1</sup> Between 1990 and 2000 alone, Hispanics as a proportion of the entire Arizona population rose by 6.5% (Figures 1 and 2).

*Figure 1*

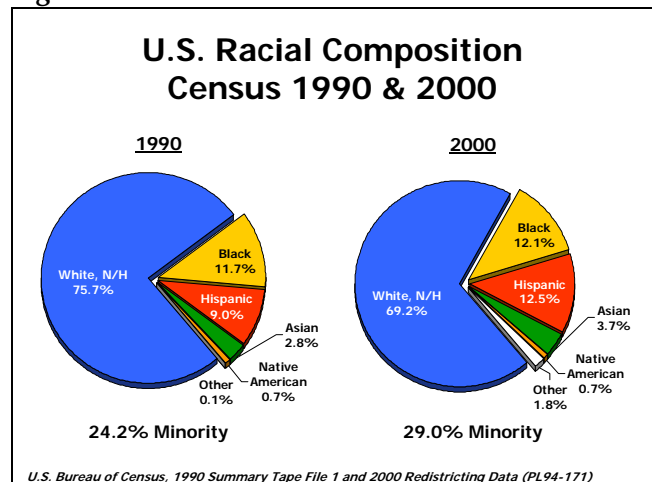
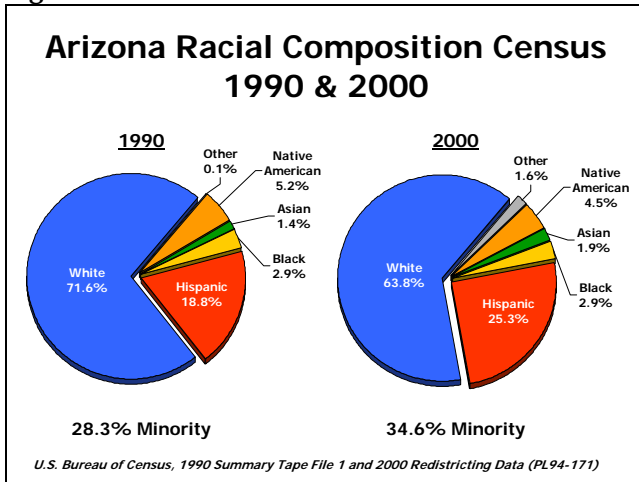


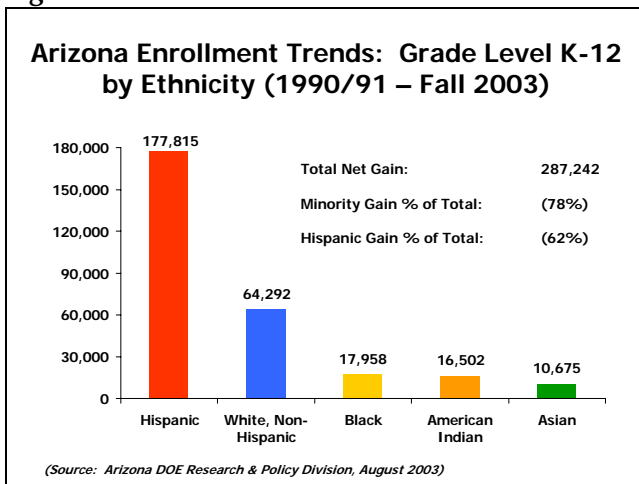
Figure 2



### Arizona Public School Enrollment Trends

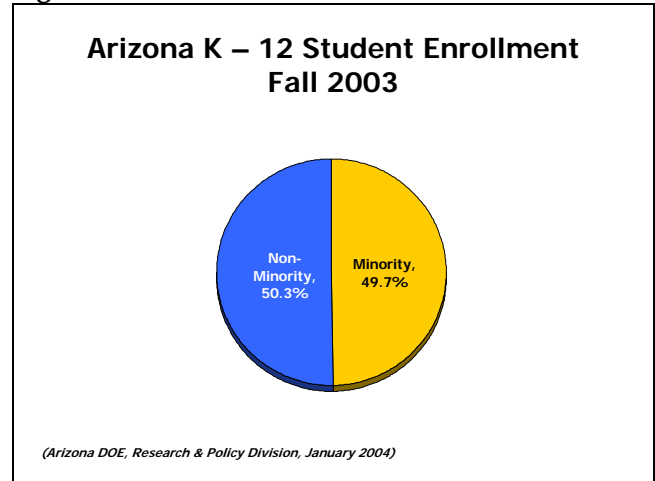
The population trends are mirrored in Arizona public school enrollment. Since the 1990-91 academic year, the most dominant trend is the increase in Hispanic student enrollment. In grades K-8 Hispanic students contributed 74% of the total growth from fall 1990 to fall 2003. Collectively, minority student enrollment accounted for a tremendous 90% of total student growth in the elementary grades. Hispanic students contributed 62% of the net gain in total K-12 enrollment growth from fall 1990 to fall 2003. Minorities as a whole accounted for 78% of total student gain in Arizona for the same time period (Figure 3).

Figure 3



In fall 2003, the minority student population constituted *half* of Arizona’s student population (Figure 4). If current trends continue, and there are no indications that the demographic shifts will halt anytime soon, Arizona’s public schools will soon become predominately minority.

Figure 4



### K-12 Academic Achievement

In addition to the composition of Arizona public schools, a description of academic performance provides further insight into the characteristics of Arizona public school students.

### Arizona’s Instrument to Measure Standards – Elementary Grades

Arizona’s Instrument to Measure Standards (AIMS) is a state-developed standards-based test given at third, fifth and eighth grade, as well as in high school. The test covers three subject areas: math, reading and writing. The Arizona Department of Education releases AIMS test results on an annual basis.<sup>2</sup>

The AIMS test is intended to provide helpful academic information to a wide range of audiences, including parents, teachers and the general public. To that end, the Arizona Department of Education (ADE) reports AIMS

results by performance levels in order to provide a context for interpreting student achievement on the exam. AIMS results are divided into four explicit performance levels: Exceeds the Standard, Meets the Standard, Approaches the Standard and Falls Far Below the Standard. "Meets the Standards" is the grade level goal for all students, because "students that perform at this level are well prepared to begin work on even more challenging material that is required for the next grade."<sup>3</sup> For the purposes of this section, the analysis centers on the percentage of students who performed at or above grade level, where grade level skills and knowledge are defined as either meeting or exceeding the standards on the AIMS test.

To begin, there are common themes throughout the entire analysis. First, there is a negative relationship between the percentage of students meeting or exceeding the standards and grade. In general, as the grades increase, the achievement level decreases. For example, third graders consistently eclipsed their fifth and eighth grade peers every year in every subject. In addition, fifth graders achieved higher scores than eighth graders in all subject areas and years except for a single anomaly, a slight advantage in favor of eighth grade students in the 2001 reading scores.

Second, there are consistent gaps in academic achievement by racial/ethnic group, a fact that deserves careful consideration in light of the changing demographics of the state. Asian students continually outperformed their peers in every subject and grade. At the other extreme, Native American students exhibited the lowest performance in every subject and grade. White students consistently outperformed their Black, Native American and Hispanic peers, but continually lagged behind Asian students.

Despite the impressive achievement of Asian students, however, the small size of this racial/ethnic group in relation to other student groups means that their AIMS performance rates have a minimal effect on the achievement of the total Arizona student population. Asian students make up only about 2% of the total number of students tested in Arizona, an extremely low proportion in comparison to Hispanic students who compose approximately 25%. White students, the largest student group, constitute approximately 50% of all students tested. The primary focus of the following analysis is on student groups with the most impact on the overall Arizona student achievement scores.

In 2003, 66% of third grade students met or exceeded the standards in mathematics and 77% in reading and writing. Over the last four years, third grade math rates increased every year by approximately 4%; the most progress of any subject/grade combination. The four-year gains were highest among Native American and Hispanic students, approximately 20% for each group. Reading scores also rose over the last four years, but to a lesser extent than mathematics. Native American, Hispanic and Black third graders made the greatest gains, 13%, 12% and 8% respectively (Figures 5, 6 and 7).

**Figure 5**

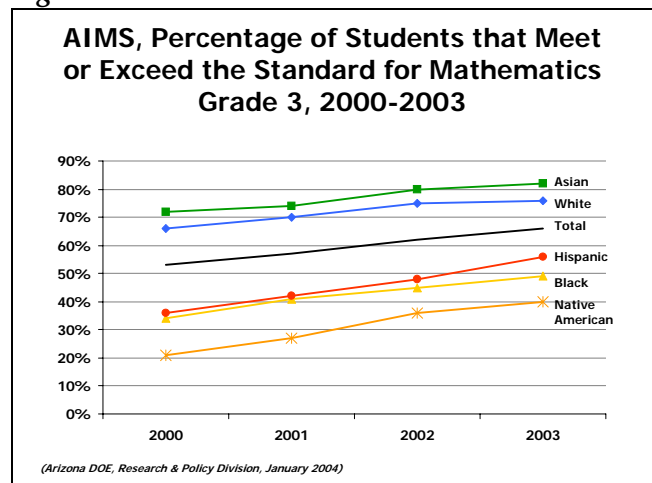


Figure 6

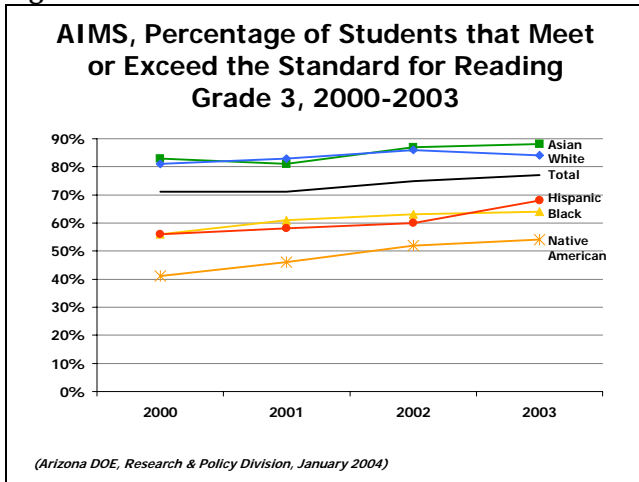


Figure 8

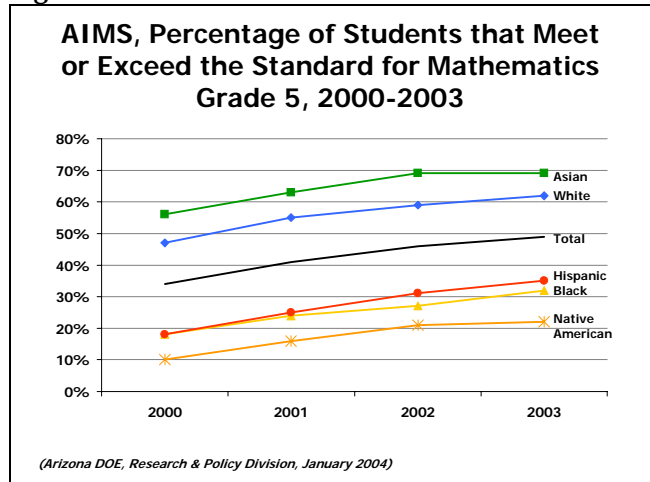


Figure 7

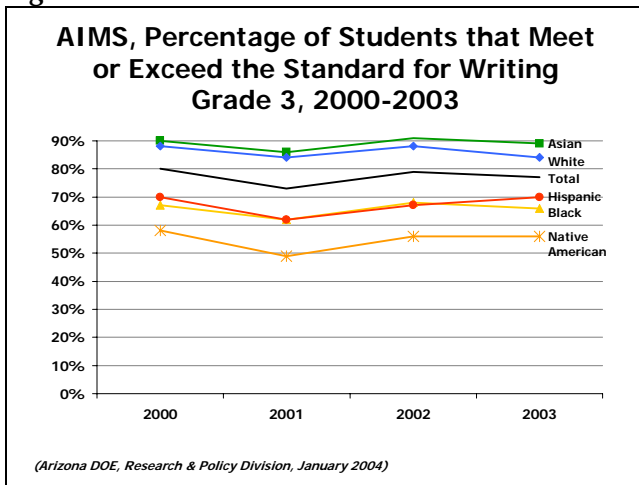
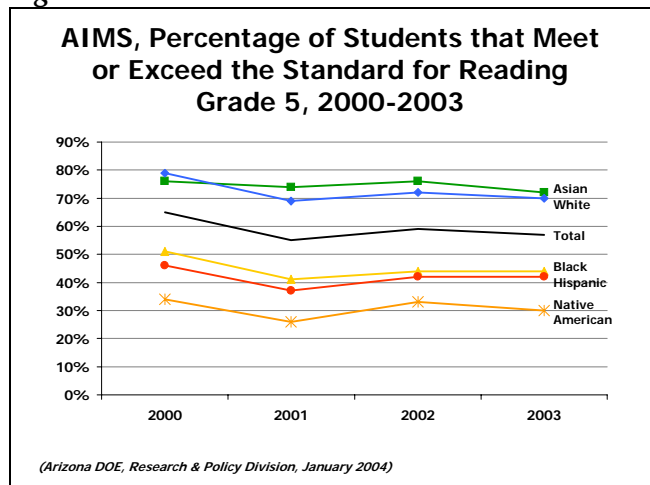
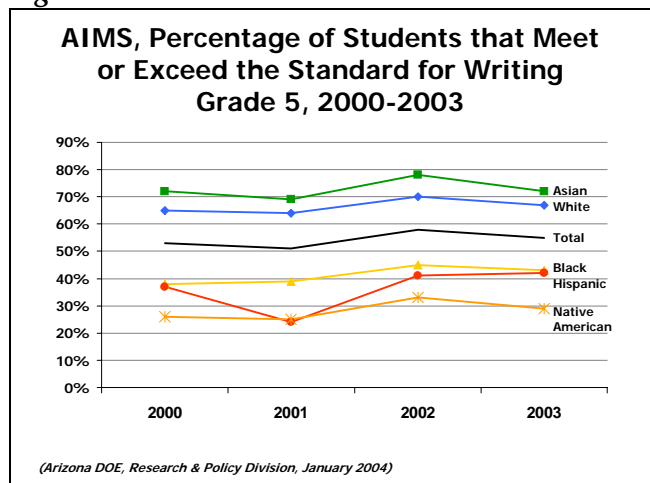


Figure 9



Similar to their third grade peers, Arizona's fifth graders performed best on reading and writing, but did not reach the same attainment level as the third graders. In 2003, 57% and 55% of fifth graders met or exceeded the standards in reading and writing, and 49% in mathematics. The biggest improvements occurred in mathematics where all racial/ethnic groups posted material gains from 2000 to 2003 of 12-17%. Furthermore, the gains in mathematics were more uniform across racial/ethnic groups than in third grade. Fifth graders, however, lost ground in their overall reading rates. Fifth-grade reading scores *decreased* by 8% since 2000 (Figures 8, 9 and 10).

Figure 10



Eighth graders had the most difficulty with AIMS, particularly with mathematics. The low eighth grade scores complete a general trend of weakening academic performance as the grade level increases. While 65% of eighth graders met or exceeded the standards in reading and 46% in writing, only 21% performed at grade level in mathematics. Incidentally, the State Board of Education, in response to the low eighth grade math scores, voted in February 2004 to lower the passing threshold for the eighth grade math test. Finally, in addition to relatively low absolute performance levels, the achievement gains in eighth grade are either modest or negative across all racial/ethnic groups (Figure 11, 12 and 13).

Figure 11

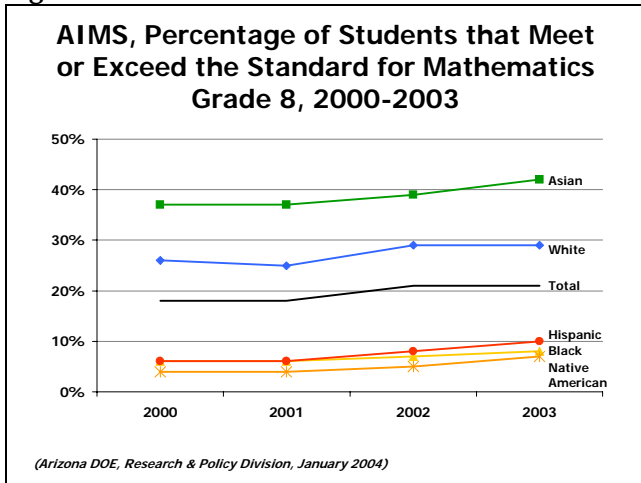


Figure 12

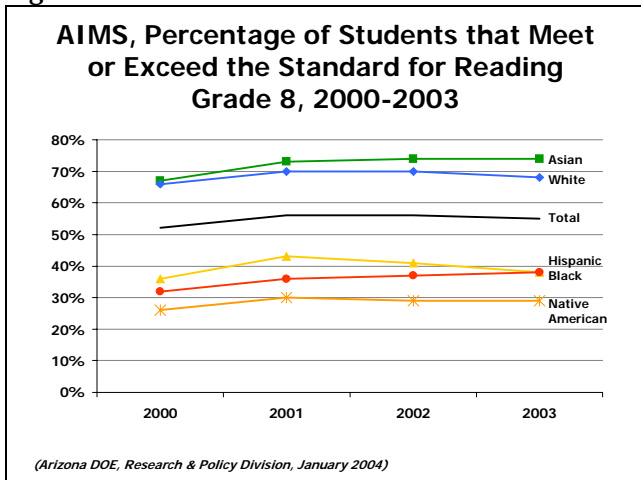
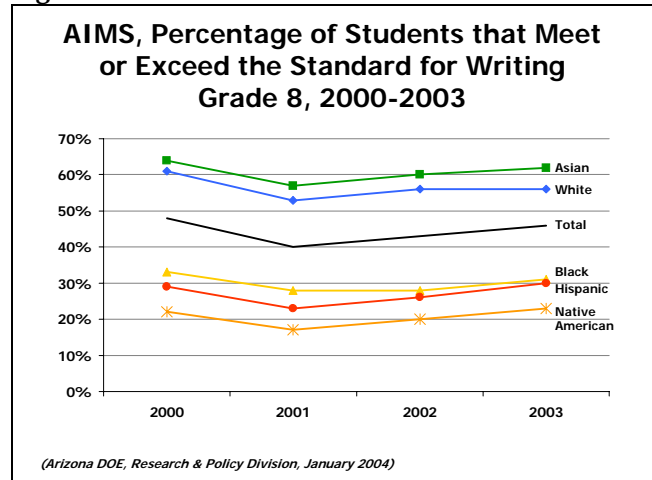


Figure 13



*Arizona's Instrument to Measure Standards – High School Cohort Analysis*

To date, there are few, if any, analyses of high school AIMS results that concur with Arizona's assessment policies. The most common presentation of high school AIMS includes the results for a single year. The central question in this type of cross-sectional analysis is, "what percentage of high school students pass AIMS in a given year?" This question has been publicized so many times that Town Hall attendees have likely been exposed exclusively to the annual release of AIMS results for discrete grade levels, such as tenth grade.

A cross-sectional analysis, however, is an incomplete picture of student achievement on high school AIMS. These analyses do not encompass the achievement of students throughout the course of their high school education. To be consistent with Arizona assessment policies one must address the question, "what percentage of high school students will pass AIMS by the end of a traditional four-year high school education?"

Contrary to popular media portrayals, *not* passing AIMS in tenth grade does not mean the student has failed the assessment for good. Once AIMS becomes a graduation requirement

beginning with the class of 2006, students will be afforded five opportunities to pass the assessment, once each semester beginning in the spring of tenth grade. Students must pass all three subject tests, reading, writing and mathematics to receive a high school diploma. Once a student passes any of the three subject area tests, the student is not required to retake that particular test. In addition, if a student returns for a fifth year of high school, or more, the student will receive additional opportunities to take the assessment.

At this point, no graduating class has taken all five administrations as a requirement for a high school diploma. When AIMS becomes a graduation requirement, public attention will shift from isolated tenth grade passage rates to a discussion of how many students have passed the assessment during their high school career. In order to understand how the graduation requirement policies will affect student passage rates over time, we introduce a model that simulates the multi-year, multiple administration AIMS graduation policy using the results from a previous class.

The results are an estimation of the AIMS passage rates for the class of 2003 and the analysis is based on the following assumptions. First, the passage rates for the fall assessments in 2001 and 2002 have been imputed. The class of 2003 actually took the assessment three times, spring 2001, 2002 and 2003. The two fall passage rates were imputed to simulate the five-test administration schedule. The analysis assumes that the passage rate for the fall administration in a given school year is equivalent to the spring administration of that same school year. Second, the simulated results are *not* the graduation rate.

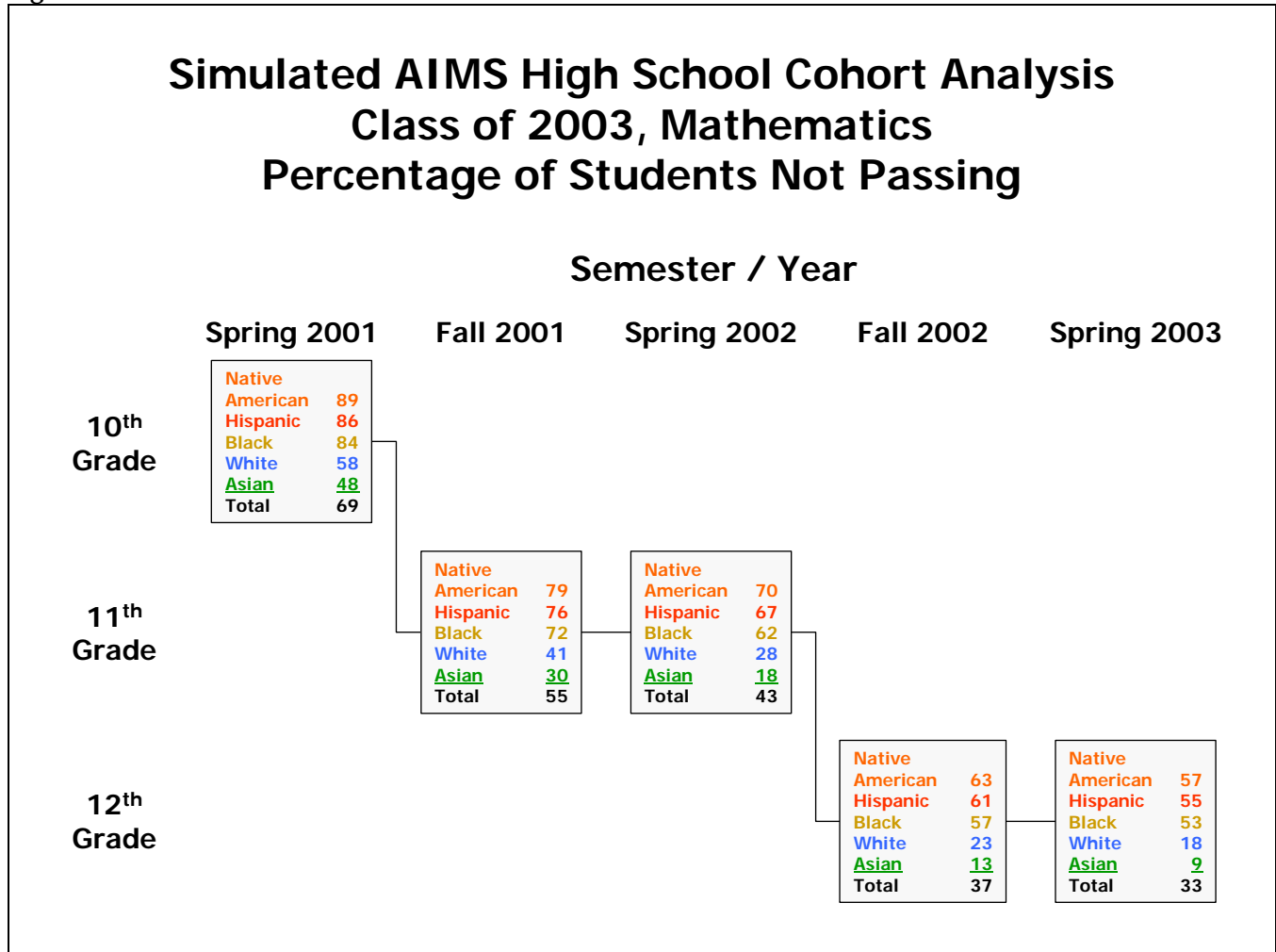
The analysis assumes that no students left or entered the cohort and that all students who did not pass the assessment in a given year, re-took the assessment the following year. Third, the students in the class of 2003 did not take AIMS as a graduation test. Therefore, the passage rates may not be indicative of the effort the students might have demonstrated on the assessment had they been taking it under a high-stakes environment.

The estimated passage rates for the class of 2003 vary substantially by subject area. Students in the class of 2003 passed AIMS at the highest rate as sophomores during the first administration in spring 2000, when all students were required to take the assessment. Approximately 68% of students passed the reading and writing subject area tests on the first attempt, and 31% of the class passed the mathematics assessment. In general, the passage rates decreased as the students progressed through high school.

At the end of a typical four-year high school education, an estimated 6% of students would not have passed the reading and writing tests. In mathematics, approximately 33% of the class of 2003 would not have passed the test.

The estimated passage rates differ considerably by racial/ethnic group. In mathematics, approximately 55% of Hispanic, Native American and Black students in the class of 2003 would not have achieved a passing score. The inter-group disparities are also prevalent in reading and writing, but the failure rates are considerably lower in these subject areas. Figure 14 is a pictorial representation of the cohort analysis for mathematics. See Appendix A for the reading and writing data.

Figure 14



### Arizona High School Outcomes

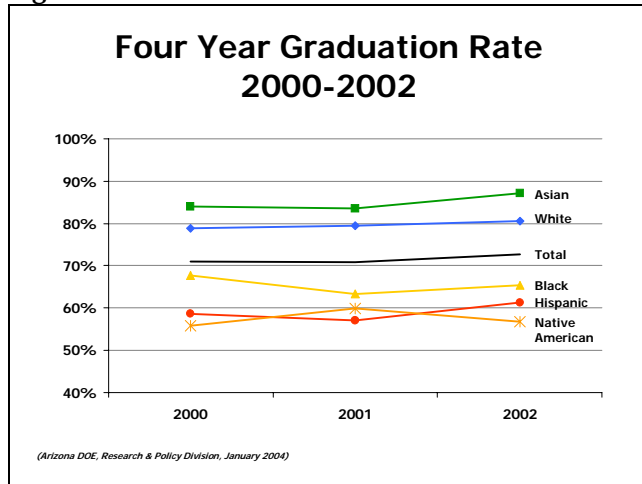
High school outcomes are an informative educational statistic. The ADE reports longitudinal statistics that follow a group of students, or cohort class, throughout high school, a period of four to five years. Upon conclusion of the traditional four years of high school, there are four student outcomes: graduated, left school without graduating, received a GED or enrolled for an additional year of study. This analysis focuses on the outcomes and associated rates for recent graduating classes, the class of 2000, 2001 and 2002.<sup>4</sup>

The most familiar statistic is the high school graduation rate. The *Four-year Graduation Rate* represents the percentage of a cohort class that received a high school diploma by completion of their fourth year of study. From 2000 to 2002, the Arizona high school graduation rate fluctuated between 71 and 72.7%.

The overall graduation rates, however, mask substantial differences in four-year graduation rates by race/ethnicity. Asian students had the highest rates for all three years followed by White students. The graduation rates for Hispanic, Native American and Black students consistently lagged behind those of their Asian

and White peers by 15-25%. Furthermore, Hispanic, Native American and Black students are *not* closing the gap in graduation rates (Figure 15).

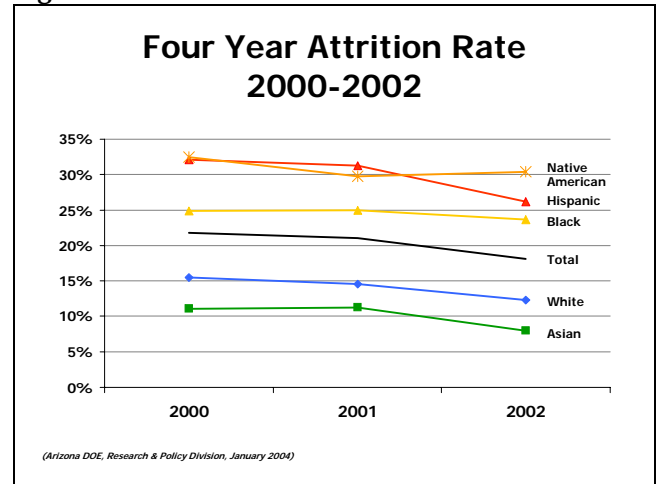
Figure 15



Graduation is obviously the desired outcome of a student’s high school education; however, not all students receive a diploma. In some cases, students leave high school and this departure is captured in a lesser-known statistic called the attrition rate. The *Four-year Attrition Rate* includes students who dropped out of high school and students who left school, but whose academic status and location are unknown to the school. The 2000 attrition rate for Arizona public school students was approximately 20% and had decreased slightly over the following two years.

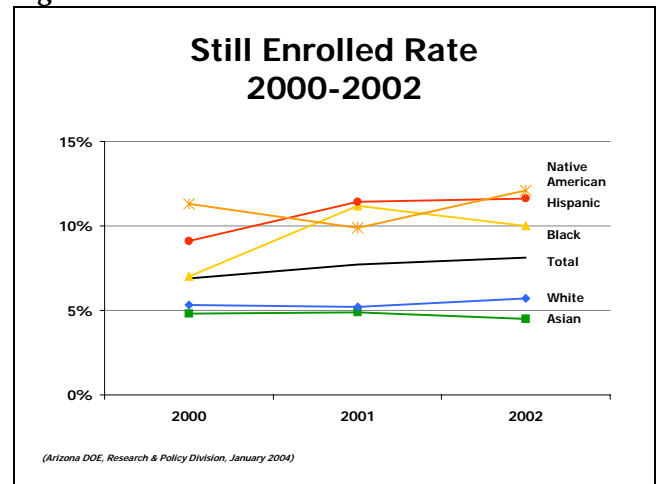
Similar to graduation rates, there is substantial variability in attrition rates across racial/ethnic groups. Native American students leave public high schools at the highest rate. Thirty percent of Native American students in the class of 2002 were not credited with receiving a high school diploma and either dropped out of school or their status is unknown. Nevertheless, the long-term trends are positive because every student group had an overall net decrease in their attrition rate over the three-year time span (Figure 16).

Figure 16



After four years of high school, approximately 7-8% of Arizona students return to school for another year of study to complete high school graduation requirements. These students are accounted for in the *Four-year Still Enrolled Rate*. Hispanic, Native American and Black students enroll for a fifth year of study at the highest rates, approximately 9-12% (Figure 17).

Figure 17



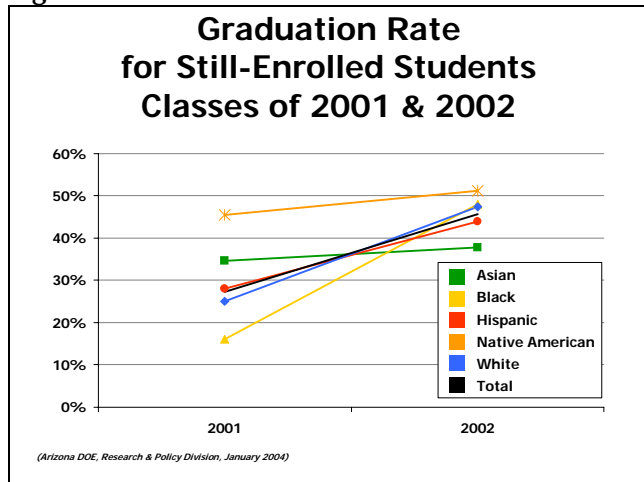
If students are successful in graduating by the end of their *fifth* year of high school, their accomplishment is credited in the *Five-year Graduation Rate*. The five-year graduation rate demands special consideration, because AZ LEARNS, the state’s school accountability system, uses the five-year model as the official Arizona high school graduation rate.<sup>5</sup> By

including the fifth year of high school, the graduation rate for the class of 2002 increases to 76.4%, an increase of 3.7% over the four-year graduation rate.

In theory, a fifth year of high school allows students the time to complete graduation requirements and provides public schools the opportunity to count these students as graduates in published reports. The important policy question is whether students who enroll for a fifth year actually complete graduation requirements. The *Graduation Rate for Still Enrolled Students* is the percentage of students who enrolled for a fifth year of high school and graduated by the end of that academic year. Approximately 4,700 students in each of the 2001 and 2002 classes enrolled for a fifth year of high school. In 2001, 27.3% of those students received a diploma. In 2002, the graduation rate for still enrolled students increased to 45.7%.

There are some encouraging results in the racial/ethnic group analysis. First, 45 and 51% of Native American students who enrolled for a fifth year of high school received a high school diploma by the end of the 2001 and 2002 academic years respectively, the highest rates of all racial/ethnic groups. Second, the large inter-group discrepancies evident in the class of 2001 converged by 2002 (Figure 18).

Figure 18



## Student Characteristics

Schools are not the sole contributor to a student’s education. Non-school factors such as home, community and personal characteristics play a determinant role as well. Non-school factors shape how well students are prepared for school and their rate of progress. Therefore, student characteristics, outside of school, are important in any discussion of Arizona’s student population. For obvious privacy reasons, the data available on student characteristics are limited. Instead, education researchers and policy makers use proxies as substitute indicators of student characteristics that cannot be directly measured. The two most common proxies in education research and policy are eligibility for the federal free and reduced lunch program and student mobility.

Family income is the sole eligibility criterion for the free/reduced lunch program. Program eligibility is used as a proxy for poverty and/or disadvantaged status. In 2003, 49% of the Arizona K-12 student population was eligible for free/reduced lunch, 12.4% higher than the national average.<sup>6</sup> This gap indicates that Arizona has a higher percentage of students living in poverty and/or disadvantaged conditions than other states.

As for mobility, education policy makers commonly assume that Arizona has a highly mobile student population. Student mobility plays a prominent role in education debates because existing research indicates that switching schools can be detrimental to a student’s educational progress. As a student characteristic, mobility also can be used as a proxy for the stability of a student’s home conditions.

In 2002, approximately 20% of all student entries into Arizona K-12 public schools transferred to another school. This percentage includes students who moved multiple times. In

addition, the percentage of student transfers has steadily increased over the past five years. In 1998, the transfer-out rate was approximately 13% and the bulk of the growth has occurred in the past two years.<sup>7</sup>

### Higher Education

#### *Arizona's University Enrollment Eligibility Rates*

University enrollment eligibility rates provide another means to understand academic success. University enrollment eligibility is based on both "aptitude" and "competency" measures. Aptitude measures incorporate standardized test scores (e.g., ACT, SAT), class rank, and

grade point average (GPA), while competency measures focus on course subject requirements.<sup>8</sup> University enrollment eligibility must not be confused with high school graduation: one may graduate from high school and still not be eligible to attend a university. In 1999, 42% of public school graduates were eligible for admission to a state university. Enrollment eligibility, broken down by race/ethnicity, reveals striking disparities by racial/ethnic group. Sixty-two percent of Asian students were eligible for University enrollment, followed by 49% of White students. On the other extreme, Native American students had an eligibility rate of 21% (see Table A).

*Table A*

<b>Arizona High School Graduates Eligible for University Enrollment</b>						
<b>1999</b>	<b>African American</b>	<b>American Indian</b>	<b>Asian American</b>	<b>Hispanic</b>	<b>White</b>	<b>Total</b>
<b>Arizona Public High School Graduating Class 1</b>	<b>1,473</b>	<b>2,346</b>	<b>864</b>	<b>8,920</b>	<b>22,125</b>	<b>35,728</b>
<b>Public High School Graduates Eligible for Admission 2</b>	<b>27%</b>	<b>21%</b>	<b>62%</b>	<b>29%</b>	<b>49%</b>	<b>42%</b>
<b>Estimate of College-eligible High School Graduates</b>	<b>398</b>	<b>493</b>	<b>536</b>	<b>2,587</b>	<b>10,842</b>	<b>14,856</b>
<b>Actual University First-time Resident Freshman, Fall 1999 3</b>	<b>252</b>	<b>312</b>	<b>486</b>	<b>1,224</b>	<b>6,138</b>	<b>8,412</b>
<p>1. U.S. Department of Education National Center for Educational Statistics, <i>Common Core of Data, 1998-99</i>.</p> <p>2. Arizona Board of Regents 1998 Eligibility Study.</p> <p>3. Residential Freshman include graduates of private high schools, but excludes international students and students with unknown ethnicity.</p>						

### **College Attendance and Graduation Rates**

In 2000, 326,159 students of all ages enrolled in some type of Arizona postsecondary institution. The bulk of Arizona's college students attended *public* two-year institutions, followed by *public* four-year institutions.<sup>9</sup> There are enrollment disparities by race/ethnicity across all postsecondary institutions. The vast majority of postsecondary students are White. Minorities

make up only 29% of the total student population. Asians, Native Americans and Blacks contribute 4% each. Seventeen percent of Arizona's postsecondary institution population is Hispanic, making it the largest minority population in the state's postsecondary institutions. However, the Hispanic population is underrepresented in comparison to the overall state population where Hispanics constitute 25%.

Despite the low number of minorities enrolled in Arizona’s postsecondary institutions, there have been positive trends in minority achievement of associate’s and bachelor’s degrees. Between 1991 and 2001, the total associate’s degrees awarded to minority students increased by 197% and bachelor’s degrees by 70%. Hispanic students had the largest increases. Associate’ degrees earned by Hispanics rose by approximately 32% and bachelor’s degrees rose by 4%.<sup>10</sup>

### Implications

The demographics of Arizona’s classrooms are in a continuous state of change. Over the last decade, minority students, particularly Hispanics, have fueled the increases in public school enrollment. At the present rate, the minority student population will soon become the majority.

Given the enrollment trends, the consistent achievement gaps by racial/ethnic groups should be disconcerting to the public. According to every K-12 academic indicator, Arizona’s major minority groups consistently lag behind their White and Asian peers. The sub-par achievement of the major minority groups in grades K-12 carries forward into lower university eligibility, attendance and graduation rates.

A number of important policy issues arise from these findings, such as the need to improve student academic achievement, especially at the higher grade levels, increase graduation rates and strengthen the K-16 educational pipeline. It is not in Arizona’s interest to produce two diverse populations – one that is academically prepared to meet the rigors of the changing workplace and another population that lacks the skills necessary to be successful.

*Louis Olivas, Ed.D. and Shon Zelman co-authored this brief.*

## Appendix A

Simulated AIMS High School Cohort Analysis, Class of 2003, Reading, Percentage of Students Not Passing

	<u>Spring 01</u>	<u>Fall 01</u>	<u>Spring 02</u>	<u>Fall 02</u>	<u>Spring 03</u>
Asian	23%	12%	6%	4%	2%
Black	47%	31%	20%	16%	13%
Hispanic	53%	38%	27%	21%	16%
Native American	61%	40%	26%	19%	14%
White	19%	8%	4%	2%	1%
Total	33%	19%	11%	8%	6%

Simulated AIMS High School Cohort Analysis, Class of 2003, Writing, Percentage of Students Not Passing

	<u>Spring 01</u>	<u>Fall 01</u>	<u>Spring 02</u>	<u>Fall 02</u>	<u>Spring 03</u>
Asian	21%	10%	5%	2%	1%
Black	43%	27%	17%	10%	6%
Hispanic	51%	34%	23%	15%	9%
Native American	59%	40%	26%	16%	10%
White	21%	9%	4%	2%	1%
Total	32%	19%	11%	6%	3%

*Note: Shaded cells represent imputed results.*



*thinkAZ is an independent, non-partisan research institute dedicated to providing thorough, accurate and impartial information on public policy issues that impact the economic and social well-being of the state.*

---

## ENDNOTES

<sup>1</sup> United States Census Bureau, United States Census 2000 and Census 90, January and March 2002, <<http://www.census.gov/>> (21 January 2004).

<sup>2</sup> Arizona Department of Education, AIMS Report Wizard, 2003, <<http://www.ade.az.gov/profile/publicview/>> (19 January 2004).

<sup>3</sup> Arizona Department of Education, Arizona's Instrument to Measure Standards (AIMS): State Board Approved AIMS Performance Levels Grades K-12, <<http://www.ade.state.az.us/standards/aims/PerformanceStandards/performancelevels.asp>> (1 March 2004).

<sup>4</sup> Arizona Department of Education, Graduation Rate Study Information, 2003, <<http://www.ade.az.gov/researchpolicy/grad/>> (20 January 2004).

<sup>5</sup> Arizona Department of Education, "Arizona Schools Accountability System: Technical Manual," February 17, 2004, <[http://www.ade.az.gov/azlearns/AZ\\_LEARNS\\_Technical\\_Manual\\_2003.pdf](http://www.ade.az.gov/azlearns/AZ_LEARNS_Technical_Manual_2003.pdf)> (4 March 2004).

<sup>6</sup> National Center for Education Statistics, The Nations Report Card, May 2003, <<http://nces.ed.gov/nationsreportcard>> (19 January 2004).

<sup>7</sup> State rates can be found on the Arizona Department of Education website under "Find a Report Card" ([http://www.ade.az.gov/srcs/find\\_school.asp?rdoYear=2004](http://www.ade.az.gov/srcs/find_school.asp?rdoYear=2004)) (8 March 2004)

<sup>8</sup> The University of Arizona Office of Assessment and Enrollment Research, "The 1996-1998 Arizona High School Transcript Study: Eligibility of Arizona's 1996 and 1998 High School Graduates for Admission to the Arizona University System," November 2001, <[http://aer.arizona.edu/AER/Enrollment/Policy\\_Analyses/HSTFinalReport.pdf](http://aer.arizona.edu/AER/Enrollment/Policy_Analyses/HSTFinalReport.pdf)> (20 January 2004).

<sup>9</sup> Tonya M. Drake and Christine A. Forester, "Arizona Minority Student Success Report," Arizona Minority Education Policy Analysis Center, 2003, 10.

<sup>10</sup> Drake and Forester, 11.