

## Indiana SAT Scores by Race/Ethnicity

There has been increased interest and activity over the past few years regarding university policy and practice for improving the academic quality of incoming students while enhancing the commitment to diversity. With regard to the academic quality of incoming students, two years ago the Board of Trustees approved an admissions policy for IU Bloomington that reaffirms the use of SAT/ACT scores as one among a number of criteria to be considered in undergraduate admissions, with preference given to students who score above the state (for residents) or national (for nonresidents) average. The Board of Trustees also approved an admissions policy for IUPUI that considers SAT/ACT scores and gives preference to students who score at or above the state average. SAT/ACT scores may also be reviewed and considered by the regional campuses in making admissions decisions. With regard to diversity, last year the Board of Trustees approved a goal of doubling the enrollment of underrepresented minorities on the Bloomington campus by 2013-14. More recently, other IU campuses have been charged with developing campus plans to increase underrepresented minority enrollment.

The purpose of this issue of *FYIU* is to inform further the development of policy and practice related to the joint realization of these academic quality and diversity goals. Specifically, we explore past and potential future trends in Indiana's SAT scores by race/ethnicity. This analysis uses information on Indiana's college-bound seniors provided by the [College Board](#) and on public high school enrollment numbers provided by the [National Center for Education Statistics](#).<sup>1</sup>

In presenting this information, we do not intend to suggest that SAT/ACT scores are or should be the only measures of academic achievement considered by IU campuses in admissions decisions. All IU admissions offices employ a holistic approach to assessing student potential. Nor do we propose that they should be the only measures of the academic quality of entering cohorts. Moreover, we do not wish to promote any unfounded assumptions about the validity of such scores in predicting the academic achievement of first-year students from different backgrounds. However, we believe it is important to review the recent and possible future trends given the stated role of SAT/ACT scores in

current campus admissions policies and practices. It is also important to note here that SAT/ACT scores are considered only for admissions decisions regarding recent high school graduates, who are not the majority of new students on many IU campuses. Admission considerations of transfer students and of students who have delayed their college entry include different criteria.

Some information provided in this issue is based on projections about the future – specifically, future high school enrollments and future SAT takers.<sup>2</sup> Such projections often do not pan out as expected for a variety of reasons. In fact, part of our motivation for presenting these projections is to promote the development of policy and practice that shapes a different future. In a sense, these projections serve as a warning as to what might occur if current conditions prevail.

### Summary of Findings

Between 1998 and 2007...

- Twelfth-grade enrollment in Indiana public high schools increased by 7%, and it is expected to increase by another 4% over the next decade. Much of this growth is the result of an increasing school-age Hispanic population.
- The number of African American and Hispanic SAT takers in the state increased at a slower rate than their respective 12<sup>th</sup> grade enrollments. While the number of these students taking the SAT is expected to increase over the next decade, this projected increase will not overcome current racial/ethnic imbalances in Indiana's four-year college-bound population.
- SAT verbal and math scores increased slightly for African American and Hispanic Hoosiers. Although the state's racial/ethnic gap in verbal and mathematics achievement remains large, it has decreased some over time.
- African American and Hispanic students were especially underrepresented among SAT takers scoring at or above the state average on the verbal and math tests. If the current trend continues, African Americans and Hispanics will represent roughly 3% and 6% (respectively) of all SAT takers in the state who earn higher than a 500 on the verbal and math tests.

<sup>1</sup> Given the predominance of the SAT within the state of Indiana, this report focuses exclusively on student scores from this test.

<sup>2</sup> Projection methodology is located in Appendix 3.

## 2007 Indiana SAT Verbal Scores

Between 1998 and 2007, SAT verbal scores did not change substantially for the overall Indiana college-bound population. Verbal scores increased slightly for African Americans and Hispanics and decreased slightly for White students (See Table 1). Given some change in these average verbal scores, the racial/ethnic gap in verbal achievement has decreased slightly over time (from 79 to 75 points for African Americans and from 47 to 41 points for Hispanics).

**Table 1.**  
**Indiana SAT Verbal Scores**

	1998		2007	
	Mean	SD	Mean	SD
Afr. Am	426	94	428	91
Hisp.	458	97	464	92
White	505	95	503	96
Total <sup>†</sup>	497	99	497	99

<sup>†</sup> Total also includes American Indians, Asians, students who marked 'Other' and students who did not respond to the race item

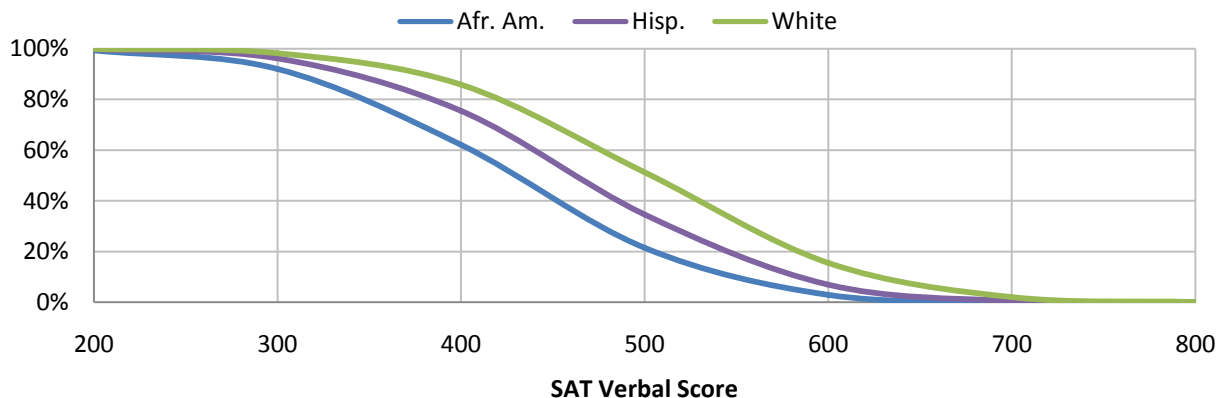
An examination of the full distribution of students by verbal score provides a clearer picture of the current racial/ethnic gaps in verbal achievement within the state (See Table 2 and Figure 1). For example, compared to over one-half of all white students, only 21% of African American students and 35% of Hispanic students have a verbal score above 500. Only 3% and 7% of African Americans and Hispanics, respectively, score above 600 on the verbal test, compared to 16% of white students. Given their relative size within the college-bound population, these small percentages of African American and Hispanic students that score well above the state average on the SAT verbal test translate into very small numbers of students (e.g., 78 African Americans and 95 Hispanics score above 600) who are excelling in verbal reasoning as defined by this criterion.

**Table 2.**  
**Estimated Number and Percentage of IN 2007 College-Bound Seniors Above SAT Verbal Scores**

	Total	SAT > 400		SAT > 500		SAT > 600		SAT > 700	
		Number	%	Number	%	Number	%	Number	%
Afr. Am.	2,658	1,650	62%	570	21%	78	3%	4	0%
Hisp.	1,366	1,032	76%	474	35%	95	7%	7	1%
White	34,398	29,525	86%	17,628	51%	5,371	16%	691	2%
Total <sup>†</sup>	42,911	35,839	84%	20,890	49%	6,375	15%	876	2%

<sup>†</sup> Total also includes American Indians, Asians, students who marked 'Other' and students who did not respond to the race item

**Figure 1.**  
**Percentage Falling Above SAT Verbal Score**



## 2007 Indiana SAT Math Scores

Over the past decade, SAT math scores increased for the overall Indiana college-bound population and for students in all reported racial/ethnic subgroups (See Table 3). Increases in average math scores for African Americans and Hispanics were larger than the increase in the average math score for white students, decreasing the racial/ethnic gap in mathematics achievement (from 97 to 89 points for African Americans and from 55 to 43 points for Hispanics).

**Table 3.**  
**Indiana SAT Math Scores**

	1998		2007	
	Mean	SD	Mean	SD
Afr. Am	411	94	425	90
Hisp.	453	99	471	95
White	508	101	514	96
Total <sup>†</sup>	500	104	507	100

<sup>†</sup> Total also includes American Indians, Asians, students who marked 'Other' and students who did not respond to the race item

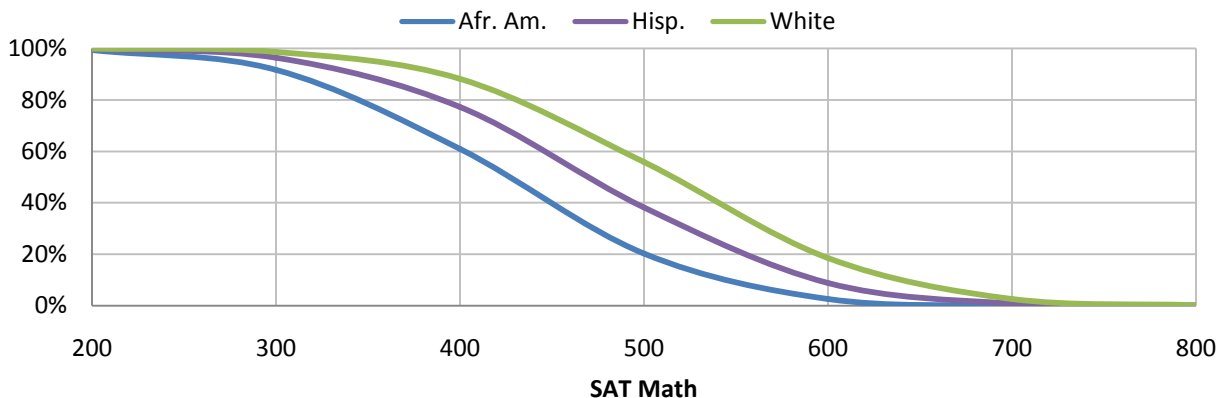
An examination of the full distribution of students by math score provides a clearer picture of the existing racial/ethnic gaps in mathematics achievement within the state (See Table 4 and Figure 2). For example, compared to over one-half of all white students, only 20% of African American students and 38% of Hispanic students have a math score above 500. Only 3% and 9% of African Americans and Hispanics, respectively, score above 600 on the math test, compared to 19% of white students. Given their relative size within the college-bound population, these small percentages of African American and Hispanic students that score well above the state average on the SAT math test translate into very small numbers of students (e.g., 69 African Americans and 120 Hispanics score above 600) who are excelling in mathematics as defined by this criterion.

**Table 4.**  
**Estimated Number and Percentage of IN 2007 College-Bound Seniors Above SAT Math Scores**

	Total	SAT > 400		SAT > 500		SAT > 600		SAT > 700	
		Number	%	Number	%	Number	%	Number	%
Afr. Am.	2,658	1,620	61%	538	20%	69	3%	3	0%
Hisp.	1,366	1,056	77%	521	38%	120	9%	11	1%
White	34,398	30,356	88%	19,193	56%	6,370	19%	906	3%
Total <sup>†</sup>	42,911	36,807	86%	22,680	53%	7,547	18%	1,161	3%

<sup>†</sup> Total also includes American Indians, Asians, students who marked 'Other' and students who did not respond to the race item

**Figure 2.**  
**Percentage Falling Above SAT Math Score**



## Public High School 12<sup>th</sup> Grade Enrollment

Over the past ten years, 12<sup>th</sup> grade enrollment among Indiana public high schools has increased by an estimated 7%, from a count of 64,829 in graduation year 1998 to a projected count of 69,084 in graduation year 2007 (See Table 5).<sup>3</sup> Over the next decade, 12<sup>th</sup> grade enrollment is expected to increase by an additional 4%, up to a projected count of 71,859 by graduation year 2016. Much of this growth is the result of an increasing school-age Hispanic population within the state. Between 1998 and 2007, Hispanic 12<sup>th</sup> grade enrollment increased by an estimated 88%, and between 2007 and 2016, Hispanic 12<sup>th</sup> grade enrollment is expected to increase by 155%. This large projected increase in the Hispanic high school-aged population will put their enrollment numbers on par with those of African Americans, and it will alter the racial/ethnic representation of high school seniors from the current 16% who are students of color to a projected 23% who are students of color by 2016.

**Table 5.**  
**Indiana Public High School 12<sup>th</sup> Grade Enrollment (Actual and Projected), by Race**

	1998	2007 <sup>†</sup>	2016 <sup>†</sup>	% Change '98-'07 <sup>†</sup>	% Change '07-'16 <sup>†</sup>
<b>Number</b>					
African American	5,626	6,933	7,585	23%	9%
Hispanic	1,490	2,805	7,160	88%	155%
White	56,985	58,201	55,289	2%	-5%
Other <sup>*</sup>	728	1,145	1,824	57%	59%
Year Total	64,829	69,084	71,859	7%	4%
<b>% of Year Total</b>					
African American	9%	10%	11%		
Hispanic	2%	4%	10%		
White	88%	84%	77%		
Other <sup>*</sup>	1%	2%	3%		

Source: Common Core of Data, National Center for Education Statistics

<sup>†</sup> Projections based on survival cohort method

<sup>\*</sup> Includes American Indian and Asian students

## SAT College-Bound Seniors

Between 1998 and 2007, the number of college-bound seniors taking the SAT increased by 10%, from 39,036 to 42,911 (See Table 6). This ten-year percent increase is greater than the respective percent increase in public high school 12<sup>th</sup> grade enrollment for the same years (at 7%), suggesting that over time a greater percentage of seniors took the SAT. We expect this same rate of increase in SAT takers over the next ten years (at 11%), despite the much lower anticipated growth in 12<sup>th</sup> grade enrollments (at 4%) between 2007 and 2016. Again, this means that, over the next ten years, an increasing share of Indiana's senior classes will be college-bound.

Much of this growth in the number of SAT takers is again the result of an increase in the number of Hispanic students who are college-bound. Over the past ten years, the number of Hispanic SAT takers increased by one-half of their 1998 size, and over the next decade, the number of Hispanic SAT takers is expected to more than double in size. Despite this apparent increase over the past decade, however, the number of Hispanic SAT takers has been increasing at a slower rate than Hispanic 12<sup>th</sup> grade enrollments (51% compared to 88%). This trend suggests that, despite a greater number of Hispanic SAT takers over the past decade, college-bound Hispanic students made up a smaller proportion of all Hispanic 12<sup>th</sup> graders. This trend over the past decade is similar for African Americans (19% compared to 23%), but it is in the opposite direction for white students (8% compared to 2%) and for the state population as a whole (10%

<sup>3</sup> Because high school graduation year 2007 data are not yet available, enrollment projections for this year are provided in Table 5.

compared to 7%). In contrast to these past trends, according to our projections, over the next decade the percent change in the number of SAT takers will be more comparable to the percent change in 12<sup>th</sup> grade enrollments for African American, Hispanic, and white students. This means that the inequities in college participation rates should decrease somewhat over the next decade. It would require larger percent increases in the number of Hispanic and African American SAT takers than those projected, however, to overcome current racial/ethnic imbalances in Indiana's college-bound population.

**Table 6.**  
**Indiana SAT Takers (Actual and Projected), by Race**

	1998	2007	2016 <sup>†</sup>	% Change '98-'07	% Change '07-'16 <sup>†</sup>
<b>Number</b>					
African American	2,227	2,658	2,920	19%	10%
Hispanic	907	1,366	3,469	51%	154%
White	31,838	34,398	34,224	8%	-1%
Other <sup>*</sup>	4,064	4,489	6,954	10%	55%
Year Total	39,036	42,911	47,567	10%	11%
<b>% of Year Total</b>					
African American	6%	6%	6%		
Hispanic	2%	3%	7%		
White	82%	80%	72%		
Other <sup>*</sup>	10%	10%	15%		

Source: College-Bound Seniors, College Board

<sup>†</sup> Projections based on survival cohort method and regression analysis

<sup>\*</sup> Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

Due to discrepancies between the racial/ethnic categories that appear in the Common Core of Data (CCD) and SAT state reports, percentages located in the bottom of Table 5 and Table 6 should not be directly compared.<sup>4</sup> An examination of how the percentages change over time, however, is important to consider. For all racial/ethnic groups but African Americans, the change in the racial/ethnic representation of SAT takers is in the same direction as the change in racial/ethnic representation among 12<sup>th</sup> graders at public high schools. For African Americans, however, their representation among SAT takers remains constant despite an increase over time in their representation among 12<sup>th</sup> graders.

### SAT College-Bound Seniors above State Average on the Verbal Test<sup>5</sup>

Over the past decade, the estimated total number of Indiana college-bound seniors who scored above 500 (i.e., approximately the state average in 1998) on the SAT verbal test increased by 9%, from 19,710 in 1998 to 20,890 in 2007 (See Table 7). The percent increase over the next decade in the number of students above this same score is projected to be only slightly higher, at 12%. In both instances, the percent change in students above this particular score is comparable to the percent change in the total number of SAT takers. This suggests that, in the future, approximately one-half of SAT takers will score above 500. This, in turn, suggests that the state average on the verbal test, currently at approximately 500, will not change substantially over the coming decade.

<sup>4</sup> The SAT has racial/ethnic categories that do not map directly to those provided by CCD. Students provide a self-report of their race on the SAT, which may differ from that provided by CCD, and students may elect not to answer the racial/ethnic item on the SAT.

<sup>5</sup> Only the approximate state average (i.e., 500) will be discussed in this section of the issue. Other selected scores (i.e., 550 and 600) on the verbal test are provided in Appendix 1.

Although there appears to be little change over time in the percentage of students who score above the state average on the verbal test of the SAT, this trend, based on all students, masks some important differences by race/ethnicity. Specifically, the 1998-07 percent change and the projected 2007-16 percent change in the number of Hispanic students that score above the state average are greater in magnitude than the comparable percent changes in the total number of Hispanic SAT takers. This trend suggests that increases over time in the number of Hispanic students that score above the state average are not only due to shifts in the population who take the SAT, but are also due to an increase in the average verbal SAT score for this racial/ethnic group over time. Currently, 35% of Hispanics score above 500 on the verbal test, compared to 33% in 1998. By 2016, a projected 36% will score above 500 on this test. Due to this projected increase both in the number of Hispanics taking the SAT and in the test scores of these students, by 2016, Hispanic students will represent a projected 5% of the college-bound population with an SAT verbal score above 500, compared to 2% of that same population currently. This increased representation by 2016, however, still falls short of the representation of Hispanic students within the larger SAT taking population during the comparable time period (at 7%).

**Table 7.**  
**Indiana SAT Takers with Verbal Score Above 500 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	480	22%	570	21%	631	22%	19%	11%
Hisp.	301	33%	474	35%	1,242	36%	57%	162%
White	16,587	52%	17,628	51%	17,694	52%	6%	<1%
Other*	1,801	44%	2,219	49%	3,905	56%	23%	76%
Year Total	19,170	49%	20,890	49%	23,471	49%	9%	12%
<b>% of Year Total</b>								
Afr. Am.	3%		3%		3%			
Hisp.	2%		2%		5%			
White	87%		84%		75%			
Other*	9%		11%		17%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

\* Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

The 1998-07 percent change and the 2007-16 percent change in the number of African American students that score above 500 on the verbal test are on par with the comparable percent change in the total number of African American SAT takers. This pattern suggests that the average verbal score for African Americans will not change in the coming years. As fewer than one-quarter of African Americans score above the state average as compared to roughly one-third of Hispanic students and one-half of white students, the representation of African Americans in the college-bound population with an SAT verbal score above the state mean is projected to remain constant at 3%, falling well short of the representation of African American students within the overall SAT taking population (at 6%).

### SAT College-Bound Seniors above State Average on the Math Test<sup>6</sup>

Between 1998 and 2007, the estimated total number of Indiana college-bound seniors who have scored above a 500 (i.e., approximately the state average in 1998) on the SAT math test increased by 16%, 19,501 to 22,680 (See Table 8). The percent increase over the next decade in the number of students above this score is projected to be higher, at 19%.

<sup>6</sup> Only the approximate state average (i.e., 500) will be discussed in this section of the issue. Other selected scores (i.e., 550 and 600) on the math test are provided in Appendix 2.

In both instances, the percent increase over time in the number of students above 500 has outpaced the percent increase in the total number of SAT takers. As a result, the representation of students above 500 has shifted from 50% to 53% of the total SAT taking population between 1998 and 2007, and it is projected to shift from 53% to 57% between 2007 and 2016. Given the standard properties of SAT scores, this shift in the distribution of students scoring above 500 suggests that the average math score for the state will increase to about 517 by 2016.

**Table 8.**  
**Indiana SAT Takers with Math Score Above 500 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	383	17%	538	20%	739	25%	41%	37%
Hisp.	290	32%	521	38%	1,558	45%	80%	199%
White	16,924	53%	19,193	56%	20,398	60%	13%	6%
Other <sup>*</sup>	1,904	47%	2,428	54%	4,332	62%	28%	78%
Year Total	19,501	50%	22,680	53%	27,026	57%	16%	19%
<b>% of Year Total</b>								
Afr. Am.	2%		2%		3%			
Hisp.	1%		2%		6%			
White	87%		85%		75%			
Other <sup>*</sup>	10%		11%		16%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

<sup>\*</sup> Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

For all racial/ethnic groups presented in this issue, the percent increase between 1998 and 2007 and the projected percent increase between 2007 and 2016 in the number of students scoring above 500 on the math test has outpaced their respective percent increases in the total number of SAT takers over time. This suggests that increases over time in the number of students that score above 500 are due not only to shifts in the number of students who take the SAT, but are also due to increases in the average math SAT score for all racial/ethnic groups. This trend may be most evident for white students, who, despite a projected 1% *decrease* in the number taking the SAT in the coming decade, have an anticipated 6% *increase* in the number of students scoring above 500 on the math test.

Despite an increase in average SAT math scores over time for all races/ethnicities, these gains do not appear to be large enough for African American and Hispanic students to overcome current patterns of underrepresentation among students who score above 500 on this test. By 2016, not quite one-half of all Hispanic SAT takers and only one-quarter of African American SAT takers are projected to score above 500 on the math test. Because close to one-half of all Hispanic students will score above 500, the projected representation of Hispanic students among students who fall above this score (at 6%) will be only slightly less than their projected representation among all SAT takers (at 7%). At 3% of those students scoring above 500 on the math test, African Americans, however, will fall well short of their representation within the overall SAT taking population (at 6%).

## Conclusions

Indiana University is committed to educating Hoosiers and ensuring that the undergraduate student body represents the increasing diversity of the state. Given current realities regarding the achievement gaps by race/ethnicity, increasing the academic quality of entering students while simultaneously increasing the racial/ethnic representation of undergraduate classes will not be easy. Although the projections provided in this report do not take into consideration

current efforts to close the racial/ethnic achievement gap in high schools, efforts over the past decade have not resulted in substantial changes in SAT scores by race/ethnicity. In general, our projections are based on roughly the same gains in SAT scores that appeared over the last decade. Unless substantially new actions and policies are enacted, the current analysis portends that by 2016, universities such as Purdue, Ball State, Indiana State, and IU will be competing with each other and with in-state private and other out-of-state institutions over the admission of roughly 1500 or fewer Hispanic and fewer than 1000 African American Hoosiers who have attained SAT scores over 500 on the verbal and math tests. There are many possible ways to address this dilemma. We will mention three of them here to stimulate thought:

- Programs and activities aimed at improving the preparation of underrepresented minority students, such as the School of Education's Pathways to Success initiative
- Expanding the use of admission criteria that are more appropriate for predicting the success in college for traditionally underserved populations
- Implementing more extensive and more accessible college preparation and support programs for those who emerge from high school with insufficient credentials

Given the seeming intractability of gaps in SAT/ACT score performance, changing the projected future course will likely require significant efforts in all of these suggested areas as well as several other significant and creative approaches. To aid in this effort, Appendix 4 provides for each Indiana county descriptive indicators of the academic quality and racial/ethnic representation of recent college-bound high school graduates. We hope that this information will be of use as policy makers, university wide and at each campus, work toward the joint realization of increasing the academic quality and diversity of future entering student cohorts.

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## Appendix 1: SAT takers with Verbal Score Above Selected Scores

**App 1 Table 1.**  
**Indiana SAT Takers with Verbal Score Above 550 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	208	9%	239	9%	271	9%	15%	13%
Hisp.	156	17%	238	17%	659	19%	53%	177%
White	10,120	32%	10,740	31%	10,678	31%	6%	-1%
Other*	1,111	27%	1,454	32%	2,626	38%	31%	81%
Year Total	11,595	30%	12,671	30%	14,234	30%	9%	12%
<b>% of Year Total</b>								
Afr. Am.	2%		2%		2%			
Hisp.	1%		2%		5%			
White	87%		85%		75%			
Other*	10%		11%		18%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

\* Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

**App 1 Table 2.**  
**Indiana SAT Takers with Verbal Score Above 600 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	71	3%	78	3%	93	3%	9%	20%
Hisp.	65	7%	95	7%	284	8%	45%	200%
White	5,051	16%	5,371	16%	5,236	15%	6%	-3%
Other*	590	15%	831	19%	1,535	22%	41%	85%
Year Total	5,778	15%	6,375	15%	7,149	15%	10%	12%
<b>% of Year Total</b>								
Afr. Am.	1%		1%		1%			
Hisp.	1%		1%		4%			
White	87%		84%		73%			
Other*	10%		13%		21%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

\* Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

## Appendix 2: SAT takers with Math Score Above Selected Scores

**App 2 Table 1.**  
**Indiana SAT Takers with Math Score Above 550 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	155	7%	219	8%	292	10%	41%	33%
Hisp.	150	17%	279	20%	891	26%	86%	220%
White	10,786	34%	12,171	35%	12,492	37%	13%	3%
Other <sup>*</sup>	1,207	30%	1,650	37%	3,126	45%	37%	89%
Year Total	12,297	32%	14,319	33%	16,801	35%	16%	17%
<b>% of Year Total</b>								
Afr. Am.	1%		2%		2%			
Hisp.	1%		2%		5%			
White	88%		85%		74%			
Other <sup>*</sup>	10%		12%		19%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

<sup>\*</sup> Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

**App 2 Table 2.**  
**Indiana SAT Takers with Math Score Above 600 (Estimated and Projected), by Race**

	1998		2007		2016 <sup>†</sup>		% Change '98-'07	% Change '07-'16 <sup>†</sup>
	Number	% of Race	Number	% of Race	Number	% of Race		
Afr. Am.	49	2%	69	3%	111	4%	39%	61%
Hisp.	64	7%	120	9%	368	11%	89%	205%
White	5,768	18%	6,370	19%	6,537	19%	10%	3%
Other <sup>*</sup>	663	16%	989	22%	1,982	29%	49%	101%
Year Total	6,544	17%	7,547	18%	8,998	19%	15%	19%
<b>% of Year Total</b>								
Afr. Am.	1%		1%		1%			
Hisp.	1%		2%		4%			
White	88%		84%		73%			
Other <sup>*</sup>	10%		13%		22%			
Total	100%		100%		100%			

Source: College-Bound Seniors, College Board; Estimates based on score means and standard deviations

<sup>†</sup> Projections based on survival cohort method and regression analysis

<sup>\*</sup> Includes American Indians, Asians, students who marked 'Other' and students who did not reply to the item

## Appendix 3: Projection Methodology

### Projections of Public High School Senior Enrollments

Projections of high school senior enrollments by race/ethnicity are based on the cohort survival method. This common method of enrollment forecasting first establishes a ratio of senior enrollment in the current year to junior enrollment in the prior year. Junior enrollment in the current year is then multiplied by this ratio to estimate the senior enrollment for the upcoming year. The following is a numeric example of the calculation of a cohort survival ratio for Hispanic enrollments:

Required Information	Calculations
2004 junior enrollment = 2,702	Cohort survival ratio = $2,473/2,702 = 0.92$
2005 senior enrollment = 2,473	Projected 2006 senior enrollment = $2,962 * 0.92 = 2,711$
2005 junior enrollment = 2,962	

Cohort survival ratios are fairly stable over time for most racial/ethnic groups. Exceptions, however, are the cohort survival ratios for American Indians and Asian Americans, both of which fluctuate more over time due to the relatively small number of these students within the population. To ensure the stability in the cohort survival ratios by grade level, a composite ratio was calculated using five years of data for each race/ethnicity.

This composite ratio for each grade level was then multiplied by the prior grade level enrollment to arrive at estimates of senior enrollments through the year 2015-16. Due to the limits of space, an abbreviated example of enrollment projections through the year 2010-2011 for Hispanic students is illustrated below. Cohort survival methods often have less error than other projection methods, but as suggested by the table, the further out the projections go, the more error is likely compounded as estimated enrollments are based on prior estimates of enrollments.

	Actual		Cohort Ratio	Projected				
	2004-05	2005-06		2006-07	2007-08	2008-09	2009-10	2010-11
Grade 1	5,323	5,886						
Grade 2	4,964	5,362	1.008	5,932				
Grade 3	4,724	5,111	1.040	5,578	6,170			
Grade 4	4,494	5,028	1.060	5,418	5,913	6,541		
Grade 5	4,256	4,817	1.066	5,361	5,777	6,304	6,974	
Grade 6	4,143	4,514	1.065	5,128	5,707	6,150	6,712	7,425

### Projections of SAT Takers

The projection of SAT takers by race/ethnicity is based on regression analysis of ten years of data on the ratio of SAT takers to high school seniors in the state. For each year of available data, the ratio was calculated by dividing the number of SAT takers of a particular race/ethnicity by the number of public high school seniors of that same race/ethnicity. Regression analysis was used to find the best fitting trend line given the available years of data. Projections of the ratio of SAT takers to high school seniors for each race were calculated using the results of the

regression equation. The projected number of SAT takers by race for a given year was then calculated by multiplying the projected senior class enrollment for a given race by the projected SAT-HS ratio for that race. Here is a numeric example of these calculations based on Hispanic SAT takers:

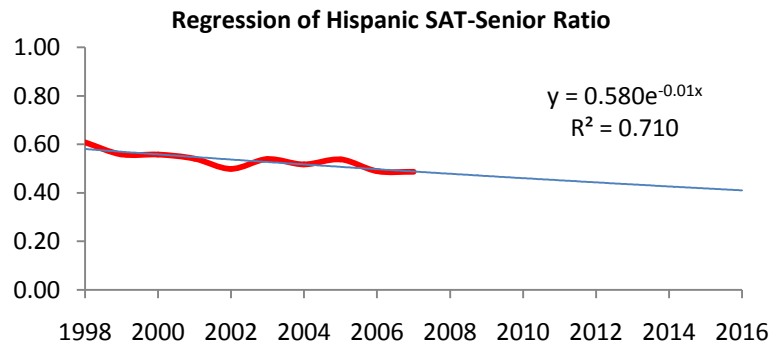
#### 2006-07 Ratio Calculation

Projected 2006-07 seniors = 2,805  
 Actual 2006-07 SAT takers = 1,366  
 2006-07 SAT-HS Ratio =  $1,366/2,805 = 0.49^{\dagger}$

#### 2007-08 Regression-Based Calculation

Projected 2007-08 SAT-HS Ratio =  $0.52^{\dagger}$   
 Projected 2007-08 seniors = 3,130  
 Projected 2007-08 Sat takers =  $3,130 * 0.52 = 1,642$

<sup>†</sup> The ratio for 2006-07 is below the regression line, which explains the slight increase for 2007-08 despite an overall downward trend.



### Projections of SAT Takers Above Verbal and Math Scores

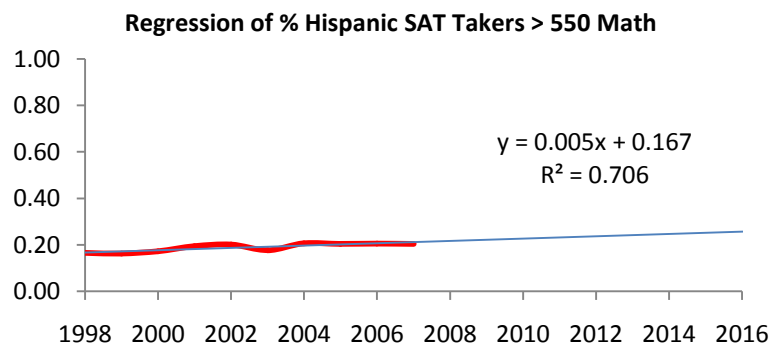
The projections of SAT takers above a certain score on the verbal or math tests are based on a similar regression analysis of ten years of data on the estimated percentage of students above the score. The example below will use a score of 550. For each year of available data, the percentage of each race/ethnicity scoring above a score of 550 on the test was estimated using the state's published mean and standard deviation for each race/ethnicity. This method of estimation assumes that test scores are normally distributed within racial/ethnic category. Regression analysis was used to find the best fitting trend line given the available data. Projections of the percentage of SAT takers that fall above the score were calculated using the results of the regression equation. The projected number of SAT takers that fall above the score by race/ethnicity for a given year was then calculated by multiplying the projected number of SAT takers for a given race/ethnicity by the projected percentage of SAT takers for given race/ethnicity that fall above the score. Here is a numeric example of these computations for Hispanic SAT takers:

#### 2006-07 % with Math Score > 550

Mean = 471, SD = 95,  $x = 550$   
 $z = (550-471)/95 = 0.827$   
 Estimated % Above 550 =  $P > z = 20.4\%$

#### 2007-08 Regression-Based Calculation

Projected 2007-08 % Above 550 = 21.7%  
 Projected 2007-08 SAT takers = 1,642  
 Projected 2007-08 Sat takers =  $1,642 * 0.217 = 356$



**Appendix 4. College-Bound Seniors, Share of Underrepresented Minorities (URM), and SAT Scores by County within IU Campus Region**

	Public High School Graduates	Public H. S. Core-40 Graduates	Core-40 as % of Pub. High School Grads	Public H.S. College-Bound Graduates	College-Bound as % of Pub. H.S. Grads	URM as % of Pub. H.S. Enrollment	URM as % of Pub. H.S. Core-40 Grads	SAT Takers Attending Pub. H.S.	SAT Takers as % of Pub. H.S. Grads	Verbal Score (Weighted Avg.)	Math Score (Weighted Avg.)
Adams	361	240	66.5%	266	73.7%	5.2%	2.9%	241	66.8%	501	512
Allen	3,134	2,138	68.2%	2,492	79.5%	23.7%	15.0%	1,889	60.3%	495	515
Bartholomew	696	574	82.5%	599	86.1%	4.9%	5.4%	490	70.4%	518	531
Benton	127	66	52.0%	81	63.8%	5.5%	0.0%	76	59.8%	496	510
Blackford	131	104	79.4%	85	64.9%	1.0%	1.0%	63	48.1%	502	485
Boone	620	493	79.5%	516	83.2%	1.8%	0.6%	502	81.0%	525	546
Brown	148	83	56.1%	110	74.3%	0.8%	1.2%	71	48.0%	527	515
Carroll	201	145	72.1%	146	72.6%	3.3%	0.0%	138	68.7%	485	525
Cass	430	291	67.7%	289	67.2%	11.4%	4.8%	191	44.4%	484	494
Clark	835	514	61.6%	606	72.6%	10.9%	7.6%	481	57.6%	476	473
Clay	271	217	80.1%	233	86.0%	1.9%	0.0%	146	53.9%	476	474
Clinton	362	212	58.6%	238	65.7%	9.0%	5.2%	188	51.9%	481	517
Crawford	103	56	54.4%	60	58.3%	0.3%	0.0%	51	49.5%	497	470
Daviess	235	164	69.8%	197	83.8%	3.0%	0.6%	139	59.1%	472	474
Dearborn	611	368	60.2%	472	77.3%	0.7%	0.5%	317	51.9%	494	510
Decatur	254	158	62.2%	173	68.1%	0.6%	0.6%	156	61.4%	482	505
DeKalb	474	327	69.0%	347	73.2%	1.6%	0.9%	234	49.4%	486	505
Delaware	1,125	649	57.7%	960	85.3%	9.3%	6.9%	666	59.2%	494	502
Dubois	528	369	69.9%	428	81.1%	3.0%	1.6%	393	74.4%	484	517
Elkhart	1,817	1,196	65.8%	1,323	72.8%	19.5%	10.1%	1,143	62.9%	486	504
Fayette	187	95	50.8%	130	69.5%	3.0%	5.3%	90	48.1%	494	486
Floyd	668	413	61.8%	548	82.0%	8.5%	5.1%	430	64.4%	494	506
Fountain	186	112	60.2%	116	62.4%	1.1%	0.0%	131	70.4%	468	471
Franklin	195	98	50.3%	97	49.7%	0.2%	1.0%	109	55.9%	456	486
Fulton	160	118	73.8%	98	61.3%	2.1%	0.8%	94	58.8%	472	488
Gibson	345	210	60.9%	272	78.8%	3.1%	2.9%	182	52.8%	473	504
Grant	681	321	47.1%	483	70.9%	12.3%	8.7%	378	55.5%	477	491
Greene	332	181	54.5%	260	78.3%	1.2%	1.1%	193	58.1%	485	498
Hamilton	2,464	1,984	80.5%	2,213	89.8%	5.3%	2.9%	2,042	82.9%	532	548
Hancock	747	482	64.5%	521	69.7%	3.0%	1.0%	510	68.3%	501	504
Harrison	439	252	57.4%	307	69.9%	0.9%	0.4%	253	57.6%	499	494
Hendricks	1,394	1,172	84.1%	1,128	80.9%	5.4%	4.2%	865	62.1%	515	522
Henry	521	324	62.2%	364	69.9%	1.7%	0.9%	268	51.4%	485	501
Howard	814	580	71.3%	663	81.4%	10.5%	8.6%	517	63.5%	503	516
Huntington	403	249	61.8%	264	65.5%	1.7%	2.0%	213	52.9%	487	517
Jackson	404	255	63.1%	231	57.2%	3.3%	2.4%	219	54.2%	489	509
Jasper	282	213	75.5%	214	75.9%	4.8%	4.7%	192	68.1%	479	498
Jay	193	107	55.4%	80	41.5%	1.1%	0.0%	106	54.9%	478	507

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Jefferson	268	186	69.4%	197	73.5%	1.8%	2.2%	170	63.4%	495	499
Jennings	237	116	48.9%	172	72.6%	1.7%	2.6%	132	55.7%	478	489
Johnson	1,396	1,094	78.4%	1,059	75.9%	2.3%	2.2%	945	67.7%	496	507
Knox	359	221	61.6%	285	79.4%	2.4%	1.8%	178	49.6%	504	505
Kosciusko	853	621	72.8%	586	68.7%	7.1%	3.7%	542	63.5%	495	506
LaGrange	338	229	67.8%	194	57.4%	4.8%	3.1%	164	48.5%	471	501
Lake	4,474	2,824	63.1%	3,363	75.2%	45.1%	27.5%	2,876	64.3%	473	478
LaPorte	992	660	66.5%	569	57.4%	13.4%	6.4%	477	48.1%	482	488
Lawrence	413	203	49.2%	259	62.7%	1.6%	2.5%	236	57.1%	488	507
Madison	1,087	637	58.6%	811	74.6%	11.9%	6.4%	596	54.8%	478	482
Marion	6,415	4,532	70.6%	4,954	77.2%	44.2%	31.9%	3,192	49.8%	496	504
Marshall	490	348	71.0%	323	65.9%	8.1%	3.4%	322	65.7%	483	505
Martin	127	85	66.9%	101	79.5%	0.6%	0.0%	76	59.8%	458	486
Miami	369	295	79.9%	257	69.6%	4.4%	4.4%	199	53.9%	489	495
Monroe	835	550	65.9%	687	82.3%	5.3%	3.5%	577	69.1%	531	535
Montgomery	411	253	61.6%	292	71.0%	3.7%	1.2%	237	57.7%	500	512
Morgan	704	420	59.7%	508	72.2%	1.0%	0.7%	349	49.6%	497	501
Newton	167	100	59.9%	120	71.9%	4.4%	3.0%	89	53.3%	479	483
Noble	479	343	71.6%	330	68.9%	9.8%	9.3%	279	58.2%	484	504
Ohio	73	73	100.0%	42	57.5%	0.6%	0.0%	27	37.0%	482	493
Orange	209	106	50.7%	128	61.2%	1.6%	0.0%	109	52.2%	468	482
Owen	166	111	66.9%	101	60.8%	1.4%	2.7%	72	43.4%	498	485
Parke	175	109	62.3%	138	78.9%	0.6%	0.9%	89	50.9%	483	477
Perry	201	109	54.2%	125	62.2%	0.7%	0.0%	93	46.3%	462	501
Pike	120	87	72.5%	89	74.2%	0.2%	0.0%	61	50.8%	484	479
Porter	1,743	1,324	76.0%	1,317	75.6%	8.3%	7.5%	1,322	75.8%	501	515
Posey	337	169	50.1%	229	68.0%	1.6%	0.0%	161	47.8%	495	512
Pulaski	153	105	68.6%	101	66.0%	1.0%	0.0%	90	58.8%	477	494
Putnam	419	271	64.7%	251	59.9%	1.7%	2.2%	241	57.5%	479	498
Randolph	316	219	69.3%	200	63.3%	1.1%	0.5%	162	51.3%	474	477
Ripley	356	231	64.9%	228	64.0%	0.3%	0.4%	217	61.0%	476	496
Rush	145	98	67.6%	121	83.4%	1.0%	0.0%	101	69.7%	500	496
Scott	203	135	66.5%	123	60.6%	0.9%	0.0%	133	65.5%	472	463
Shelby	459	298	64.9%	356	77.6%	2.9%	1.0%	304	66.2%	496	506
Spencer	288	191	66.3%	216	75.0%	1.4%	0.0%	183	63.5%	469	497
St. Joseph	2,220	1,413	63.6%	1,694	76.3%	26.0%	14.2%	1,359	61.2%	492	513
Starke	226	120	53.1%	108	47.8%	2.6%	0.0%	125	55.3%	463	480
Steuben	331	202	61.0%	219	66.2%	2.6%	2.5%	165	49.8%	498	513

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Sullivan	189	97	51.3%	112	59.3%	0.5%	0.0%	74	39.2%	479	487
Switzerland	78	65	83.3%	50	64.1%	0.6%	0.0%	47	60.3%	460	447
Tippecanoe	1,169	783	67.0%	871	74.5%	11.9%	7.8%	789	67.5%	522	549
Tipton	193	133	68.9%	140	72.5%	2.7%	0.8%	115	59.6%	496	507
Union	91	65	71.4%	80	87.9%	0.6%	0.0%	51	56.0%	461	502
Vanderburgh	1,368	795	58.1%	1,100	80.4%	15.3%	8.7%	539	39.4%	519	528
Vermillion	183	108	59.0%	129	70.5%	0.2%	0.0%	106	57.9%	481	472
Vigo	907	613	67.6%	764	84.2%	7.6%	4.7%	555	61.2%	496	503
Wabash	374	206	55.1%	249	66.6%	2.9%	0.5%	218	58.3%	485	508
Warren	88	60	68.2%	71	80.7%	0.6%	1.7%	53	60.2%	463	464
Warrick	634	387	61.0%	491	77.4%	1.9%	1.0%	392	61.8%	497	517
Washington	289	148	51.2%	204	70.6%	0.7%	0.7%	127	43.9%	480	477
Wayne	611	404	66.1%	449	73.5%	6.4%	5.2%	340	55.6%	502	503
Wells	345	240	69.6%	207	60.0%	2.5%	1.7%	195	56.5%	505	523
White	293	182	62.1%	201	68.6%	5.8%	5.5%	164	56.0%	472	496
Whitley	381	247	64.8%	307	80.6%	1.3%	0.0%	238	62.5%	476	484
<b>Grand Total</b>	<b>58,625</b>	<b>39,151</b>	<b>66.8%</b>	<b>43,888</b>	<b>74.9%</b>	<b>15.4%</b>	<b>9.8%</b>	<b>35,020</b>	<b>59.7%</b>	<b>494</b>	<b>507</b>

Source: 2005-06 High School Enrollments, SAT Scores, and Graduates; Indiana Department of Education