

# 2016 | USE OF PREDICTIVE VALIDITY STUDIES TO INFORM ADMISSION PRACTICES

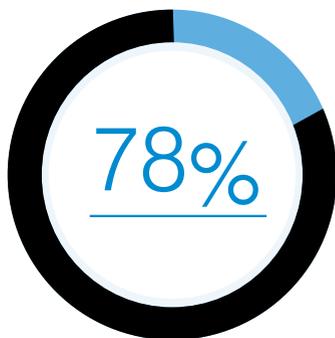
**NACAC**

National Association for  
College Admission Counseling

# 01 | EXECUTIVE SUMMARY

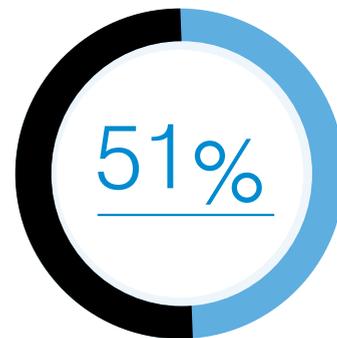
As part of the National Association for College Admission Counseling's (NACAC) mission to support professionalism in admission practice and ensure a level playing field for all students, NACAC has long taken an interest in monitoring how standardized admission test scores are used in the admission process. However, admission tests are one among many factors that colleges consider when evaluating prospective student applications. This paper explores the broader subject of predictive validity studies related to a variety of admission criteria and student outcomes. Because of the breadth of this subject, the focus of the paper is on the extent to which validity studies are being utilized on campuses around the country and the ways in which the studies are conducted.

- Standardized testing is required by an overwhelming majority of survey respondent colleges. **At 78 percent of institutions, either the SAT or ACT is required.**



A smaller proportion requires one specific admission test—the ACT at 6 percent of institutions and the SAT at 3 percent.

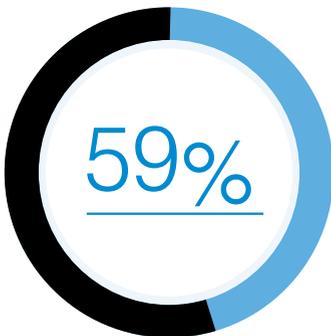
- **Slightly more than half (51 percent) of responding institutions reported that they conduct admission validity studies.**



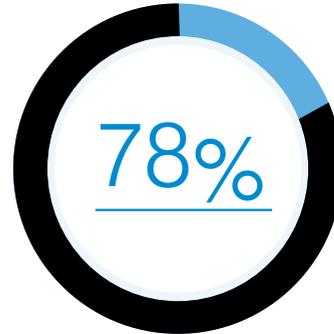
Survey results indicate that the use of validity studies increases with both enrollment size and admission selectivity. Colleges that require applicants to submit test scores also are more likely to conduct these studies.



- Predictive validity study methodologies most frequently used by survey respondents include simple and multi-variate linear regression, as well as logistic regression. **The most common predictors used in regression models are high school GPA and admission test scores.** The most common outcome measured is first-year college GPA.
- **More than half (59 percent) of institutions that conduct validity studies do so annually.**
- According to the survey results, **the vast majority of institutions conducting validity studies do so independently (78 percent)**, with a minority operating in conjunction with an external provider, including College Board and ACT.



An additional 24 percent conduct these studies every other year. Institutions with relatively large enrollments, as well as more selective colleges, appear more likely to conduct studies on an annual basis.



- **The most common way in which validity study results are being used by colleges is to review and validate or refine criteria used in the admission process.** Other purposes (indicated by a small minority of respondents) included retention planning, determining at-risk-students, advising, awarding merit and/or need-based financial aid, and marketing or recruitment.
- A review of actual validity studies conducted by 11 institutions who agreed to provide their results indicated that **no one research approach is used by all, or even most, colleges.** The questions to be asked, and the usefulness of the answers, tend to be institution-specific.

# 02

## INTRODUCTION AND BACKGROUND

As part of the National Association for College Admission Counseling's mission to support professionalism in admission practice and ensure a level playing field for all students, NACAC has long taken an interest in monitoring how admission tests are used in the admission process. NACAC's Statement of Principles of Good Practice (SPGP) includes both mandatory and best practices encouraging transparency and fairness in the use and reporting of test scores by admission offices. With the 2008 release of the *Report of the Commission on the Use of Standardized Tests in Undergraduate Admission*, NACAC took another step forward in encouraging its members representing higher education to examine critically the role that standardized testing plays in reaching admission decisions at individual institutions.

The study presented in this report addresses an important recommendation from the Commission:

NACAC currently maintains a statement that "college admission professionals should research the degree to which standardized tests predict achievement in college alone and in conjunction with other credentials for all students, for men and women, and for members of different racial and ethnic groups." The current Commission agrees with this statement and recommends that colleges and universities regularly conduct research of this nature, especially institution-specific validity studies.

In keeping with this recommendation, this paper explores the broader subject of predictive validity studies related to admission criteria and student outcomes. Briefly defined, admission validity studies involve research examining the

factors that are most relevant in predicting college performance, with the goal of identifying students who will be successful or who are at-risk. These studies are important for individual colleges and universities to undertake because the results will differ depending on their individual circumstances and goals for composition of the student body, which, in turn, shapes how admission criteria are determined and revised. The need for regularly conducting these studies is further supported by changes related to the criteria themselves. For example, recent changes in the content of the SAT, increased use of the SAT and ACT as high school assessment instruments, and the changing demographics of the student population who take the tests, could all affect the predictive validity of test scores. Adoption of the Common Core State Standards has also changed the academic curricula to which many students are exposed and could conceivably affect how coursework and grades predict college performance. It is particularly important for college admission offices to conduct predictive validity studies after making a substantial change to their admission criteria, such as including additional factors or becoming test optional.

Because of the breadth of this subject, the focus of the paper is on the extent to which validity studies are being utilized on campuses around the country and the ways in which the studies are conducted.

### Background

Colleges use a number of variables in the admission process, including indicators of academic performance in high school,

standardized admission tests scores, and non-cognitive factors. One of the goals of the admission office is to identify applicants that are most likely to be academically successful. However, institutions also have an interest in building a class that is diverse in many ways, including, but not limited to, academic interests, socio-economic background, and race/ethnicity. One expectation that NACAC's SPGP puts forth is that colleges consider, to the extent possible, how various factors in the admission process might differentially predict success for different student populations.

Although this paper does not offer a complete review of the literature, there are several broad themes that are generally mentioned. Admission validity studies often use prediction models for collegiate outcomes such as GPA in the first year of college or grades in particular core subjects. Most frequently the factors used in the models include measures of standardized test scores and high school GPA, but they may include a range of other variables, including demographic background, characteristics of the high school attended, and other college performance factors. Many studies have found high school grades to be the most important predictor (for example, Geiser 2008), but other variables are often important contributors (for example, Bettinger et al. 2003).

### ***Methodology***

This study uses several data sources. First, a review of the literature and recommendations from previous NACAC efforts were used to provide context and direction, leading to the development of a survey of the NACAC membership as well as the collection of a select number of example validity studies.

Subsequently, in 2011, a 15-question survey was created. It was distributed online to 1,354 US four-year NACAC member colleges; 424 responses were received, for a response rate of 31 percent. The respondents came from a wide range of institutions. Survey questions focused on three broad areas: admission policies and the use of standardized testing, the degree to which member institutions are using validity studies to evaluate the effectiveness of admission factors in predicting success, and how those studies are being used. As part of NACAC's 2015 Admission Trends Survey, a few of these questions were repeated to determine if any major practices related to validity studies had changed substantially.

The survey results were merged with selected variables from other datasets, including the US Department of Education's Integrated Postsecondary

The literature also notes some of the limitations of these studies. One such limitation is when a predictive validity model is based only on selected samples—such as freshmen that were admitted to the college rather than the whole applicant pool<sup>1</sup> (Bettinger et al 2003; Sackett et al 2008). Many studies do not take into account variables that are highly correlated with college performance, such as students' demographic and socioeconomic characteristics. Factors such as standardized test scores may be highly correlated with student background (Rothstein 2003). The studies may use composite scores rather than individual scores or subject scores (Bettinger et al 2011), despite some evidence that curriculum-based subject achievement tests may be effective predictors of college performance (Geiser 2008).

Nonetheless, those studies help admission offices identify students who are likely to be successful at their institutions. These studies also have the potential to provide information that would allow colleges to think more critically about the ways in which they evaluate a prospective student's potential for success. However, many of the studies are limited in defining "success" solely as a function of the first-year GPA, largely due to the ease and timeliness of the data availability, rather than a narrow view of the meaning of success.

Education Data System (IPEDS) and the NACAC Admission Trends Survey.

In addition, the survey asked institutions whether respondents would be willing to share their research with this project on a confidential basis. Of the 114 institutions that responded to this question, 40 (35.1 percent) indicated a willingness to make their research available. Half of this group was selected for interviews to better understand the work, and 11 colleges accepted the project's invitation to do so. Interviews typically lasted for 45 minutes or longer, and provide a level of detail that supplemented survey response data.

The 11 institutions interviewed represented a range of institution types: four liberal arts colleges (two each in the East and the Midwest); five large public institutions, two of which have a technical focus (in the South, Midwest and West); a mid-size West Coast private university; and a major private research institution in the East (see appendix for more detailed descriptions of the institutions). Although these institutions are not necessarily representative, they illustrate some ways validity studies are being conducted on campuses, including their methodologies and findings.

<sup>1</sup> This "range restriction" can lead to underestimates of validity (Sackett et al 2008), although there are some statistical procedures that try to correct for this limitation.

# 03

## UNDERSTANDING THE LANDSCAPE: SURVEY OF NACAC MEMBERS

To understand more about the use of validity studies on campus, NACAC conducted a survey of its college membership (see Box). The responding institutions comprised a wide range of institutional characteristics. Survey respondents were representative of all four-year colleges in terms of both control and admission rates. However, NACAC survey respondents had larger enrollments, on average (see Table 1).

### *Admission Policies*

#### *Use of Standardized Testing*

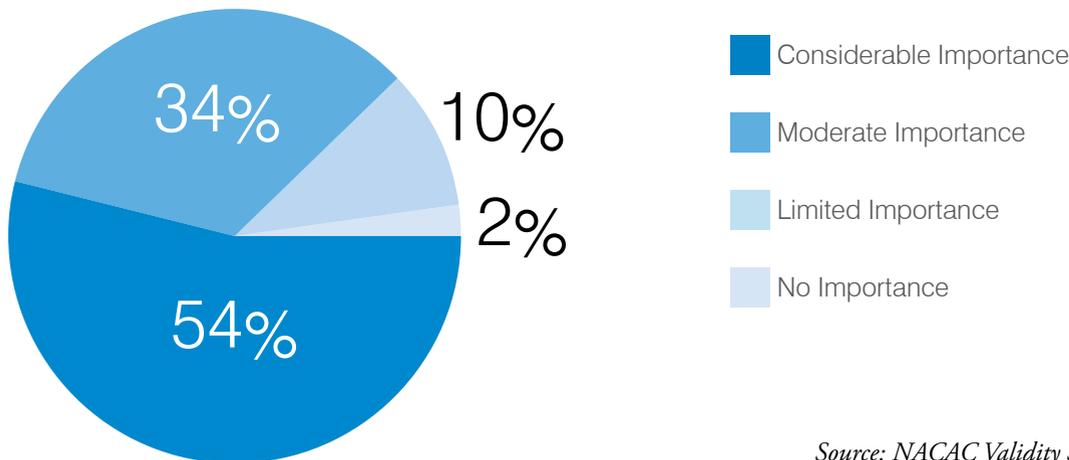
Standardized testing is required by an overwhelming majority of the institutions responding to the survey. At 78 percent of institutions, either the SAT or ACT is required. A smaller proportion require one specific admission test—the ACT at 6 percent of institutions and the SAT at 3 percent. Less than 10 percent of the respondent colleges require the SAT subject examinations, with or without other tests. However, there are variations among respondents with different characteristics. For example, private institutions were less likely than publics to require either ACT or SAT scores (77 percent compared to 87 percent, respectively).

A substantial minority of responding institutions does not require tests for all students, but may require or recommend them for certain groups of students, or will

Table 1: NACAC Survey Sample Compared to All Colleges

Type	NACAC Survey Sample	All Colleges
Public	29.5	34.0
Private	70.5	66.0
<b>Undergrad Enrollment</b>		
0–1,499 enrollment	26.2	48.6
1,500–2,999 enrollment	28.8	19.5
3,000–4,999 enrollment	11.8	10.0
5,000–9,999 enrollment	15.8	10.6
10,000 or more	17.5	11.3
<b>Selectivity</b>		
Less than 30 percent	7.0	4.4
30–49 percent	14.2	14.3
50–70 percent	37.6	33.7
71–85 percent	34.6	31.8
More than 85 percent	6.7	15.9

Figure 1. Institutional Ratings of the Importance of Standardized Admission Test Scores as Admission Criteria



Source: NACAC Validity Study Survey, 2011

consider test scores even if they are not required. For example, overall about 9 percent of respondents say they require SAT or ACT for some students or recommend the tests, and about 9 percent will consider test scores if they are submitted.

From another perspective, respondents reported that almost two-thirds of first-time students submitted SAT scores (63 percent) and almost half (47 percent) submitted ACT scores. Certain groups of respondents were more or less likely to have students submitting either the SAT or ACT. For example, selective colleges were likely to have larger proportions of students submitting SAT scores and a smaller proportion submitting ACT scores compared to less-selective institutions.

#### *Importance of Test Scores as Admission Criteria*

As shown in Figure 1, slightly more than half of responding institutions believed that test scores as admission criteria were considerably important. Public institutions were more likely to rank test scores as “considerably important,” as were institutions with larger enrollment. Not surprisingly, institutions that required submission of

ACT or SAT scores were much more likely to rank test scores as “considerably important.”

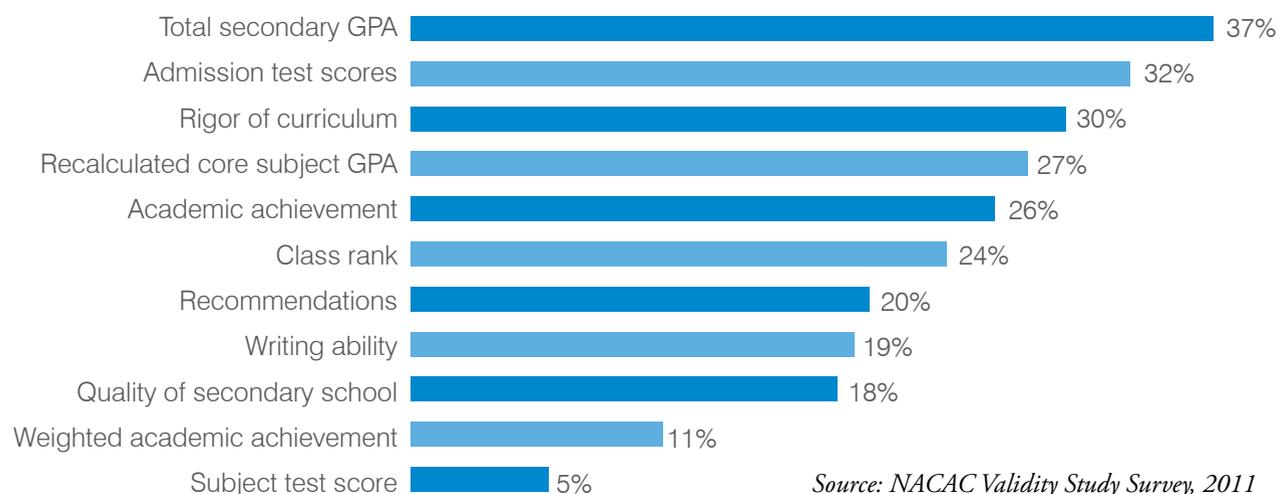
#### *Approaches to the Application Review Process*

Admission processes can be sorted into two primary approaches: creating a single rating for all the academic information in a file by condensing one or more numeric factors, or evaluating each of these items separately. Fewer than half (45 percent) of survey respondents reported using a single academic score.

The responding institutions that use a condensed score are different in some ways from those that evaluate factors separately. For example, private institutions were more likely than publics to use a condensed admission score (48 percent compared to 36 percent). In addition, the single score method is more likely to be used by institutions with a more selective admission process.

The alternative to the single score method is to evaluate separately each of the academic components of a candidate’s file. In this case, survey respondents were asked to indicate the academic measures for which ratings were compiled during the applicant review process.

Figure 2. Use of Separate Numeric Scores



Source: NACAC Validity Study Survey, 2011

There are a number of admission factors that may be converted into separate numeric scores. Some lend themselves easily to quantitative measurement, such as standardized test scores, subject test scores, class rank, secondary school GPA, and recalculated core-subject GPA. Others may be more difficult to convert into a numeric score, such as rigor of the curriculum, secondary school quality, or qualitative factors such as recommendations and writing ability.

Overall, responding institutions that used separate numeric measures most commonly used high school GPA, followed by test scores. Factors such as curricular rigor and academic achievement were also mentioned by more than a quarter of respondents (see Figure 2).

### Utilization of Validity Studies

#### Likelihood

In 2011, slightly less than half (48 percent) of responding institutions reported that they conduct admission validity studies. (Fifty-one percent of 2015 Admission Trends Survey respondents reported conducting validity studies.) Survey results indicate that the use of validity studies increases with both enrollment size and admission selectivity (see Figure 3). Similarly, institutions that require applicants to submit test scores are more likely to conduct

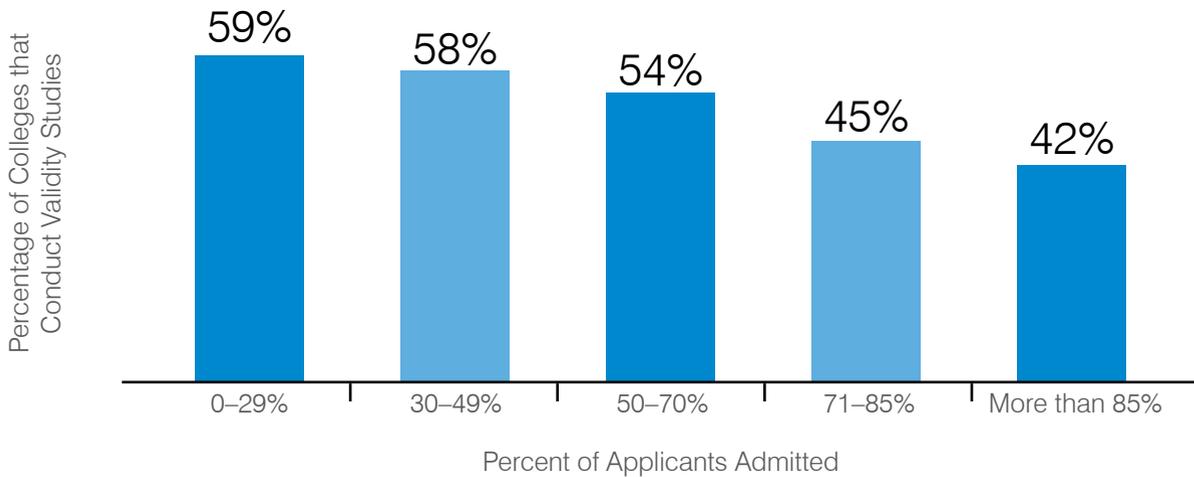
validity studies (53 percent versus 47 percent), as are those institutions that use a composite rating to evaluate applicants (59 percent versus 41 percent).

#### Methodology of Validity Studies

Institutions were also asked a series of open-ended questions about the methodologies and variables used in their validity studies. More than 100 responses were received. A scan of the responses suggests that, while there is a wide range in how institutions conduct these studies, some commonalities stand out.

Overall, methodologies such as simple and multi-variate linear regression, as well as logistic regression, are frequently mentioned. These regression techniques can be used to predict outcomes that are then compared to the actual results. Some mention using only high school GPA and test scores as predictors, while others add a number of other variables into the model, such as demographic or curriculum characteristics. Although regression is the most common technique, a wide range of analysis methods were mentioned, including descriptive statistics, correlation analysis, retention/graduation based on specific criteria, discriminant analysis, decision-tree analysis, and qualitative use of non-cognitive variables. Many institutions noted that they used the College Board's ACES

Figure 3. Percentage of Respondents that Conduct Validity Studies, by Selectivity



Source: NACAC Validity Study Survey, 2011

instrument or a similar tool rather than developing their own analysis framework.

The most common outcome, or dependent variable, appears to be first-year college GPA. However, other measures were mentioned, including final college GPA, time or credit hours to degree, retention and graduation rates, and grades in core courses.

Not surprisingly, the frequently mentioned predictors or independent variables are high school GPA and standardized test scores, as well as rigor of the high school curriculum, high school class rank, and internal admission ranking scores. But a very wide range of other variables were mentioned, including AP/IB/Honors classes, grades in certain high school subjects, demographic characteristics, recruited athlete status, high school quality, major, state of origin, recalculated or prerequisite GPA, subjective factors such as self-confidence, personal ratings, campus visits, and measures of TEAS scores and Compass placement tests.

#### *Conducting Validity Studies*

About half (52 percent) of institutions that conduct validity studies do so annually. An additional 21 percent conduct these studies every other year. The remaining respondents are approximately equally divided between

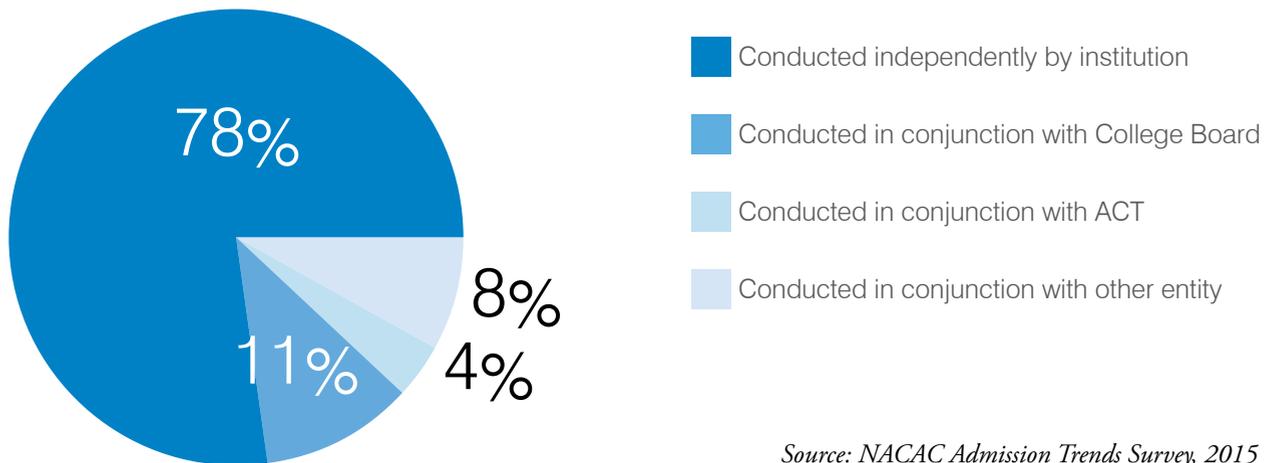
colleges with a protocol for conducting studies every three, four or five years, and those who describe their protocol as “ad hoc,” “as needed,” “periodically,” or “sporadically.” In the 2015 Admission Trends Survey update, 59 percent reported conducting studies annually, and 24 percent did so every other year.

It is probably appropriate to resist the tendency to believe that all institutions should conduct this kind of research on an annual basis. The needs of any given college are likely to be specific to that institution. For instance, there may not be many changes from year to year for some colleges, while others may have had recent admission policy changes and want to track the results closely.

Institutions may conduct validity studies in-house, or partner with an external organization. According to the survey results, the vast majority of institutions conducting validity studies do so independently (71 percent), with a minority operating in conjunction with an external provider, including ACT and the College Board. The 2015 update survey results indicate that 78 percent of colleges conducting validity studies do so independently.

Public institutions were more likely to conduct validity studies independently, while private colleges were more likely to use an outside organization. While a third of

Figure 4. Institutional Independence in Conducting Validity Studies



Source: NACAC Admission Trends Survey, 2015

private institutions (34 percent) worked with an outside organization, only 17 percent of public institutions did so.

#### ***Use of Validity Studies on Campus***

The survey asked a number of open-ended questions about how validity studies are being used on campus. One question asked which office on campus was in charge of creating validity studies. The most common response appears to be the institutional research office, which made up more than one third of the mentions, followed by admission and the office of enrollment management. However, validity studies are also conducted by or in partnership with provosts, faculty,

deans or department chairs, and the student affairs office, among others.

According to survey respondents, often the validity study findings were distributed to many offices on campus for review and/or information, in addition to the admission office. Other offices included academic affairs, enrollment management, institutional research, provost, student affairs, advising, and the president's office.

The most common way in which predictive validity study results are being used is to review and validate or refine criteria used in the admission process. However, a number of other ways to use validity studies appeared, including retention planning, determining at-risk-students, advising, awarding merit and/or need-based financial aid, and marketing or recruitment.

# 04

## INSTITUTIONAL EXAMPLES: APPROACHES TO VALIDITY STUDIES

In order to drill deeper into the various approaches to validity studies, 11 institutions agreed to provide more detailed information about their efforts. Although these institutions are not a representative sample, they can illustrate some of the survey findings and provide ideas to consider. The institutions provided copies of their internal test validity results. Combined with in-depth interviews, the results showed that no one research approach is used by all, or even most, colleges. The questions to be asked, and the usefulness of the answers, tend to be institution-specific.<sup>2</sup>

The institutions interviewed began conducting validity research at a widely varied range of times. Several have accumulated more than two decades of experience, while one has just completed its first study. The remaining institutions began validity research between two and ten years ago.

Reasons for implementing a research program also varied. Reported motivations included:

- A desire — generated by faculty interest in the selection process — for the institution to focus more on “outcomes instead of admission decisions.” Respondents noted: “Outcomes became more important to us than access.” (College C)
  - A suspicion that “appropriate admission decisions often don’t match what the numbers say.” This institution’s focus has been on maximizing students’ first-year GPA rather than retention. (College F)
  - New staff support for the effort. The institution hired a staff member with experience in institutional research, providing the research capability the admission office had requested for some time. (College E)
  - Furthering an institutional focus on factors maximizing first-year success. Now that the admission validity research has been launched, study of retention factors is beginning. (College D)
  - Attendance at a panel on validity studies at the national NACAC conference. (College J)
  - A need on the part of the admission office to validate the admission process, and help administration understand the conclusion that SATs alone were not a reliable selection criterion. (College G)
  - To improve retention, especially among several constituent colleges of a large public university. (College H)
- Aside from College C, which has focused solely on how admission intake can maximize retention, the institutions initiated validity study protocols to determine the extent to which the criteria used in making admission decisions were appropriate. In this context, “success” consists of demonstrating that the college-level academic achievement of students is consistent with what admission process ratings predicted. Validity studies have made it possible for these colleges either to affirm or improve the

<sup>2</sup> Note that some of the institutions submitted more than one study.

protocol used for making admission decisions. Once this has been achieved, all but the liberal arts colleges have moved on to investigating the link between admission criteria and retention, or made plans to do so.

Each college has constructed its research to match its unique needs. Because the validity studies do not follow a parallel format (for instance, some focus on correlations between admission criteria and college grades, while others discuss these criteria in terms of the percentage of college grade variation explained by each criterion), this paper cannot provide a “how to” or “best practice” for institutions embarking on their own validity studies. However, these examples, as well as a review of the extensive scholarship available in the field, can help generate discussion on a campus level and within the profession.

The following themes cover some of the variables used in validity studies—such as GPA, class rank, standardized testing, and other factors used by the 11 institutions in their validity studies—as well as some broader issues that are important to consider when thinking about the effective use of validity studies.

### *Outcome Measures*

By far the most typical approach in validity studies is to examine academic performance in college, with the most common measure being first-year college GPA. However, some colleges have focused on the first semester, and others use GPA achieved at the end of the second year of college or at graduation. One institution interviewed for this project calculated the college average with the exclusion of the semester with the lowest performance.

### *Grade Point Average*

The variable that generally reflects the strongest correlation with college academic achievement is the high school GPA, and almost all of the colleges interviewed used some form of it as a variable in their validity studies. In general, admission offices or researchers recalculate the averages of incoming students so they are all in the same format, usually on a 0-4.0 scale. Many studies, however, eliminate courses beyond the five traditional academic core subjects (English, foreign language, math, science



and social studies). Some colleges have also applied weighting for honors, AP, and other advanced coursework.

High school GPA was the most important predictor of college performance in the example studies provided for this paper. For example, College E has found correlations of .63 and .71 between high school and college grade point averages, depending on the cohort involved. College J and College F have almost identical results concerning the percentage of college academic achievement explained by secondary school grades (17.6 percent and 18 percent, respectively).

### *Class Rank*

Rank in class offers the apparent advantage of compensating for the difference in grading curves among secondary schools. Class rank remains in fairly common use as an admission criterion, as the survey responses illustrate, although it has become increasingly less important over the past two decades. Only two of the 11 institutions interviewed made use of class rank in admission decisions, and in one case only as a component of the overall academic rating. There are challenges in using class rank as a research variable. For example, the number of secondary schools that share class rank publicly diminishes annually, and now reflects fewer than half the nation's high schools. However, many schools that do not publish class rank information provide grade distribution information. This information can often be used to estimate class rank, but the process for doing so requires manual calculation by admission staff in the application review process.

### *Standardized Testing*

While standardized test scores are used by most of the institutions, there is no common practice concerning how they are factored into validity studies. According to the interviews, the only common practice appears to be to use the highest scores for individual SAT components regardless of the test date on which they were achieved. This practice is less common for research involving the ACT, where five of the institutions interviewed used only the best composite score. However, two institutions “super scored” the ACT for their research; that is, they created a new composite score from the four highest scores achieved on the component sections, regardless of test date. For one of these colleges, this policy was chosen after discovering that all peer institutions followed this protocol.

Four of the colleges used a concordance table to determine the strongest standardized test results for candidates

who submitted scores on both the SAT and the ACT. At two of these colleges, validity studies were conducted with the stronger of the two scores. One researcher explained that this approach made sense because “our admission decisions are done that way.” Another college only substituted scores if the concordance process showed a difference of two points or more between the best ACT composite score and converted SAT results. In contrast, another institution used only SAT scores in its research, disregarding ACT results altogether, and another used the higher of the scores on the writing or critical reading sections of the SAT.

One institution investigated the impact on correlations with college academic achievement by using average (as opposed to highest) scores for each student's standardized testing. The result was a stronger correlation, but only by a very small margin.

Not only did the manner in which scores were used in research vary, but colleges also found highly individualized conclusions, often focused on particular components of the tests. In comparing the critical reading and the former writing SAT components, one institution (J, with the most selective admission process among the five institutions providing data) found a much stronger correlation with college grades for the critical reading results, but four others found the writing test to have a far stronger impact. Finally, College E, which bases admission decisions on a single rating, found that ratings with SAT scores correlated better with college grades than did ones that included the ACT. In every case, secondary school grade point average had a far higher correlation with first-year college grades than did any portion of the SAT. For the three institutions that provided correlation data, seven of eight entering cohorts examined showed a correlation between .40 and .59. Only one cohort of the eight had an SAT section correlation as high as .29, and this was for the writing section.

The SAT subject tests are far less widely used in admission decisions than the SAT or ACT. However, five of the institutions ran validity studies involving SAT subject test scores. College J found that when the subject tests were combined with SAT results and the high school grade point average, the percentage of variation in college grades that was explained rose only one percentage point, from 19.7 percent to 20.7 percent. However, the subject tests did have more impact than any section of the SAT when the scores were all included. For College H, the percent variation in college grades predicted by seven different

subject tests ranged from 37 percent to 49 percent, very similar to the SAT, whose three sections ranged from 42 percent to 46 percent. College E found that, when the SAT subject test results were combined with the SAT, only the SAT writing result continued to have correlation impact, though it depended on which subject test scores were included.

#### *Individual Colleges within a University*

Five of the universities interviewed conducted validity studies related to their constituent undergraduate schools, though two did so only in relation to retention. College F found that testing was strongly predictive of college academic achievement only for the colleges of engineering and liberal arts, and that the writing score had the strongest correlation of the three SAT components for liberal arts students. However, only the math test score correlated with achievement for students in their undergraduate business college.

For College J, a science subject test score predicted performance better for liberal arts math and science students than any SAT component, and by a wide margin. This was also the field of study where adding SAT scores to high school GPA generated the largest increase in the percentage of explained variance: from 22.9 percent to 28.4 percent. For engineers, factoring in the math II subject test relegated all three SAT sections to negligible impact. On the other hand, for social sciences, only the critical reading score was significant, and the writing score had a lower impact than math.

#### *Quality of the Secondary School*

Ratings of secondary schools were less utilized as an admission criterion. Three of the institutions interviewed researched this factor. One (College F) found that top students from public and independent schools did equally well, and has decided that it is inappropriate to factor the quality of a candidate's secondary school into the admission decision. Another institution (College J) imported the percentage of parents at each secondary school who had an undergraduate degree using the College Board's Enrollment Planning Service. They found it had a negligible impact on their correlation results.

#### *Rigor of the Curriculum Pursued at the High School Level*

For institutions creating a single academic rating, the rigor of the student's curriculum is typically one of several factors used to compile it. None of the institutions

interviewed that compile an academic rating shared research on the impact of a sub-rating for the strength of the courses the student has pursued at the high school level. College D, however, which compiles an academic index on a more narrow basis than many institutions (they include only the SAT and ACT and high school GPA), found that adding a rating for curricular rigor did not improve the correlation with college academic achievement.

Several institutions, however, did research many criteria that would fall within the general area of evaluating a student's curriculum. For College E, the number of honors, IB, AP, and other college-level courses pursued, showed a strong correlation (.52 one year and .57 in another) with college grades. However, this was among ten academic factors investigated, and only three (the internal admission academic rating, high school GPA and SAT Writing) were above .6. Eight fell between .52 and .58, so the impact of the number of advanced courses pursued was generally parallel to the score on a single SAT subject test. On the other hand, College J's research has determined that taking rigorous classes such as AP courses does not have a significant effect on predicting college grades, and College D found only a very small impact. Beyond the number of courses, some institutions used the number of AP exams or the actual AP scores. For example, College H researched the impact of AP exams on college grades; while it found a strong correlation (.38), this fell below the correlations for each SAT component, the high school grade point average and six of seven subject tests examined.

#### *Writing Ability*

Writing ability is included within the overall academic rating by those colleges that use single composite ratings. College E indicated that because their education is particularly writing-intensive, the quality of a candidate's essays and the score on the SAT writing test informally receive enhanced weight in making admission decisions, but has not formally investigated this admission criterion. Two universities have done so, in each case finding no strong impact on predicting college grades. College D found over four cohorts that the correlation between ratings for essays in the admission process and college grades ranged between .16 and .21. College H researched whether writing ability affected the accuracy of college grade predictions through a validity study. They found that for students rated "top 10," "above average," and "average" in writing ability, actual grades



achieved varied from the validity study prediction from  $-.01$  to  $+2.0$  on the university's 0-4.0 grading curve. Writing ability is likely a factor in the admission process of any college requiring one or more admission essays. However, the limited data obtained in this study suggests that in itself it is not likely to be a factor in predicting college academic performance.

#### *Using a Single Composite Academic Rating*

Using a single academic rating can create a simple path towards validity research. Two of the liberal arts colleges interviewed both found in their research strong support for the use of their academic rating. In one case, studying three entering classes showed College E very strong correlations (between  $.69$  and  $.83$ ) with second-year college grade point averages. They found that by “tweaking” the weight given to academic criteria, they were able to enhance the correlation. In the other (College G), the academic rating was stronger than standardized testing in predicting first-year college academic performance, and got stronger with each additional year of college grades, while the value of standardized testing decreased each year. College D, which compiles an admission rating using fewer factors than others, however, found that high school GPA was stronger than SAT scores in predicting

initial college academic performance, but the SATs were superior in predicting grades later in college.

The academic rating at the two liberal arts colleges include most of the factors for which non-single-rating colleges may have individual ratings: high school rank, high school grade point average, rigor of curriculum, recommendations, writing ability, and standardized testing. College G also includes the concept of learning style, with a curve ranging from a top of “intellectual fire” to a low of “intellectually apathetic.” College E adds a recalculated grade point average, and the quality of the high school the candidate attended.

It makes sense for institutions with a single academic rating to research its constituent components periodically. For instance, the admission process at College D increased the percentage of difference in first-year grades explained by their academic index from  $.17$  to  $.21$  by factoring in writing ability and leadership.

#### *Admission “Sub-groups”*

While admission offices maintain a common protocol for the evaluation of any application, there are a variety of applicant cohorts that receive additional attention and may in some cases be admitted with a lower academic threshold than the pool as a whole. There are a wide

variety of these groups: alumni children, students who live further away from campus, international students, students representing ethnic or racial diversity, first-generation college students, students of one gender or the other, recruited athletes, students applying early decision and more. The research question is not whether students in one of these categories get better or worse grades than their classmates, but whether the admission process accurately predicted how well they would do academically when enrolled. Given the relatively small number of interviews for this study, however, only a few examples were found.

For example, several institutions looked at the relationship of gender to admission evaluations. While in no case was the outcome significant, for two colleges, women had slightly higher grades than predicted and men, slightly lower. A third college found no difference for either gender in the relationship of their actual and predicted academic performance.

For two institutions, researching academic performance by recruited athletes also offered divergent results. For one, athletes tangibly underperformed their academic predictions the first time this was studied, but with the following student-athlete cohort, this effect disappeared. While athletes still underperformed academically, the degree to which they did so was not significant. For the other college, athletes did considerably less well academically than their admission ratings predicted for the three successive entering classes studied.

In general, students of each ethnic background tended to achieve the grades that were predicted. College J found race was significant in many models until the SAT was introduced. College G found that its academic rating “worked equally well for all subgroups, broadly speaking.” A third college found the ratings were accurate for white, Asian, and Hispanic students, but over-predicted college academic achievement for African-Americans.

#### *The Impact of a Non-Academic Rating on Academic Performance*

Many institutions either use a rating for high school extracurricular involvement in their admission process, or subsume it within a broader “personal qualities” rating. Several institutions investigated the relationship of



extracurricular activities to college academic achievement. One college found no correlation on a broad basis, but that some of these students did less well than predicted. Another college found a small positive correlation between the extracurricular rating and college grades. In addition, College D found that when writing ability and leadership were added to the typical admission index, the percentage of grade variation explained rose from .17 to .21. In the study of four cohorts, the leadership rating had a correlation between .10 and .15 with first-year grades, in each case lower than the essay correlation.

#### *Yield on Admitted Students*

Only one institution that was interviewed (College F) researched the effect of admission decision factors on yield. The research found that a 300 point SAT increase (out of 2400 possible) was associated with a 17 percent reduced chance of the student enrolling.

#### *Retention*

Several of the institutions interviewed have researched how the factors used in the admission decision affect retention. One, College C, a large public western univer-

sity with a selective admission process, has even gone so far as to focus its entire admission process on improving retention. “We decided to focus our admission process on outcomes rather than intake,” they said. Through this research, they discovered that admission “tips”—candidates given special consideration beyond the normal selection process—graduated at a far lower rate than other students.

College D found no retention correlation between the SAT Critical Reading score, but found significance for the math score for three of five cohorts which were studied. For College F, there was no connection between graduation and scores on any section of the SAT. The effect of high school grade point average was significant, but it had a lower correlation with graduation than it did with first-year college grades. They hypothesize that the strongest students (in terms of high school grades and standardized testing) might transfer to other institutions at a higher rate than the rest of the school population. It is possible that there is a relation between retention and these two admission metrics up to a certain level of academic ability, but they have not yet researched this question.

College H looked at the connection of seven different factors and graduation. Six related to standardized testing (falling in the top or bottom 25 percent on the SAT Critical Reading, SAT Math or ACT), and the last was a high school rank in the top 10 percent of the class. While this model accounted for 80 percent of the variation in graduation rates, two criteria were found to be outliers—a “top 10 percent” high school class rank, and having a score on the SAT critical reading component in the bottom 25 percent. In addition, having a critical reading score in the top 75 percent correlated negatively with the probability of graduating. These disparities did not appear when the model was run with just the ACT scores (top and bottom 25 percent of their entering class) and class rank, while yielding a similar 80 percent correlation with graduation.

#### *Potential Uses for Validity Study Results*

In the institutional interviews, several ideas were raised about how validity studies can be used on campus. One potential application is for the education of the faculty and staff, and especially for admission staff training (an activity mentioned by Colleges J and K and possibly pursued by other colleges that were interviewed). Validity studies also seem tailor-made for an institutional decision on whether standardized testing needs to be required.

Indeed, College E’s research affirmed the value of testing in making the most accurate admission decisions.

It would also seem that validity studies could provide useful information in the planning of campus enrollment size. An institution turning away many students who could do well there has the opportunity for growth. Conversely, an institution with an exceptional number of at-risk students might benefit from scaling down. Finally, the use of validity studies in recruitment and the allocation of financial aid (both need- and merit-based) might eliminate the need to hire outside consultants for this work.

The interviews also revealed several additional ways validity studies can generate strategic changes:

- College H, which admits each student to a field of study, eliminated the opportunity for students to specify a second-choice undergraduate school in its admission process, based on the poor experience with academic achievement and retention for these students. It also led to revising the first-year experience for students interested in the sciences to reduce intra-university transfers to other fields of study.
- College C found that sub-groups of students targeted for special attention in the admission process often fared poorly, and reduced the number of these groups from twenty-five to “five or so.”
- Two universities (C and P) have begun to hold the deans of their undergraduate schools responsible for retention, which has led to increased attention on admission criteria that best predict student academic success.
- College C reports that the improvement in retention generated by research had “wonderful results,” both in campus community-building and generating increased faculty support for recruitment outreach activities. Conversely, College G felt that the research has been greeted with “spectacular indifference” by the school administration.
- College H, forced to move to holistic admission review by the Gratz and Grutter decisions of the U.S. Supreme Court, found that validity studies confirmed the improvement in the admission process when it was reformulated. The result also helped the institution become comfortable with the court-mandated changes in its admission process.
- College D learned there was no reason to change the way the admission process had been managed.
- College E’s research confirmed the value of standardized testing in their admission process, and answered negatively the question of whether to become “test-optional.”

# 05

## SUMMARY AND CONCLUSIONS

This project represents NACAC's continuing commitment to the importance of conducting validity studies, a commitment that was confirmed by its Commission on the Use of Standardized Testing. The survey results illustrate that the admission profession has undoubtedly come a long way in this area, but there is much progress still to be made. About half of the institutions surveyed conduct validity studies, but half do not, and almost a third of the institutions that do this research do it less frequently than every other year.

It is clear that validity studies contribute meaningfully to assessing the accuracy and fairness of admission processes in selecting those students likely to have the greatest academic success at the college level. For this reason, validity study research has focused on investigating this relationship. The survey responses and institutional examples in this paper suggest that validity studies have focused heavily on connecting college academic performance with the criteria used to make decisions in the admission process.

Whether an institution uses a single academic rating or individual evaluations of the constituent factors related to student academic ability and achievement, the intellectual process is similar. In each case, various indices of academic performance are examined. Overall, it is clear that high school grades are by far the most significant predictor of college academic achievement. In addition, for all the schools interviewed for this

project who examined the subject, standardized testing made a significant contribution to the ability to predict college academic performance. However, the impact of individual tests varied widely from institution to institution, so it is critical that each college or university conduct research that is institution-specific.

Another common use of validity research relates to the retention of current students. Given that retention research invariably shows lower retention rates for students with lower college course grades, reducing the number of students predicted to struggle academically should have a positive impact on retention. For this reason, schools with relatively non-selective admission processes can still make valuable use of validity research, although the survey results suggest it is not currently a common practice for these institutions. One challenge with connecting retention to admission process variables, however, is that with the likely exception of schools with highly selective admission processes, attrition can often be higher for students with strong academic evaluations in the admission process. The institution interviewed for this project that noted this effect hypothesized that strong students have more appealing transfer options.

Validity research can also perform a number of other valuable functions, although the survey responses suggest that most of these are conducted relatively infrequently. They can, for instance, help create appropriate targeting in the recruitment of new students and allocation of

financial aid funds (both need- and merit-based). In general, validity studies can make a strong contribution to strategic planning for the institution as a whole. Understanding these possibilities could motivate more institutions to begin validity study protocols.

Effective use of validity studies depends on sharing information beyond the admission office and the office of

institutional research. However, not even a quarter of the institutions surveyed share research results beyond these two offices. There was, for instance, little evidence that faculty (beyond those engaged in academic management) receive any report on validity results. In addition, only a minimal number of the institutions using validity studies reported that they were used to train the admission staff.

## APPENDIX: INSTITUTIONAL PROFILES

**College A:** A public research university in the Southeast enrolling more than 25,000 undergraduates, with an acceptance rate slightly over 50 percent.

**College B:** A four-year private non-profit liberal arts colleges in the Midwest. It has slightly more than 3,000 undergraduates. Its acceptance rate is slightly higher than 60 percent.

**College C:** A public institution on the West Coast with an undergraduate enrollment under 20,000 students, and almost all students coming from its home state. It received more than 30,000 applications per year, and offers admission to 30–35 percent of this pool. Incoming freshmen have an average ACT composite scores in the 25–30 range, and average SAT scores that are somewhat over 600 on each section of the test.

**College D:** A Southern public university with particular strength in math and science, with more than a quarter of its students coming from out-of-state. It offers admission to over half the 10–15,000 first-year students who apply each year. Average first-year composite test scores are in the 27–32 range on the ACT, and between 1900 and 2100 on the SAT.

**College E:** A private Midwestern liberal arts college with an enrollment under 2,000 students, and less than 20 percent of its students from its home state. It receives 4–5,000 applications each year and offers admission to 30–40 percent of applicants. The entering class has average testing between 28 and 32 on the ACT composite, and 1900–2100 on the SAT.

**College F:** A private university on the West Coast with around 6,000 students, a significant majority of whom reside in-state. It receives somewhat over 10,000 applications a year and offers admission to about half of this group. Average testing is in the 24–30 range on the ACT and 1700–1900 on the SAT.

**College G:** An East Coast private liberal arts college with more than 2,000 students, very few of whom come from the home state. It receives around 8,000 first-year applications annually, and offers admission to about 20 percent of students. Average testing is 30–33 on the ACT, and 1900–2200 on the SAT.

**College H:** A Midwestern university with particular focus on technological and scientific fields, and around 30,000 undergraduates of whom 30–40 percent come from out-of-state. It receives more than 30,000 applications annually, and offers admission to 60–70 percent of this pool. Average first-year class testing is 23–29 on the ACT and 1500–1900 on the SAT.

**College I:** A liberal arts college in the northeast with about 2,000 undergraduates and an acceptance rate of 78 percent. (Validity study not provided.)

**College J:** A private research university on the East Coast, with the vast majority of its students coming from out-of-state. It receives 15–20,000 applications in each admission cycle, and offers admission to 20–25 percent of this pool. Average first-year testing is in the 29–33 range on the ACT and 1900–2200 on the SAT.

**College K:** A public university system in the West. (Validity study not provided.)

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