ACT Insights in Education & Work

More Information, More Informed Decisions:

Why test-optional policies do *NOT* benefit institutions or students

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Abstract

In this research report, we review commonly held beliefs about test-optional policies and practices. Focusing solely on empirical evidence, we highlight research findings that directly address the stated intentions and actual outcomes of such practices. Throughout the paper, we raise concerns with test-optional policies as they pertain both to institutions as well as the students they serve. We conclude with the recommendation that colleges and universities employ holistic models of education readiness and success, supported by the notion that more information about students is better than less.

Introduction

In this report, empirical evidence that directly addresses the stated intentions and actual outcomes of test-optional practices is summarized. The five assertions reviewed in this report are:

1. Test-optional policies increase the diversity of enrolled students
2. Test-optional policies do not result in admitting less qualified students
3. Test scores do not add any information above and beyond HSGPA
4. Test scores are not predictive of college success beyond the first year of college
5. Test scores are biased measures of student readiness for minority and underserved students

The studies and empirical findings referenced within this document include a review of prior research findings found in peer-reviewed articles and technical reports, as well as original research. We conclude with the recommendation that stakeholders, including students, parents, and educators, use more information—not less—to evaluate one's academic preparation level and make important educational decisions.

Assertion 1: Test-optional policies increase the diversity of enrolled students

The stated goal of many institutions that have adopted test-optional admissions policies is to increase the diversity of students on their campus (Belasco, Rosinger, & Hearn, 2014; Espenshade, & Chung, 2011; Mattern, Shaw, & Kobrin, 2011). However, empirical evidence linking test-optional policies to increased diversity is lacking. In fact, a recent study of 180 selective liberal arts colleges, of which 32 were test-optional, suggests that the diversity of the student body is largely unaffected (Belasco et al., 2014). On the other hand, one outcome that has been consistently impacted by test-optional policies is the number of applicants an institution receives. There is clear evidence that institutions that transition to a test-optional policy experience a substantial uptake in the number of students applying to their institution (Belasco et al., 2014; Epstein, 2009; Syverson, 2007). Results also indicated that test-optional institutions reported significantly higher test scores as compared to test-requiring colleges, and that the difference in test scores has increased over time.

Given these data, concerns over the motives of institutions who adopt test-optional policies have been raised (Belasco et al., 2014; Diver, 2006; Epstein, 2009). Specifically, if more students apply, institutions can adopt a lower selection ratio providing greater leeway to be more selective with the remaining predictors (e.g., high school grades, class rank, quality of courses completed). In addition to being able to admit a smaller percentage of applicants, the reported average test scores of enrolled students at test-optional institutions will likely be inflated since students with high admission test scores are more likely to submit their scores under a test-optional policy. Results from the Belasco et al. study (2014) suggest that this may be the case. A result, whether intentional or unintentional, may be an increase in the institutional ranking since student selectivity (test scores, high school rank, and selection ratio) accounts for 12.5% of the weight in determining where an institution falls on the *U.S. News College Rankings*. Perhaps more disconcerting is that students rely on reported institutional test score information to decide which schools to apply to and which schools to attend. If this information is faulty, we are doing a disservice to students by directing them towards colleges that may not be the best fit.

Assertion 2: Test-optional policies do not result in admitting less qualified students

Proponents of test-optional policies claim that such policies do not lead to admitting less qualified students. A study by Wainer (2011) explicitly tested this hypothesis by examining the performance of students from the Bowdoin College class of 1999. Matching Bowdoin data to College Board records, Wainer was able to obtain the test scores of Bowdoin students who did not submit scores. He found that non-submitters performed about 120 points lower on the SAT as compared to students who did submit their scores. Moreover, their first year grade point average (FYGPA) was substantially lower, as would have been predicted by their lower SAT scores. The average FYGPA was roughly 0.20 lower for non-submitters as compared to submitters.

In a more recent study based on a multi-institutional sample, Hiss and Franks (2014) revisited this issue by examining college outcomes of students admitted under test-optional policies. The authors conclude that test-optional practices do not result in the admittance of less qualified students as there were few significant differences in the college performance of non-submitters versus submitters. However, the paper focuses primarily on the entire sample, which includes six public institutions (representing 58% of students in the total sample), which admit students based on high school rank and grades if the student has reached a certain grade threshold (e.g., HSGPA of 3.0 or higher) but still require admissions tests. We argue that the most relevant data to address the efficacy and validity of test-optional admissions policies would be the results from the 20 private colleges (representing over 37,000 students) admitted under what the authors define as "pure optional testing."

Focusing on the results for the students attending the private institutions, Hiss and Franks found that students submitting test scores had slightly higher grades in high school than non-submitters. In addition, test submitters outperformed non-submitters on freshmen grade-point-average (GPA) and cumulative GPA. Non-submitters were also less likely to declare a STEM major. Given that STEM fields tend to have more rigorous grading standards, the differences in grades between submitters and non-submitters would likely be larger if corrections for course difficulty were applied (Westrick, 2015).

In terms of predictive validity, the authors found that test scores accounted for additional variance beyond high school grade point average (HSGPA) for all institutions included in the study, and the effect was even more pronounced at private institutions using the "pure optional testing" model. However, the most compelling reason for using admissions tests is found when examining the validity of admissions decisions made based on non-submitters which increased from 0.16 with grades alone to 0.26 when admission test scores were incorporated for the private colleges. When examining results for the "pure optional testing" model, the evidence clearly indicates that admissions tests add important incremental validity in predicting college success beyond HSGPA. These results are likely an underestimate of the efficacy of admissions testing because it didn't control for different course taking patterns between submitters and non-submitters. Research has shown STEM courses are more stringently graded than non-STEM course grades (Westrick, 2015). Similarly, other differences in the academic preparation and background of test score submitters and non-submitters were not addressed.

Assertion 3: Test scores do not add any information above and beyond HSGPA

Critics of standardized tests often point to the small additional variance accounted for in college outcomes by test scores after taking into account HSGPA as evidence that test scores do not provide meaningful information beyond high school grades (Mattern, Kobrin, Patterson, Shaw, & Camara, 2009). However, the same argument applies when evaluating the additional variance accounted for by HSGPA over test scores. A recent meta-analysis of four-year colleges indicates that both HSGPA and ACT® test scores are strong predictors of FYGPA (Westrick, Le, Robbins, Radunzel, & Schmidt, 2015); albeit the relationship between HSGPA and FYGPA was stronger ($r = 0.58$) as compared to that of test scores and FYGPA ($r = 0.51$).[1] With that in mind, HSGPA will account for a larger percentage of variance beyond test scores than vice versa when predicting FYGPA; however, that does not negate the importance of test scores.

As an alternative method for illustrating the added value of test scores, researchers have begun to show graphically the differences in expected outcomes at various HSGPA and test scores values (Bridgeman, Pollack, & Burton, 2004; Sawyer, 2010). For example, as shown in Figure 1, the probability of earning a B or higher in the first year of college varies dramatically among students with the same HSGPA but different ACT Composite scores (Sawyer, 2010). Among students with a 4.0 HSGPA, students with an ACT Composite score of ten have less than a 30% probability of earning a B or higher as compared to over a 95% probability for students with an ACT Composite score of 30. Even for less extreme cases, the results illustrate that test scores meaningfully discriminate among students with the same HSGPA. Therefore, institutions that ignore test score information would in effect consider all applicants with the same HSGPA as having the same likelihood of being successful once on campus; however, the results indicate that this is not the case.

[1] Correlations were corrected for range restriction due to selection based on ACT score, HSGPA, and socioeconomic status.

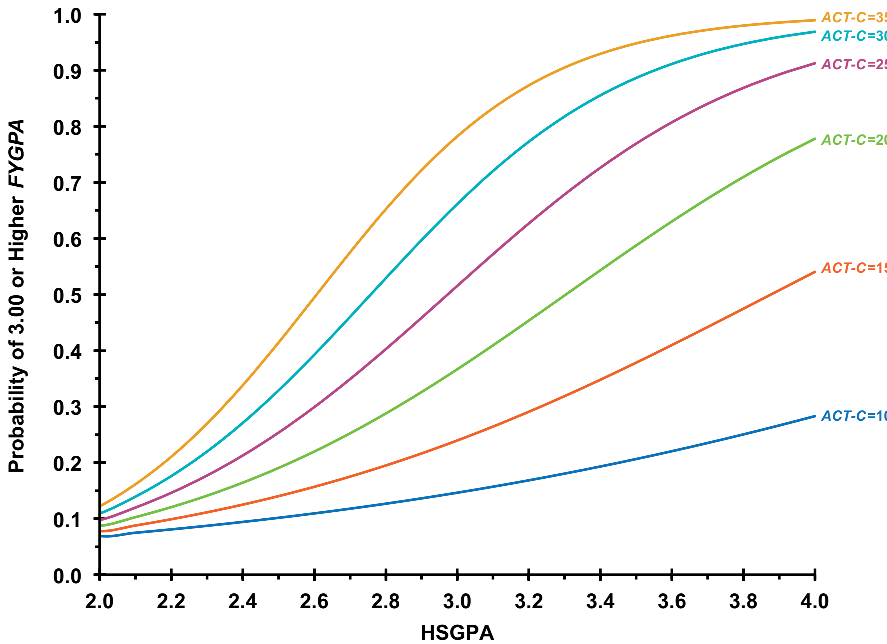

Figure 1. Probability of 3.00 or Higher FYGPA, Given HSGPA and ACT Composite Score. Reproduced from Richard Sawyer (2010). *Usefulness of High School Average and ACT Scores in Making College Admission Decisions*. ACT Research Report Series 2010–2. Iowa City: IA.

Test-optional policies can foster scenarios where applicants with lower HSGPAs but higher test scores are being denied admissions over applicants with higher HSGPAs but lower test scores, even when the denied applicant is more likely to be successful. For example, a student with 3.2 HSGPA and an ACT Composite score of 25 has roughly .63 probability of earning a B or higher. On the other hand, a student with a 3.5 HSGPA and an ACT Composite score of 20 has a .59 probability. These examples illustrate the additional information gleaned from taking both students' HSGPA and their test score in consideration as more information leads to more informed decisions. Moreover, having multiple pieces of information allows institutions to more accurately identify students on their campus who are at-risk academically and then provide resources appropriately. Ignoring test score information may result in the failure to identify at-risk students; thus, their likelihood of succeeding and staying in college may be diminished because they may not receive additional support.

Assertion 4: Test scores are not predictive of college success beyond the first year of college

Another misconception is that test scores are not predictive of more important long-term outcomes such as cumulative grades or college graduation. Contrary to popular belief, empirical data indicates that test scores are predictive of more distal outcomes (Radunzel & Mattern, 2015; Radunzel & Noble, 2012). In fact, data indicate that students who graduate high school ready for college as indicated by their ACT test scores are significantly more likely to enroll in college and graduate within six years (Figure 2; Radunzel & Mattern, 2015). For example, among students who met all four ACT College Readiness Benchmarks, six out of ten are predicted to immediately enroll in college and complete a degree within six years. Alternatively, of students who did not meet any ACT College Readiness Benchmarks, only two out of ten are expected to immediately enroll in college and complete a degree within six years. In fact, only half of all students who did not meet any benchmarks are expected to enroll in college immediately following high school graduation. One potential criticism of these findings is that they do not take HSGPA into account. Since HSGPA and test scores are correlated, readers may be wondering if test scores still provide added value in terms of predicting long-term outcomes once HSGPA has been taken into account.

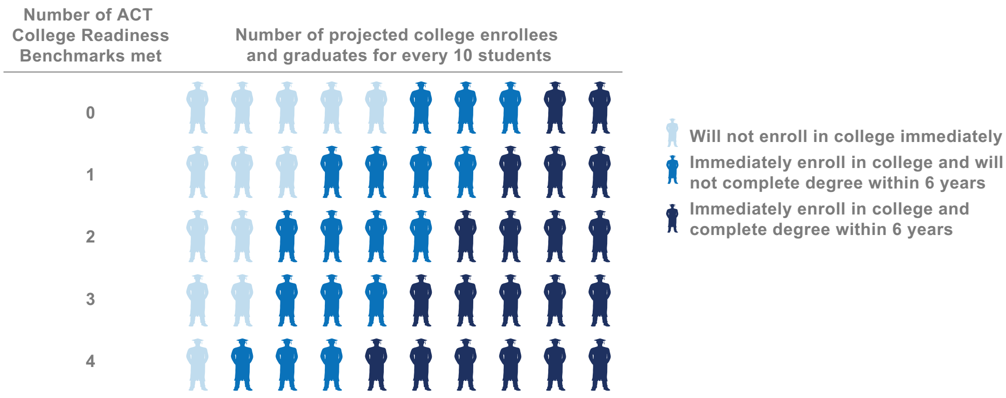

Figure 2. College Enrollment and Graduation Rates by Number of ACT College Readiness Benchmarks. Reproduced from Radunzel, J., & Mattern, K. (2015). *Providing context for college readiness measures: College enrollment and graduation projections for the 2015 ACT-tested high school graduating class*. Iowa City, IA: ACT, Inc.

Turning our attention to the research evidence on the joint influence of test scores and HSGPA on college success beyond the first year of college, research findings consistently point to the fact that ACT test scores do provide incremental validity above and beyond HSGPA in the prediction of long-term college outcomes such as cumulative grades and college graduation (Radunzel & Noble, 2012). Figure 3 illustrates this point using six-year cumulative GPA as the outcome of interest. Specifically, among students with the same HSGPA, students with higher ACT Composite scores are more likely to earn a six-year cumulative GPA of 3.00 or higher than students with lower ACT Composite scores. For example, among students with a 3.0 HSGPA, students with an ACT Composite score of 20 have roughly a 0.40 probability of earning a cumulative GPA of 3.00 or higher as compared to a nearly 0.70 probability for students with an ACT Composite score of 35. The differences in probability of success by ACT score become larger at higher levels of HSGPA—the part of the scale where admission decisions are often made and the requirement to submit test scores is often waived. These results suggest that test scores are even more informative for students with higher HSGPAs, which is in direct contradiction to test-optional policies.

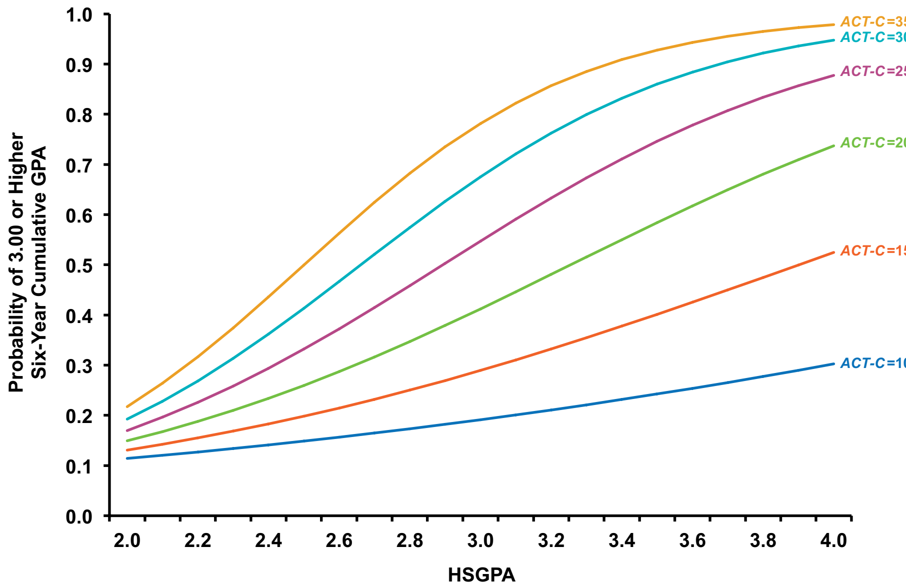

Figure 3. Six-year Cumulative GPA of 3.00 or Higher by HSGPA and ACT Composite score. Reproduced from Radunzel, J., & Noble. J. (2012). *Predicting Long-Term College Success through Degree Completion Using ACT® Composite Score, ACT Benchmarks, and High School Grade Point Average*. (ACT Research Report No. 2012–5). Iowa City, IA: ACT, Inc.

We find a similar pattern of results when examining six-year bachelor's degree completion rates, though the differences are not as large as those seen for cumulative GPA (Radunzel & Noble, 2012). Among students with a 3.0 HSGPA, students with an ACT Composite score of 20 have a 0.34 probability of earning of a bachelor's degree in six years as compared to a 0.41 probability for students with an ACT Composite score of 30 (Figure 4). These findings underscore the importance of considering multiple pieces of information to better understand students' levels of readiness for college and their likelihood of being successful in college, starting from the first day through college graduation.

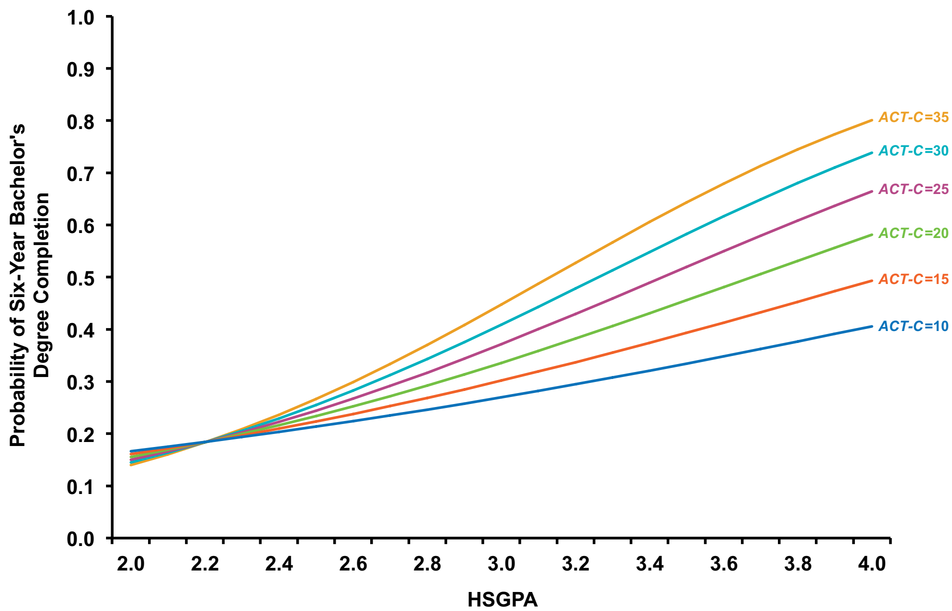

Figure 4. Six-year Bachelor's Degree Completion Rates by HSGPA and ACT Composite score. Reproduced from Radunzel, J., & Noble. J. (2012). *Predicting Long-Term College Success through Degree Completion Using ACT® Composite Score, ACT Benchmarks, and High School Grade Point Average*. (ACT Research Report No. 2012–5). Iowa City, IA: ACT, Inc.

Discrepant Performance

Another way to think about the added value of test scores beyond HSGPA applies to cases where students perform significantly higher on one measure as compared to the other (Mattern, Shaw, & Kobrin, 2011). National data indicate that the nearly three-quarters of students perform similarly on the ACT as compared to their HSGPA; however, a fair number of students have a significantly higher HSGPA as compared to their ACT test scores or vice-versa. To identify discrepant performance, the difference between students' standardized HSGPA and ACT Composite score was computed. Students who scored one standard deviation or higher on HSGPA as compared to their ACT Composite score were categorized as *Higher HSGPA* whereas students who scored one standard deviation or higher on ACT as compared to their HSGPA were categorized as *Higher ACT*. Students who scored within one standard deviation on the two measures were categorized as *Non-Discrepant.* Based on the 2015 ACT-tested graduating cohort who had both a valid ACT score and HSGPA, which constituted over 1.6 million students, we found that 13% (~200,000) had significantly higher ACT Composite scores, 74% (1.2 million) had non-discrepant performance, and another 13% (~200,000) had significantly higher HSGPA. These percentages are driven by the one standard deviation rule for determining discrepancy—a much larger percentage of discrepant students would be observed, for example, if discrepancy was based on a half standard deviation rule.

Examination of the student characteristics of the three discrepancy groups reveals significant differences in gender, parental education level, household income, and race/ethnicity. We also find that Higher ACT students attend high schools that differ in meaningful ways as compared to the high schools that Higher HSGPA students attend. In particular, differences in percentage of students who are college-bound at their school, the percentage of the student body qualifying for free or reduced lunch (FRL), and school location emerge. As shown in Table 1, females, students from lower socio-economic status (SES) backgrounds, and underserved minority students comprise a larger percentage of the Higher HSGPA group as compared to the other two groups. In terms of school characteristics, students with higher HSGPA are more likely to attend high schools in rural areas, serving a larger percentage of students eligible for free or reduced lunch, and having a smaller percentage of students who are college-bound. These results suggest that HSGPA and ACT scores are not redundant measures. Instead, discrepancies in the two measures vary systematically by student and school characteristics. The results by socio-demographic characteristics highlight the disparities in educational opportunities that currently exist is the US where many underserved minority students attend high-poverty elementary and middle schools (Ross, Kena, Rathbun, et al., 2012).

Table 1. Student Characteristic of 2015 ACT-tested Students by Discrepant Category

Student Characteristics		Higher ACT	Non-discrepant	Higher HSGPA
Number of Students		212,476	1,211,589	208,520
Academic Preparation (mean)	ACT Composite	24.5	21.5	16.7
	HSGPA	2.66	3.27	3.60
Gender	Female	37.7%	55.3%	63.5%
	Male	61.7%	44.2%	35.8%
	Missing	0.6%	0.5%	0.6%
Parental Education Level	No College	17.1%	18.6%	28.0%
	Some College	21.4%	24.8%	27.6%
	Bachelor's Degree	23.6%	25.8%	19.8%
	Graduate Degree	25.1%	19.8%	11.0%
	Missing	12.8%	11.0%	13.6%
Income	Less than $36,000	21.0%	23.6%	35.3%
	$36,000 to $60,000	15.0%	16.7%	17.9%
	$60,000 to 100,000	16.9%	19.0%	15.1%
	Over $100,000	22.5%	19.7%	10.4%
	Missing	24.6%	20.9%	21.3%
Racial/Ethnic Background	Black/African American	9.3%	12.5%	19.9%
	American Indian/Alaska Native	0.6%	0.7%	1.2%
	White	59.4%	58.5%	43.1%
	Hispanic/Latino	12.7%	14.7%	22.3%
	Asian	6.3%	4.4%	5.0%
	Native Hawaiian/Other Pacific Islander	0.3%	0.3%	0.4%
	Two or more races	4.7%	4.0%	3.5%
	Prefer not to respond	6.7%	4.9%	4.7%
School College-bound Rate	<50%	8.0%	9.6%	12.5%
	50–70%	26.9%	31.9%	39.2%
	70–80%	18.6%	20.3%	20.7%
	80–90%	22.5%	20.9%	17.0%
	>90%	24.0%	17.4%	10.6%
School Poverty (FRL%)*	0–20%	30.0%	20.8%	7.6%
	20–40%	31.8%	30.7%	22.0%
	40–60%	23.0%	26.8%	29.8%
	60–80%	10.4%	14.4%	23.7%
	80–100%	4.9%	7.4%	16.9%
School Locale*	Rural	16.8%	22.7%	26.2%
	Town	10.1%	13.4%	15.0%
	Suburban	45.7%	40.0%	31.5%
	City	27.4%	24.0%	27.2%

* only available for students attending a public high school.

The results presented thus far clearly indicate that students with a particular HSGPA vary considerably in terms of their ACT Composite scores; likewise, students with a particular ACT Composite score vary considerably in terms of their HSGPA. A graphical representation of this variability is displayed in Figure 5 where larger boxes indicate a larger number of students who have a HSGPA and ACT Composite score combination in the specified ranges (Camara & Moore, 2016). For example, an ACT Composite score of 22 to 24 and a HSGPA of 3.75 or higher is a common combination as indicated by the larger box. Interestingly, among students with low HSGPAs (<2.50), there is less variability in the distribution of test scores. That is, both measures suggest the student is not academically prepared. On the other hand, the variance in test scores among students with a high HSGPA (≥3.75) is much larger with large blue boxes across the entire ACT score range except for the bottom two ACT test score range categories. For many of these students, the measures are providing conflicting information. Such findings beg the question, which measure is the true indication of the student's level of academic preparation for students with discrepant performance?

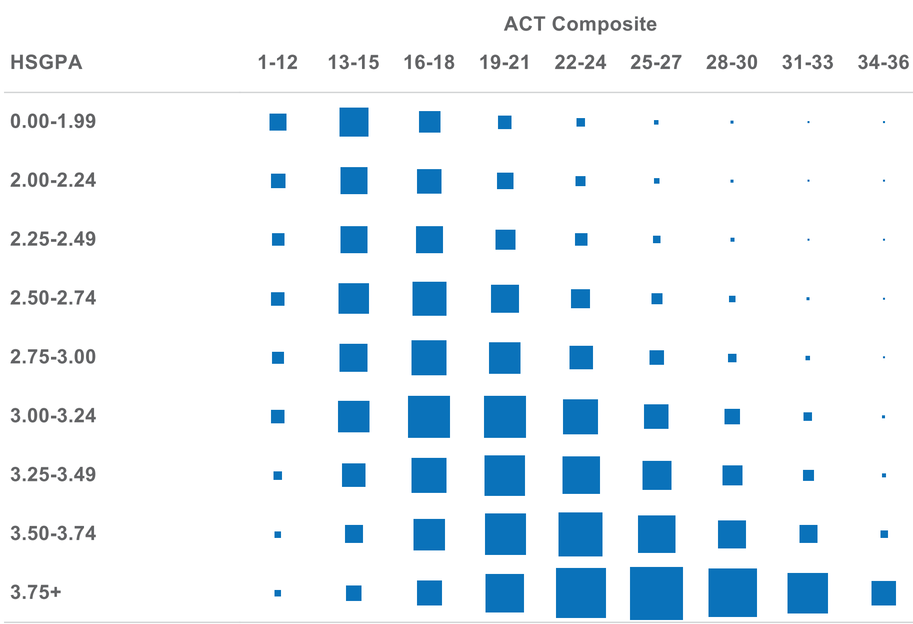

Figure 5. Distributions of High School GPAs and ACT Composite Scores. Reproduced from Camara, W. & Moore, J (2016). *Research you can apply to practice. "Really"!* Presented at the annual Enrollment Planners Conference, Chicago, IL.

The extent to which these measures—individually and in combination—accurately predict future outcomes for discrepant students speaks to this question. To address this question, three different regression models were estimated based on a sample of ACT-tested students who also had FYGPA data available[2]: 1.) a model that relied solely on HSGPA to estimate one's predicted FYGPA, 2.) a model that relied solely on ACT Composite Score to estimate one's predicted FYGPA, and 3.) a model that included both HSGPA and ACT Composite to

[2] The sample included nearly 400,000 students, representing 289 post-secondary institutions.

estimate one's predicted FYGPA. For each regression model, a student's predicted FYGPA was compared to their earned FYGPA. A residual or error term was computed for each student:

$$\text{Residual} = \text{FYGPA}_{\text{earned}} — \text{FYGPA}_{\text{predicted}},$$

where positive residuals indicate that the student earned higher grades in the first year than what the model predicted. In other words, their performance was under-predicted. Negative residuals indicate that the student earned lower grades in the first year than what the model predicted; their performance was over-predicted. Given the methodology used to fit the data (i.e., ordinary least squares), mathematically, the average residual across all students must equal zero. However, the average residual for subgroups in the sample may diverge from zero. We are interested in examining the degree to which the three models results in over- or under-prediction for the three discrepant groups. The results are summarized in Table 2.

Table 2. Mean (SD) Residual by Discrepant Group

Predictor(s)	Higher HSGPA (N = 42,114)	Non-discrepant (N = 312,159)	Higher ACT (N = 38,362)
HSGPA	-0.31 (0.88)	0.02 (0.83)	0.20 (0.95)
ACT	0.37 (0.87)	0.02 (0.85)	-0.60 (0.98)
HSGPA & ACT	-0.05 (0.86)	0.01 (0.82)	-0.05 (0.96)

Note. All mean residuals are significantly different than zero at p <.01. The effect sizes for the Higher HSGPA and Higher ACT group for the HSGPA and ACT models are small to medium. Negligible effect sizes are observed for the non-discrepant group for all three models and for the discrepant groups for the HSGPA & ACT model.

So which measure is a better indicator of students' academic preparation or their likelihood of success when the measures provide conflicting information? Table 2 indicates that prediction models that use only one piece of information result in more prediction error for students with discrepant performance. For the model that included only HSGPA to predict FYGPA, students with discrepantly higher HSGPAs earned lower grades in college than what the model predicted (mean residual = -0.31). For example, if this group of students was predicted to earn a FYGPA of 3.31, in reality, they earned a 3.00, on average. Conversely, the HSGPA only model under-predicted FYGPA for students who have discrepantly higher ACT scores (mean residual = 0.20). That is, these students earned higher grades in college than what the model predicted. Students with non-discrepant performance were accurately predicted (mean residual = 0.02). These findings suggest that test-optional policies or only relying on HSGPA to make admission decisions unfairly advantages students with discrepantly higher HSGPAs while unfairly disadvantages students who have discrepantly higher ACT scores.

The pattern of results reverses when focusing on the ACT only model. Students with discrepantly higher HSGPAs earned higher grades in college than what the model predicted (mean residual = 0.37). Conversely, the ACT only model over-predicted FYGPA for students who have discrepantly higher ACT scores (mean residual = -0.60). Students with non-discrepant performance were accurately predicted (mean residual = 0.02). Though we are not aware of any HSGPA-optional colleges, the same warning given for the HSGPA-only model applies here. Institutions that use admission test scores as the sole criteria for entry into an honors program, for example, would likely risk over-prediction of some students. That is, relying only on test scores to make important decisions may unfairly disadvantage students with discrepantly higher HSGPAs while unfairly advantage students who have discrepantly higher ACT scores.

Finally, the model that included both ACT scores and HSGPA resulted in the least amount of differential prediction for each of the discrepancy groups. The mean residual was -0.05 for both the discrepantly higher HSGPA group and the discrepantly higher ACT group. The mean residual for the non-discrepant group was 0.01. The results suggest that one measure is not better—or a more accurate indicator—for students with discrepant performance. Rather, taking into consideration both pieces of information results in more accurate predictions and neither piece of information should be disregarded or ignored. This is especially true for discrepantly higher HSGPA students, who are the ones most likely to take advantage of and benefit from test-optional policies. In addition, admissions professionals rarely make decisions through purely mechanistic means; they base decisions on a comprehensive review process which allows them to give greater or lesser weight to evidence which is discrepant or inconsistent with a students' entire academic record, thus reducing the rationale for not considering any source of data. Research in admissions, selection and many other disciplines, consistently demonstrates that using multiple sources of reliable data increases decision accuracy.

Assertion 5: Test scores are biased measures of student readiness for minority and underserved students

Each year, ACT releases the Condition of College and Career Readiness report, which provides test performance information on the national ACT-tested graduating high school cohort. Results are provided for the total group as well as by state and relevant subgroups such as underserved minority students, students from low-income families, and first-generation students. The findings from these reports highlight the fact that subgroup differences on the ACT exist by race/ethnicity and socioeconomic status (SES). For example, Figure 6 shows that underserved minorities are much less likely to meet three or more of the ACT College Readiness Benchmarks as compared to White and Asian students (ACT, 2015). Unfortunately, the general public often misconstrues subgroup differences as evidence of test bias. As stated by the *Standards for Educational and Psychological Testing* (2014), "group differences in outcomes do not in themselves indicate that a testing application is biased or unfair" (p. 54).

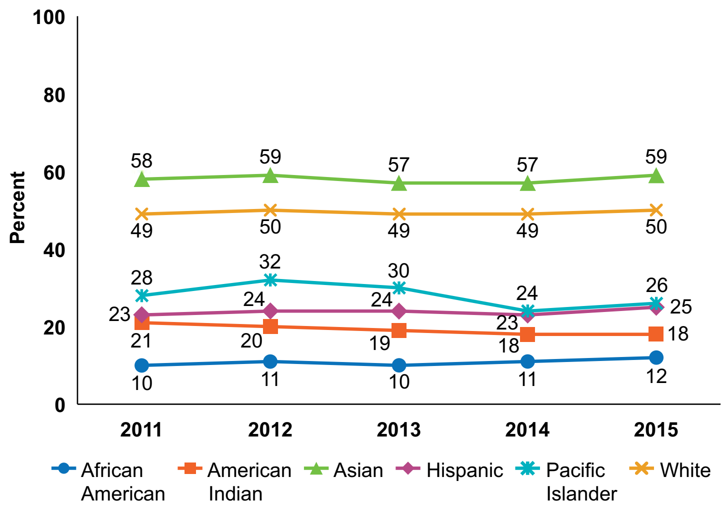

Figure 6. Percent of 2011–2015 ACT-Tested High School Graduates Meeting Three of More Benchmarks by Race/Ethnicity. Reproduced from ACT (2015). *The Condition of College and Career Readiness 2015: National*. Iowa City, IA.

It should also be noted that subgroup differences are not a unique phenomenon isolated to the ACT but rather exist across all measures of academic success, including other standardized academic measures (e.g., SAT, NAEP) and grades earned in high school and college. Subgroup differences are also observed for college enrollment, persistence, and graduation rates (Camara & Moore, 2016; Kobrin, Sathy, & Shaw, 2006; Ross, Kena, Rathbun, et al., 2012). For illustrative purposes, we have provided data on HSGPA for the 2015 ACT-tested graduating cohort to illuminate this point (Camara & Moore, 2016). Though the subgroup differences are not as large as what we see for ACT scores, the differences are still quite pronounced. For example, as shown in Figure 7, 43% of Asian students and 32% of White students obtained a HSGPA of 3.75 or higher whereas only 9% of African American and 17% of Hispanic students reached the same level of academic performance.

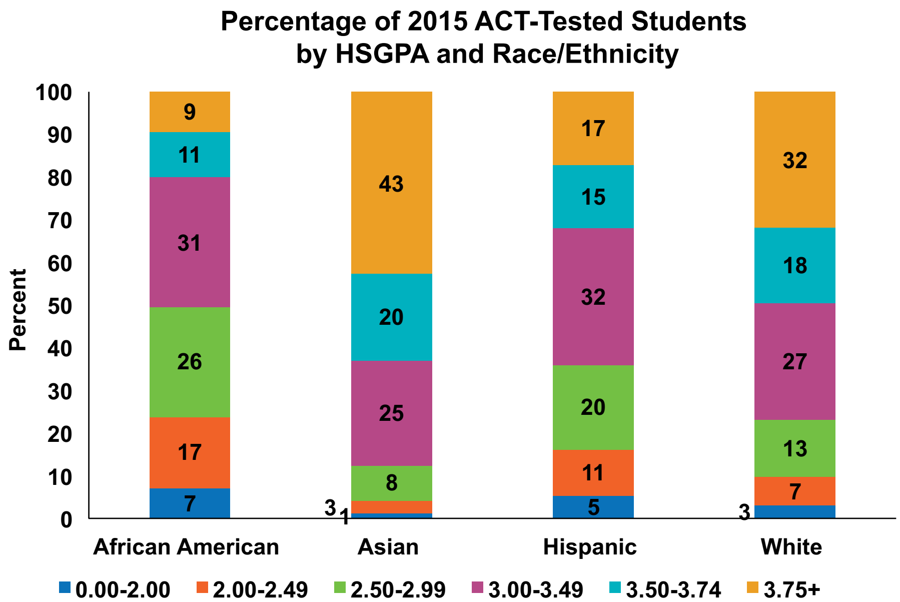

Figure 7. Distribution of HSGPA by Race/Ethnicity. Reproduced from Camara, W. & Moore, J (2016). *Research you can apply to practice" "Really"!* Presented at the annual Enrollment Planners Conference, Chicago, IL.

The distribution of HSGPA values by household income and by highest parental educational level are presented in Figures 8 and 9. A similar pattern emerges: students from more affluent backgrounds tend to earn higher grades in high school. For example, only 15% of students reporting a household income of less than $36,000 earned a HSGPA of 3.75 or higher as compare to 36% of students reporting over $80,000. Likewise, only 12% of students who reported that neither of their parents finished high school earned a HSGPA of 3.75 or higher as compared to 41% for students who reported that one or more of their parents earned a graduate degree.

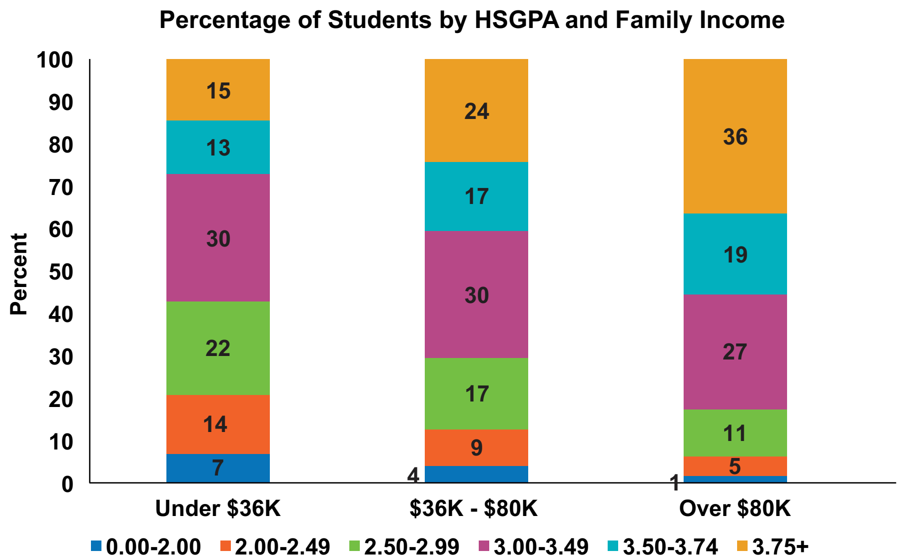

Figure 8. Distribution of HSGPA by Household Income. Reproduced from Camara, W. & Moore, J (2016). *Research you can apply to practice "Really"!* Presented at the annual Enrollment Planners Conference, Chicago, IL.

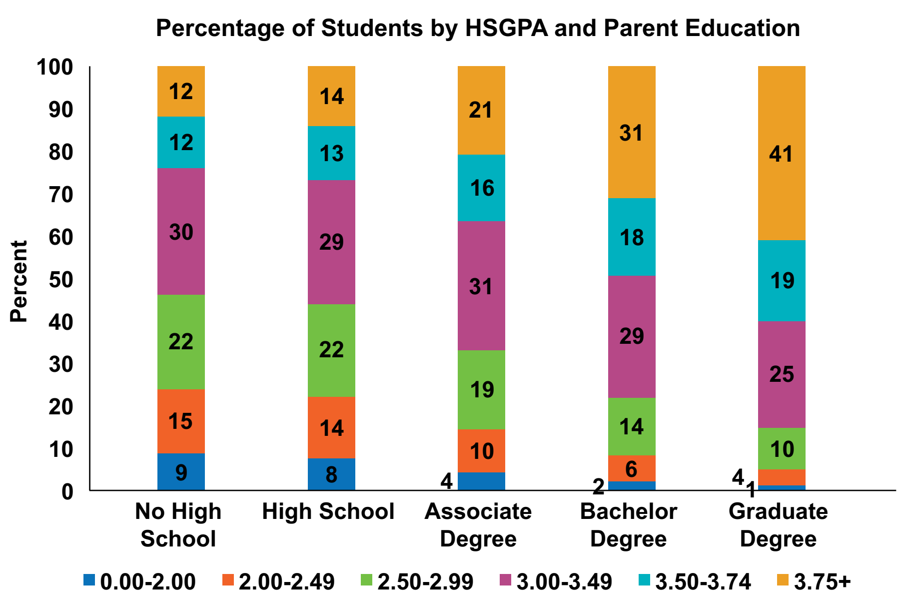

Figure 9. Distribution of HSGPA by Highest Parental Education Level. Reproduced from Camara, W. & Moore, J (2016). *Research you can apply to practice. "Really"!* Presented at the annual Enrollment Planners Conference, Chicago, IL.

Research interested in understanding why these subgroup differences exist has found that the majority of existing performance gaps can be attributable to differences in course taking patterns in high school, high school grades earned, school characteristics, and other noncognitive student characteristics (McNeish, Radunzel, & Sanchez, 2015). As displayed in Figure 10, students who reported a household income of greater than $80,000 earned ACT scores that were noticeably higher than students who reported a household income of less than $36,000. The differences ranged from a low of 3.7 points for ACT Science to a high of 5.3 points for ACT English. However, after accounting for other student and school characteristics, these performance gaps were reduced dramatically with differences ranging from only 0.2 to 0.6. Therefore, rather than blaming the test and disregarding the information gleaned through the assessment of these academic skills, students would be better served if we focused on understanding the social and educational issues that are leaving less affluent students ill-prepared for college and the workforce.

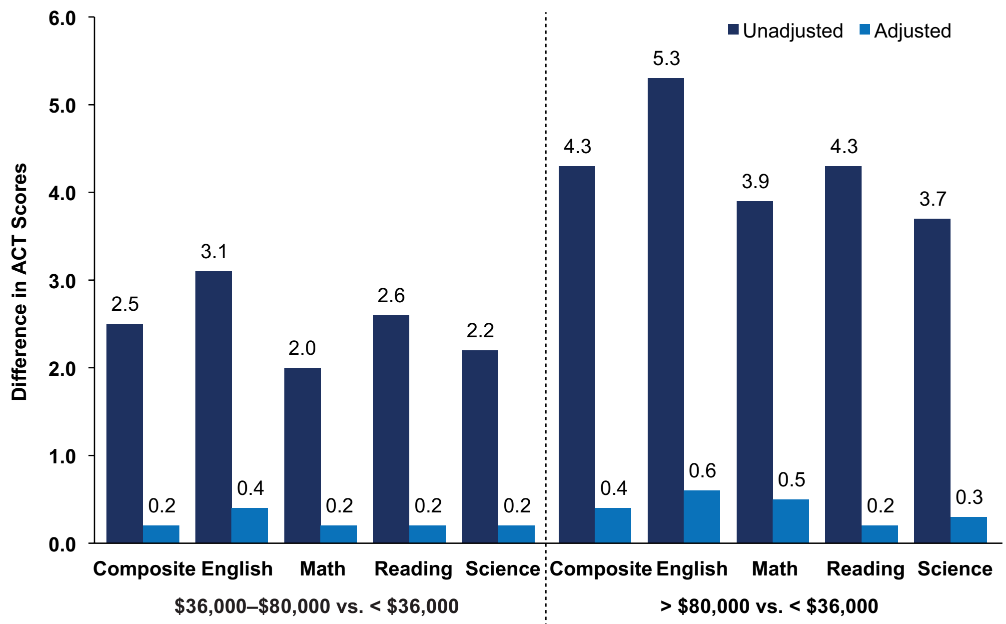

Figure 10. Unadjusted and adjusted mean differences in ACT scores by family income. Reproduced from McNeish, D., Radunzel, J. & Sanchez, E. (2015). *A Multidimensional Perspective of College Readiness: Relating Student and School Characteristics to Performance on the ACT. (ACT Research Report No. 2015–6)*. Iowa City, IA: ACT, Inc., 2015.

Even though subgroup differences in themselves do not constitute test bias, additional analyses evaluating whether subgroup differences represent true differences in academic preparation versus construct irrelevant variance should be conducted. For example, whether tests results in differential prediction is commonly examined. Differential prediction analyses test whether the relationship between test scores and an educational outcome is the same across subgroups of interest. For example, if the ACT was a biased measure of underserved minority students' academic preparation and thus an underestimate of their potential, one would expect that underserved minority students would perform better in college than what their scores would predict. However, research has consistently found that test scores over-predict their college performance. That is, underserved minority students tend to earn lower grades in college than what one would predict based on their ACT scores. As shown in Figure 11, among students with the same ACT Composite score, African American and Hispanic students are less likely to earn a FYGPA of 2.5 or higher (and 3.0 or higher) than White students (Sanchez, 2013). Using a common regression line based on the total group (black line), we see that FYGPA is underpredicted for White students and over-predicted for Hispanic and African American students. It is also important to note that HSGPA over-predicts FYGPA to a greater extent for underserved minority students than ACT scores; therefore, test-optional policies may lead to the admittance of applicants who are not ready for the rigorous demands of college level work.

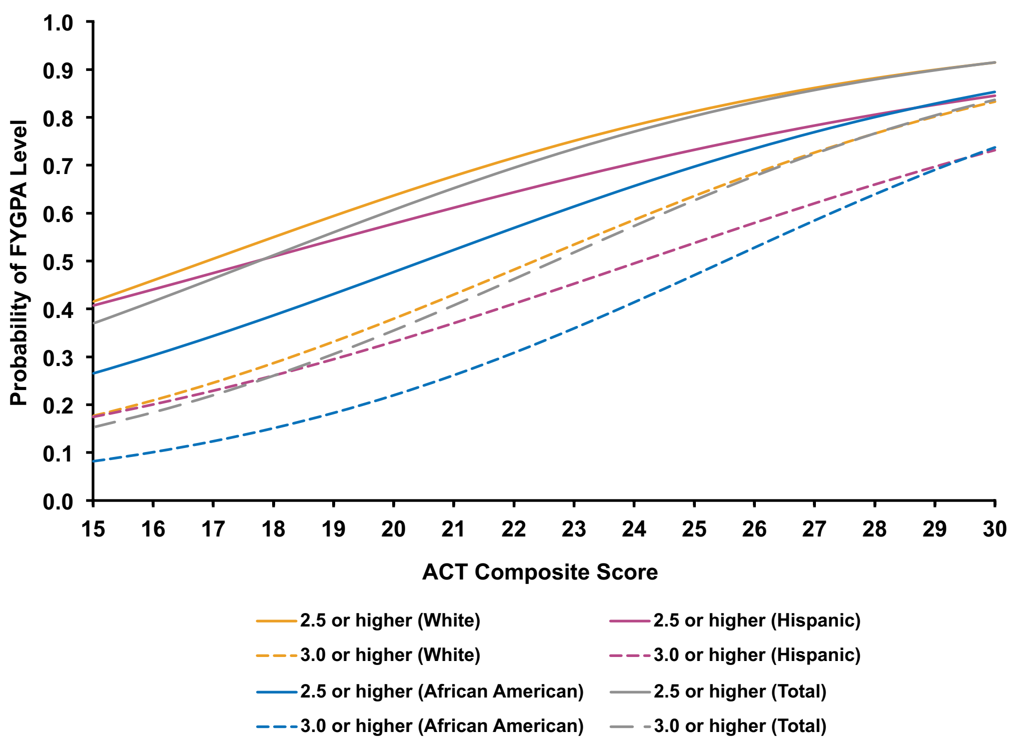

Figure 11. Over-prediction of Underserved Students' Probability of Earning FYGPA Levels. Reproduced from Sanchez, E. (2013). Differential Effects of Using ACT® College Readiness Assessment Scores and High School GPA to Predict First-Year College GPA among Racial/Ethnic, Gender, and Income Groups. (ACT Research Report No. 2013–4). Iowa City, IA: ACT, Inc.

As shown in Figure 12, the over-prediction of minority performance is not limited to first-year outcomes but occurs for long-term outcomes as well, such as degree completion (Radunzel & Noble, 2013). We see that among students with the same ACT Composite score, minority students are less likely to earn a bachelor's degree within six years than White students. For example, White students with an ACT Composite score of 18 have nearly a 0.40 probability of earning a bachelor's degree within six years as compared to roughly a 0.30 probability for minority students. Rather than constituting an underestimate of underserved minority students' potential, ACT scores slightly advantage these students as compared to White students.

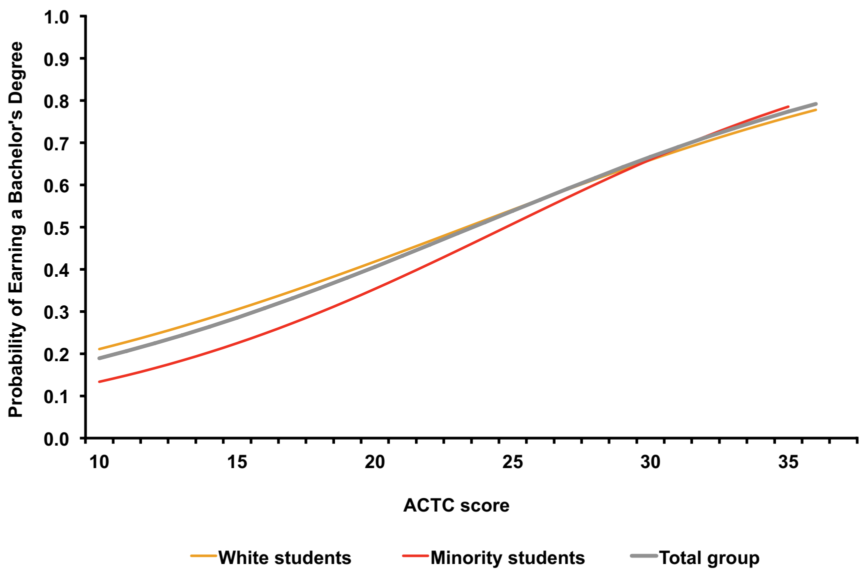

Figure 12. Over-prediction of Underserved Students' Probability of Earning a Bachelor's Degree. Reproduced from Radunzel, J., & Noble. J. (2013). *Differential Effects on Student Demographic Groups of Using ACT® College Readiness Assessment Composite Score, ACT Benchmarks, and High School Grade Point Average for Predicting Long-Term College Success through Degree Completion. (ACT Research Report No. 2013–5)*. Iowa City, IA: ACT, Inc.

Conclusion

Scores from the ACT and SAT tests are available for the vast majority of graduates of US high schools, ready to be used by colleges and universities for admissions, placement, and to identify students who may need extra academic support. For example, approximately 59% of high school graduates of 2015 took the ACT test. In certain states, the percentage is much higher. Fifteen states adopted statewide ACT testing and exceeded 90% participation rates. An additional four states similarly used the SAT statewide in 2015. With ACT statewide adoption, ACT participation rates increase most for male, African American, American Indian, and Hispanic students, as well as students with lower family income and students whose parents did not attend college (Allen, 2015). Adoption of the ACT or SAT has increased dramatically in the past few years as states seek to determine college readiness, reduce duplicative testing, and provide colleges with access to a more diverse student cohort. Adoption of the ACT or SAT can also be seen as a way to align K-12 with postsecondary expectations, supporting articulation of what students need to know and be able to do across educational levels. Test-optional policies essentially advocate for ignoring information that is already available and used by state assessment systems.

ACT and SAT test scores also play an important role in regulating high school course-taking and grading practices. If HSGPA was the sole admissions criteria used by all colleges and universities, students may be less compelled to take the challenging high school courses that prepare them for college because those same courses are likely to have higher grading standards, resulting in lower HSGPA. Instead, students would be more likely to take the courses required for high school graduation and choose easy electives. Combatting this threat, grades in college prep courses and strength of high school curriculum are typically used for admissions (Clinedinst, 2015). Absent admissions tests, grades in high school courses may become even more inflated than they are presently. Schools could easily face pressure—intentional or not—from students and the communities they serve to ease grading practices so that more of their students would be admitted to colleges of their choice. ACT and SAT scores mitigate this problem, or can reveal it when it surfaces.

A similar checks-and-balances argument supports the use of high school grades and high school coursework instead of a test-only admissions model. High school grade and coursework data can be examined to ensure that ACT and SAT scores increase for students with higher exposure to, and higher grades in, college preparatory courses.

When more is more: A Holistic Model of Student Success

Rather than eliminating sources of information, we advocate for using additional sources of information in conjunction with HSGPA and test scores to better understand students' academic strengths and weaknesses and their likelihood of success (Camara et al., 2015; Mattern et al., 2014). Empirical findings based on ACT-collected data clearly illustrate the multidimensional nature of college success and point to the importance of additional factors such as academic behaviors and interest-major fit in addition to academic preparation (Allen & Robbins, 2008; 2010; Camara et al., 2015; Mattern et al., 2014; Moore, Casillas, & Way, 2015). Research shows that higher levels of academic behaviors (as measured by ACT Engage) are associated with higher postsecondary degree completion rates within four years of entering college, even after accounting for ACT performance (Figure 13; Moore, Casillas, & Way, 2015). Specifically, among students meeting three or four Benchmarks, those with high ACT Engage College scores attained a timely postsecondary degree at nearly twice the rate as those with low ACT Engage College scores (46% vs. 25%).

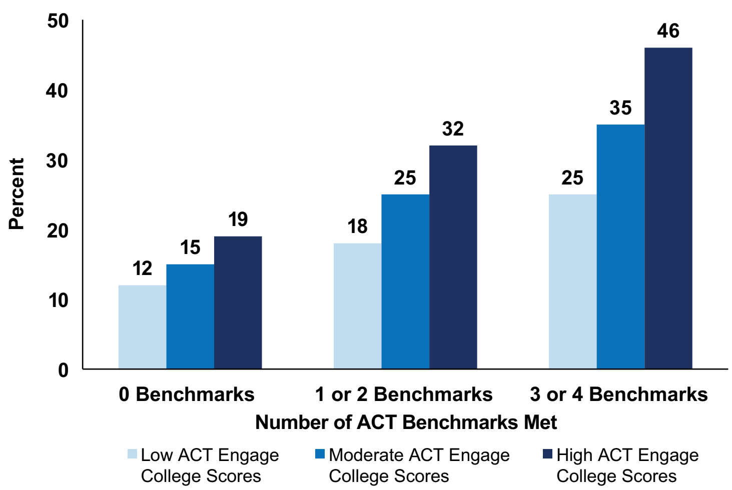

Figure 13. College completion rates by Number of ACT Benchmarks Met and Engage Scores. Reproduced from Moore, J., Casillas, A., & Way, J. (2015). *Beyond Academics: The Role of Behaviors on College Completion. (Inside ACT Research)*. Iowa City, IA: ACT, Inc., 2015

In sum, taking additional factors into account provides a richer, more holistic view of one's preparedness for future educational success, thereby helping both students and institutions make more informed decisions. Whether a student is deciding which schools to apply to or what major to declare, or an institution is deciding which students to admit or which students are in need of additional support, we contend that more information is better than less.

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