Tests and Cut Scores Used for Student Placement in Postsecondary Education: Fall 2011

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November 2012

National Assessment Governing Board

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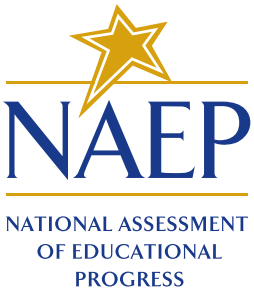

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Contents

List of Tables

Report Tables

Appendix B Tables

Appendix C Tables

Executive Summary

The National Assessment Governing Board (NAGB) oversees and sets policy for the National Assessment of Educational Progress (NAEP). Since 1969, NAEP has provided information to the public on the achievement of the nation's elementary and secondary students at grades 4, 8, and 12. As the only continuing measure of student achievement at grade 12, NAEP is uniquely positioned to report on the academic preparedness of 12th graders for college and job training.

To transform NAEP into a valid indicator of 12th grade academic preparedness, NAGB is conducting a comprehensive program of research. The fall 2011 survey of postsecondary education institutions' use of tests and cut scores in college placement is one component of this larger research program. The survey's central two-part research question is:

(1) Which national standardized tests are used by postsecondary education institutions to determine the need of entry-level students for remedial/developmental instruction in reading or mathematics?

(2) What are the cut scores on those national standardized tests below which students are deemed to need remedial/developmental instruction in reading or mathematics and at or above which students would be just academically qualified for entry-level credit-bearing college courses?

NAGB contracted with Westat to conduct the survey with a nationally representative sample of 2-year and 4-year public and private (both for-profit and not-for-profit) postsecondary education institutions. Slightly different survey forms were developed for 2-year and 4-year institutions (see Appendix A). In August 2011, Westat contacted the office of the president at each sampled institution to identify the appropriate respondent and sent survey materials to these individuals. Follow-up for survey recruitment, nonresponse, and data clarification was conducted via telephone and email by experienced interviewers from September 2011 through January 2012.

Mathematics Findings

During survey development, six nationally available standardized tests were consistently identified as being used by postsecondary education institutions in making determinations about student need for remedial/developmental instruction for mathematics: the ACT and SAT admissions tests, the ACCUPLACER Elementary Algebra and College-level Mathematics placement tests, and the COMPASS Algebra and College Algebra placement tests.

Seventy-one percent of postsecondary education institutions reported using some mathematics test for determining the need of entry-level students for remedial courses in mathematics. The range was from 4 percent for the COMPASS College Algebra test to 23 percent for ACT Mathematics.

The overall mean cut scores reported for the six standardized mathematics tests were:

- 19 on ACT mathematics on a scale of 1 to 36
- 471 on SAT mathematics on a scale of 200 to 800
- 70 on ACCUPLACER Elementary Algebra on a scale of 20 to 120
- 57 on ACCUPLACER College-Level Mathematics on a scale of 20 to 120
- 49 on COMPASS Algebra on a scale of 1 to 99
- 43 on COMPASS College Algebra on a scale of 1 to 99

Reading Findings

During survey development, five nationally available standardized tests were consistently identified as being used by postsecondary education institutions in making determinations about student need for remedial/developmental instruction for reading: the ACT and SAT admissions tests, and the ACCUPLACER Reading Comprehension, ASSET Reading Skills, and COMPASS Reading placement tests.

About half (53 percent) of postsecondary education institutions reported using some reading test for determining the need of entry-level students for remedial courses in reading. The range was from 9 percent for the ASSET Reading test to 22 percent for the COMPASS reading test.

The overall mean cut scores reported for the five standardized reading tests were:

- 18 on ACT Reading on a scale of 1 to 36
- 456 on SAT Critical Reading on a scale of 200 to 800
- 76 on ACCUPLACER Reading Comprehension on a scale of 20 to 120
- 41 on ASSET Reading Skills on a scale of 23 to 55
- 76 on COMPASS Reading on a scale of 1 to 99

Variability of Cut Scores

In addition to the mean cut score for each test, the overall range and 25th, 50th, and 75th percentiles were reported. The size of the interquartile range on each test for all institutions was converted to standard deviation units as a way of comparing the variability in cut scores across tests.

A key assumption in this survey is that each postsecondary education institution's conception of the reading and mathematics knowledge and skills needed to be "just academically prepared" for credit-bearing entry-level courses is operationalized in the cut scores used.

The variability in cut scores is appreciable. It is smallest for ASSET Reading Skills, with one score point across the interquartile range and standard deviation of .15, and largest for COMPASS Algebra, with 26 score points across the interquartile range and standard deviation of 1.35.

The data in this analysis suggest that postsecondary education institutions across the nation do not hold a single, common conception of "just academically prepared."

Mathematics Tests	Interquartile Range in Standard Deviation Units
ACT	.57
SAT	.51
ACCUPLACER Elementary Algebra	.73
ACCUPLACER College-level Mathematics	.91
COMPASS Algebra	1.35
COMPASS College Algebra	.50

Reading Tests	Interquartile Range in Standard Deviation Units
ACT	.32
SAT	.44
ACCUPLACER Reading Comprehension	.41
ASSET Reading Skills	.15
COMPASS Reading	.48

I. Introduction

The survey of postsecondary education institutions' use of tests and cut scores in college placement is one component of a larger research program of the National Assessment Governing Board (NAGB). This introductory section provides an overview of the Governing Board's research program, the purpose of this study, the policy context, policy considerations in survey design, the survey methodology, and study limitations.

Overview of the Governing Board Program of Preparedness Research

Since 1969, the National Assessment of Educational Progress (NAEP) — also known as the Nation's Report Card — has reported to the public on the academic achievement of United States elementary and secondary school students. The National Assessment is authorized and funded by Congress. Assessments are conducted in key subjects, such as reading, writing, mathematics, science, U.S. history, civics, geography, and the arts at grades 4, 8, and 12.

NAGB — an independent body of state and local educators, policymakers, technical experts, business leaders, parents, and the general public — oversees and sets policy for NAEP.[1]

In 2004, the Governing Board received a report from a national blue-ribbon commission it had established. The Commission on NAEP 12th Grade Assessment and Reporting was composed of leaders in K-12 and postsecondary education, business, and the military. Their charge was "To review the current purpose, strengths, and weaknesses of 12th grade NAEP…" After more than a year of deliberation, the Commission made five recommendations. One key recommendation was to transform NAEP to enable it to report on the academic preparedness of 12th grade students for college and job training (National Commission on NAEP 12th Grade Assessment and Reporting, 2004).

The National Commission (2004), recognizing that 12th grade is the transition point to adult pursuits, stated that:

> America needs to know how well prepared its high school seniors are to become productive citizens and to compete in a global economy — how well they can read, write and compute, and what they know about science, history, civics, and other important disciplines (p. 2).

As the only source of nationally representative data on student achievement at grade 12, the Commission concluded that NAEP is uniquely positioned to report on the academic preparedness of 12th graders.

The Governing Board accepted the Commission's report and acted on it. The Board determined that questions of validity are at the heart of transforming NAEP from a measure of current student achievement to an indicator of academic preparedness. Specifically, was the NAEP content appropriate for measuring academic preparedness for college and job training? What evidence would be necessary to support statements about preparedness to be made in NAEP reports?

[1] More information about the Governing Board is available at www.nagb.org or www.nagb.gov.

As the only source of nationally representative data on student achievement at grade 12… NAEP is uniquely positioned to report on the academic preparedness of 12th graders [for college and job training].

The first step in addressing validity questions was to determine whether the 12th grade NAEP assessment content in reading and mathematics is relevant and appropriate for measuring academic preparedness for college and job training. Consequently, the Governing Board contracted with the Achieve, Inc.[2] American Diploma Project[3] to review the NAEP 12th grade assessment frameworks in reading and mathematics. The test frameworks define what will be measured and how it will be measured for each NAEP assessment, i.e., the assessment content.

In 2006, Achieve presented its recommendations for the test frameworks that would guide development of test items for the 2009 administration of the NAEP 12th grade reading and mathematics assessments. The Governing Board reviewed these recommendations and made appropriate revisions to the NAEP frameworks for 2009 (National Assessment Governing Board [NAGB] Mathematics Framework for the 2009 NAEP, 2008; NAGB Reading Framework for the 2009 NAEP, 2008).

In 2007, the Governing Board established the Technical Panel on 12th Grade Preparedness Research. The panel's charge was to assist "the National Assessment Governing Board in planning research and validity studies that will enable…[NAEP] to report on the preparedness of 12th graders for postsecondary education and job training" (NAGB Technical Panel on 12th Grade Preparedness Research, 2009, p. iii). The panel's recommendations were presented to the Governing Board in November 2008. The first phase of the research was to be conducted in connection with the 2009 NAEP 12th grade reading and mathematics assessments.

For the purpose of designing the research program, the NAGB Technical Panel (2009) recommended the following working definition of preparedness:

> Preparedness for college refers to the reading and mathematics knowledge and skills necessary to qualify for placement into entry level college credit coursework without the need for remedial coursework in those subjects. Preparedness for workplace training refers to the reading and mathematics knowledge and skills needed to qualify for job training; it does not mean that the student is ready to be hired for a job (p. 3).

This working definition focuses on academic preparedness to *qualify for entry*, not on success in first year courses or completion of a certificate or degree.

The NAGB Technical Panel (2009) recommended studies in five areas:

- **Content alignment**, to determine the degree of overlap between NAEP and other relevant tests
- **Statistical linking**, to examine how student performance on NAEP compares with performance on other relevant tests
- **Judgmental standard-setting**, in which experts in college placement and occupational training identify the point(s) on the score scale for NAEP reporting that represents "just academically prepared"

[2] Achieve, Inc. "…is a bipartisan, non-profit organization that helps states raise academic standards, improve assessments, and strengthen accountability to prepare all young people for postsecondary education, work, and citizenship." www.achieve.org

[3] Achieve, working through state leaders, established the American Diploma Project (ADP) Network in 2005 "...to improve postsecondary preparation by aligning high school standards, graduation requirements and assessment and accountability systems with the demands of college and careers." www.achieve.org/adp-network

- **Benchmarking**, in which NAEP is administered to a representative group of interest, such as college freshmen or individuals newly enrolled in specific job training programs
- **Survey** of postsecondary education institutions' use of tests and cut scores for entry-level college course placement

The intent was to conduct a range of types of studies, examine the degree to which results were mutually confirming, and, on the basis of that examination determine whether: (a) it is feasible for NAEP to report on 12th grade students' academic preparedness, and (b) the results are sufficient to support valid statements about 12th grade students' academic preparedness in NAEP reports.

Ultimately, the goal is to identify points on the NAEP 12th grade reading and mathematics reporting scales at or above which represent the knowledge and skills needed to qualify academically for placement into entry-level, credit-bearing college courses or job training, and below which indicate a likely need for remediation.

It is important to note that NAEP, by law, does not provide individual student results, only group results for the nation, states, and 21 urban districts. The NAEP results are also disaggregated by race, ethnicity, gender, income level, and for students with disabilities and English language learners. None of this will change as a result of the preparedness research program. The intention is solely to make NAEP 12th grade results more relevant and useful as a national indicator of academic preparedness for college and job training.

This report provides findings from the fifth type of research study cited above: the survey of postsecondary education institutions' use of tests in entry-level college placement for credit-bearing versus remedial/developmental[4] courses.

Purpose of the Survey

The primary purpose of this survey is to provide a source of nationally representative data for use as potential validity evidence for NAEP reporting on 12th grade student's academic preparedness for college. The survey's central two-part research question is:

(1) Which national standardized tests are used by postsecondary education institutions to determine the need of entry-level students for remedial/developmental instruction in reading or mathematics?

(2) What are the cut scores on those national standardized tests below which students are deemed to need remedial/developmental instruction in reading or mathematics and at or above which students would be just academically qualified for entry-level credit-bearing college courses?

The survey is intended as a component of the Governing Board's program of preparedness research. However, because recent research on the use of tests in college placement decisions has been focused at the state level or presented as case studies (e.g., Brown & Niemi, 2007; Belfield & Crosta, 2012; Sommo, Mayer, Rudd, & Cullinan, 2012), the nationally representative aspect of the survey results fills an information gap that may be of wider interest to K-12 and postsecondary education policymakers and researchers.

Policy Context

The Governing Board's initiative to transform NAEP into an indicator of academic preparedness for college and job training comes amid wider

[4] In this report, the terms "remedial/developmental" and "remedial" are used synonymously.

recognition by state and national leaders of the need to ensure that 12th grade students leave high school "college and career ready."

In 2008, the National Governors Association and the Council of Chief State School Officers joined together to develop the Common Core State Standards Initiative (CCSSI). These are K-12 education standards for mathematics and English language arts that:

> [D]efine the knowledge and skills students should have within their K-12 education careers so that they will graduate high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs ("About the Standards," 2012, para. 4).

As of October 2012, the Common Core State Standards for mathematics and English language arts had been adopted formally by 45 states and 3 territories (CCSSI, "In the States"). Two consortia of states are developing assessments aligned to the Common Core State Standards.[5]

In 2010, the Obama Administration proposed that college- and career-ready standards be included in the reauthorization of the Elementary and Secondary Education Act (White House, Office of the Press Secretary, 2010). The U.S. Senate Committee on Health, Education, Labor and Pensions (2011) approved a bill to reauthorize the Elementary and Secondary Education Act that "makes college- and career-readiness for all students a central goal" (p. 20).

Similarly, the Business Coalition for Student Achievement (2012), coordinated by the Business Roundtable and the U.S. Chamber of Commerce, has stated the U.S. business community's commitment to "Ensuring that all students graduate academically prepared for college, citizenship and the 21st century workplace..." The basis for this commitment is their perspective that "improving the performance of the K-12 education system in the United States is necessary to provide a strong foundation for both U.S. competitiveness and for individuals to succeed in our rapidly changing world."

In addition to the view that inadequate achievement erodes individual opportunity and global economic competitiveness, a recent report prepared by the Independent Task Force on U.S. Education Reform and National Security of the Council on Foreign Relations (2012), co-chaired by Joel Klein and Condoleezza Rice, argues that inadequate achievement is a threat to national security.

Policy Considerations for the Survey

In conceptualizing the survey design and developing the survey items, a number of key policy issues and assumptions were addressed.

Admission Versus Placement

The first issue involved distinguishing between policies for admission to postsecondary education institutions and policies for placement into first-year courses, whether credit-bearing or remedial/developmental. The intention was to avoid conflating admissions policy and placement policy, because they are not necessarily synonymous. Many postsecondary institutions admit students who may need remediation. Highly selective institutions generally do not admit students who need remediation; they limit admission to students whose academic proficiency often exceeds "just academically prepared" to an exceptional degree. Accordingly, test cut scores used for admission would not necessarily be an indicator of "just academically prepared."

[5] The consortia are the Smarter Balanced Assessment Consortium (www.smarterbalanced.org) and the Partnership for Assessment of Readiness for College and Careers (www.parcconline.org).

The object of the Governing Board's preparedness research is to locate the points on the NAEP 12th grade reading and mathematics scales:

- at or above which represent the knowledge and skills needed to be "just academically prepared" for entry-level credit-bearing coursework;
- below which represent a likely need for remediation.

Therefore, the choice was made to focus on policies used for placement, because these policies are assumed to be more closely aligned with the institution's conceptualization of being "just academically prepared" for college level work. This distinction was also important because some tests (e.g., ACT and SAT) could be used both for admissions and placement.

Target Academic Subjects

The second key issue was the choice of reading and mathematics as the subjects of interest for the survey. Writing, for example, which is also assessed by NAEP, could have been a candidate for inclusion in the survey. Along with reading and mathematics, adequate writing skills are necessary for college-level work and inadequate skills a prescription for remediation. However, the Governing Board's initial set of preparedness research studies was designed solely in connection with the NAEP 12th grade reading and mathematics assessments. To minimize burden on respondents, the survey asked for information that was essential for the Board's immediate research needs.

Other Criteria Used for Placement

The third issue considered was that multiple factors, such as high school course taking, class rank, teacher recommendations, and grade point average, may be a factor in placement. In each stage of survey development activities, some postsecondary participants strongly urged reporting these other factors, since they viewed doing so as providing a more comprehensive picture of the information used in evaluating students' preparedness for college level courses. While the focus of the survey remained the institution's conceptualization of necessary reading and mathematics skills in relation to a specific score on a test, survey respondents were afforded the opportunity to provide information about ancillary data that are considered by their institution in determining student need for remediation.

Preparedness Versus Readiness

The fourth key issue was the distinction between academic preparedness for college and "college readiness." College readiness is a much broader concept than academic preparedness. Conley (2007), for example, has developed a conception of college readiness that includes time management, persistence, disciplined study habits, and the ability to negotiate college bureaucratic procedures, as well as performing the higher order intellectual tasks generally expected of entry-level college students. As noted above, the Governing Board's working definition is limited to academic preparedness. Accordingly, academic preparedness, rather than "readiness," is the focus of the survey.

One Survey Form or Two?

The fifth key issue was whether to have a single survey form or separate forms for 2-year institutions and for 4-year institutions. For the sake of clarity and simplicity, the decision was made to have separate forms with minor variances to account for differences in the respective missions of 2-year and 4-year institutions (e.g., the multiple roles played by 2-year institutions as a path to a college degree, job training, and adult education versus the target of a college degree for 4-year institutions).

II. Survey Development, Sample, and Data Collection Methodology[6]

Survey Development

The survey forms were developed through a multi-stage process involving expert review and testing with potential survey respondents. A draft survey developed under preliminary research conducted by the Governing Board was refined by survey development specialists at Westat, the Governing Board's contractor for the conduct of the survey. The new draft was reviewed by the contractor's Technical Review Panel for this project and further refined. The refined draft was piloted with six institutions to assess the clarity of the instructions and questions, the time needed to complete the survey, whether there were other extant sources of the requested data, and the most efficient way to identify appropriate respondents within institutions.

It was anticipated that there would be a high degree of variability among institutions in terms of the office or individual most knowledgeable about the policy on tests and cut scores for placement and that identifying the appropriate respondent would be a challenge in conducting the survey. This was confirmed at every stage of survey development.

After the pilot test, another exploratory study was conducted with eight volunteering institutions. Key among the questions addressed, where admission tests like the ACT and SAT were also used to identify students in need of remediation, was how to avoid errors due to respondents confusing the different uses of the tests.

The next phase of survey development involved review of the draft survey by an external panel of content experts in a half-day structured discussion by teleconference and then a small-scale field test with a diverse sample of 120 postsecondary institutions. This work confirmed the use of separate forms for 2-year and 4-year institutions and the president's office of the respective institutions as the place to begin the process of identifying the appropriate respondent for the survey. As a final step for survey quality and clarity, a small-scale cognitive lab and usability study[7] was conducted with participants from nine institutions.

Sample

The sample of approximately 1,670 Title IV postsecondary education institutions was drawn from the 2009–10 Institutional Characteristics (IC) component of the Integrated Postsecondary Education Data System (IPEDS) maintained by the National Center for Education Statistics (NCES). It included 2-year and 4-year degree-granting institutions in the 50 states and the District of Columbia that offer at least an undergraduate degree.

The 1,670 institutions in the sample was reduced, yielding a final sample of about 1,560, due to five institutions having closed and approximately 100 not meeting one of the following eligibility criteria in fall 2011:

- Enrollment of entering students in a degree program designed to transfer to a 4-year institution (applies to 2-year institutions only); or
- Enrollment of entering students in an undergraduate degree program in the liberal arts and sciences (applies to 4-year institutions only).

[6] For additional detail, see Technical Report in Appendix A.

[7] A cognitive lab and usability study involves in-depth interviews with individuals representing likely respondents, to assess the degree of agreement between the intended meaning of the survey instructions and items and the meaning as interpreted by the respondents.

Stratification was by level (four-year, two-year), control (public, private not-for-profit, private for-profit), highest level of offering (doctor's/doctoral-professional practice, master's, bachelor's, less than bachelor's), and total fall enrollment. Within each stratum, institutions were sorted by region (Northeast, Southeast, Central, West) and by level of minority enrollment (high black enrollment, high total minority enrollment but not high black enrollment, and low minority enrollment).

A weighted response rate of 81 percent was achieved. Weighted response rates by sector were:

4-year public institutions	91%
2-year public institutions	89%
4-year private, not-for-profit institutions	84%
2-year private, not-for-profit institutions	74%
4-year private for-profit institutions	68%
2-year private for-profit institutions	56%

A non-response bias analysis was conducted and non-response adjusted weights were estimated. Based on the non-response bias analysis, it appears that the estimates reported in the study, using the nonresponse adjusted weights, are nationally representative.[8]

Data Collection Methodology

Separate survey forms were used for 2-year and for 4-year institutions, with only minor differences in the forms.[9] The primary difference is in the description of the target population for the institution's general policy about entry-level placement into remedial/developmental or credit-bearing courses.

Two-year institutions serve students on a wide array of diverse paths, from taking a single course of interest, to obtaining training for an occupation, to enrolling in a program that would transfer to a 4-year institution for a bachelor's degree. Depending on the path chosen by the student, the 2-year institution may employ different criteria for determining student need for remedial courses. Therefore, and consistent with the eligibility criteria described above, the 2-year survey asked respondents to report "based on the tests your institution uses to evaluate entering students who are pursuing a degree program that is designed to transfer to a four-year institution." For 4-year institutions, to capture the general policy for entry-level students, as opposed to students in programs that may have additional and/or more rigorous enrollment requirements, the survey asked respondents to report "based on the tests your institution uses to evaluate entering students who are enrolled in an undergraduate degree program in the liberal arts and sciences."

Letters with background information on the survey were sent to the office of the president at each sampled institution in August 2011. The letters identified the survey sponsor (the National Assessment Governing Board), explained the purpose of the survey, and asked the president to identify an appropriate respondent.

Survey materials (background information, instructions, and the survey)[10] were sent directly to the identified respondents via email, mail, or fax. Four options were offered for completing the survey: online, and via mail, email, or fax. Follow-up for survey recruitment, nonresponse, and data clarification was conducted via telephone and email by experienced, trained interviewers from September 2011 through January 2012.

[8] See Technical Report in Appendix A.

[9] See pages A-1 through B-10, Technical Report in Appendix A.

[10] See Technical Report in Appendix A.

III. Caveats and Limitations on Interpretation

The work that was done in developing and executing the survey consistently pointed to the complexity and variability in the use of tests and cut scores by postsecondary education institutions in determining student need for remediation. The procedures in use across the country are not monolithic. However, the data in this report are intended to reflect the institutions' general policies; they do not necessarily convey the complexity of the determination process as it applies to individual students. Readers are therefore cautioned to interpret the data in this report in light of the following information.

Remedial/Developmental Coursework: Required or Recommended?

During survey development, discussions with the technical experts and the respondents in the small-scale studies confirmed that there is variability in the use of tests in placement procedures for remedial courses. In some institutions, performance below a certain cut score leads to a requirement for students to take remedial courses. In other institutions, remedial coursework is recommended, but students are permitted to take credit-bearing courses, either at their own discretion or the discretion of the institution. If different scores were used for either requiring or recommending remediation, the survey asked respondents to report the highest score used.

Use of Multiple Tests

Survey development activities also confirmed that individual institutions may use more than one test, either alone or in combination, in determining student need for remedial/developmental instruction. In the cases where respondents reported using more than one test, project interviewers followed up with the respondent to clarify which test or tests, and associated cut score, signified the institution's policy for distinguishing those students who were "just academically prepared" from those needing remedial/developmental instruction.

In cases where performance on both admissions tests (i.e. ACT and SAT scores) and placement tests were used, respondents confirmed which tests and cut scores represented the institution's general policy for placement. In other cases where multiple tests were reported, respondents confirmed whether only one test and cut score was used to make this distinction and whether the other tests and cut scores were used for determining the level of remediation needed. In most instances, these institutions offer graduated levels of remediation, reflecting higher and lower gaps between the institution's conception of "just academically prepared" and the student's test performance. Thus, multiple cut scores on a test or multiple subtests may be used to identify the level of the remedial course most appropriate for the student.

For these reasons, the survey asked respondents to report the highest score below which the need for remedial course work is indicated and at or above which students would be placed into entry-level credit-bearing courses.

General Policy Versus Individual Student Placement Determination

The experts and respondents in the small scale studies who participated during the survey development process emphasized that the placement determination of entry-level students was often handled on a case-by-case basis, with a process employing personal advising by an admission or placement counselor, taking into account test performance and other factors. The aim of this approach is to maximize the chances for the individual student's success. Examples of this approach can be found among the Achieving the Dream "Leader Colleges,"[11] but certainly are not limited to these institutions.

It is important to be aware of such individual student-centered approaches to student placement, while recognizing that the narrow focus of this survey is on postsecondary education institutions' conceptualization of being "just academically prepared" as operationalized by performance on a test, for the purpose of the Governing Board's program of preparedness research.

[11] A list of Achieving the Dream "Leader Colleges" can be found at: www.achievingthedream.org/initiatives/PRESS.

IV. Findings

The survey findings are presented first for mathematics and then for reading. For both subjects, national estimates are followed by breakouts by institution level and type. The tests displayed in the tables are the most relevant for statistical linking with NAEP because of the level of their content and their frequency of use. See Appendix C for the frequency of use of all tests for which data were collected.

Mathematics

During survey development, four nationally available standardized testing programs were consistently identified by advisors and preliminary study participants as being used in making determinations about student need for remedial/developmental instruction in mathematics. The four testing programs are the ACT and SAT admissions tests, and the ACCUPLACER and COMPASS placement tests. The placement test programs each have specific tests that are used for assessing different levels of student need for remediation.

Seventy-one percent of postsecondary education institutions reported using some mathematics test for determining the need of entry-level students for remedial courses in mathematics.

Respondents were also given the opportunity to report on whether other tests are used. They were not asked to report the cut scores on those tests because it would not be practical or useful to link performance on NAEP with performance on those tests. For example, many of the tests could be developed by the institution itself or a state-wide postsecondary education entity and, therefore, not permit national-level comparisons.

Frequency of Use of Mathematics Tests

Table 1 displays the frequency of use of various tests. Seventy-one percent of postsecondary education institutions reported using some mathematics test for determining the need of entry-level students for remedial courses in mathematics. The range was from 4 percent for the COMPASS College Algebra test to 23 percent for ACT Mathematics.

Twenty percent of institutions reported using the COMPASS Algebra test; 17 percent the SAT Mathematics test; 16 percent the ACCUPLACER Elementary Algebra test; and 5 percent the ACCUPLACER College-level Mathematics test. Twenty-two percent of respondents reported using other mathematics tests than the standardized national tests for which data were collected.

Considering differences by institution type, 100 percent of 2-year public institutions and 85 percent of 4-year public institutions reported using some mathematics test for placement. Forty to 58 percent of private 2-year and 4-year institutions use some mathematics test for placement. Details on the frequency of use of specific national standardized tests or other tests by institution level and type are displayed in Table 1.

Table 1 Estimated number of postsecondary institutions in the population and percentage of institutions using selected mathematics tests to evaluate entering students for developmental or remedial courses in mathematics, by institution level and type: Fall 2011

Institution level and type	Estimated number of institutions in the population	Percentage of institutions using any mathematics test	Percentage of institutions using specific mathematics tests						
			ACT	SAT	ACCUPLACER		COMPASS		Other mathematics tests
			Mathematics	Mathematics	Elementary Algebra	College-Level Mathematics	Algebra	College Algebra	
All institutions	3,650	71	23	17	16	5	20	4	22
Institution level									
2-year	1,470	80	23	12	24	7	34	8	16
4-year	2,180	65	24	20	11	3	10	2	26
Institution type									
Public 2-year	970	100	32	17	32	10	49	11	14
Private 2-year	500	40	—	3!	7	—	—	—	20!
Public 4-year	620	85	31	22	19	7	22	5	38
Private not-for-profit 4-year	1,230	58	24	22	5	2!	6	—	23
Private for-profit 4-year	330	52	9!	10	20	—	—	—	19

! Interpret data with caution; the coefficient of variation is greater than or equal to 30 percent but less than 50 percent.

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

NOTE: Details for the number of institutions may not sum to totals because of rounding.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Mean Cut Scores on Mathematics Tests by Institution Level and Type

Overall Estimates

Table 2 displays the mean mathematics test scores reported by postsecondary education institutions that demarcate the point at or above which students were deemed to be academically prepared for credit-bearing entry-level mathematics courses and below which student need for remediation was indicated.

The overall mean cut scores reported for the most frequently used standardized national mathematics tests are:

- 19 on ACT mathematics on a scale of 1 to 36
- 471 on SAT mathematics on a scale of 200 to 800
- 70 on ACCUPLACER Elementary Algebra on a scale of 20 to 120
- 57 on ACCUPLACER College-Level Mathematics on a scale of 20 to 120
- 49 on COMPASS Algebra on a scale of 1 to 99
- 43 on COMPASS College Algebra on a scale of 1 to 99

Statistically Significant Differences by Institution Level and Institution Type

There were five tests for which comparisons of statistical significance could be made by institution level and by institution type: the ACT and SAT mathematics tests, the ACCUPLACER Elementary Algebra and College-level Mathematics tests, and the COMPASS Algebra test.

Table 2 shows the following differences by institution level:

- The mean scores for 2-year institutions were higher than those for 4-year institutions for each of the ACT and SAT mathematics tests and the COMPASS Algebra test.
- The mean score for 2-year institutions was significantly lower than the mean score for 4-year institutions on the ACCUPLACER Elementary Algebra test.

Similar results were found by institution type:

- The mean scores for 2-year public institutions were higher than those for 4-year public institutions for each of the ACT and SAT mathematics tests and the COMPASS Algebra test.
- The mean score for 2-year public institutions was lower than the mean score for 4-year public institutions on the ACCUPLACER Elementary Algebra test.
- Public 2-year institutions had higher mean scores than private not-for-profit 4-year institutions for each of the ACT and SAT mathematics tests.

Table 2 Mean mathematics test scores below which entering students were identified as in need of developmental or remedial courses in mathematics, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Mean mathematics test scores					
	ACT	SAT	ACCUPLACER		COMPASS	
	Mathematics	Mathematics	Elementary Algebra	College-Level Mathematics	Algebra	College Algebra
All institutions[1]	19	471	70	57	49	43
Institution level[1]						
2-year	20	483	68	55	51	43
4-year	19*	467*	73*	59	44*	—
Institution type[1]						
Public 2-year	20	485	69	55	51	43
Public 4-year	19**	474**	73**	57	45**	—
Private not-for-profit 4-year	19**	459**	—	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

* Indicates a significant difference between 2-year and 4-year institutions reporting by institution level.

**Indicates a significant difference between 2-year public and the comparison group by institution type.

NOTE: For each test, mean scores are based on the number of institutions reporting the use of the test to evaluate students for remedial or developmental mathematics courses in fall 2011.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Variability of Cut Scores on Mathematics Tests by Institution Level and Type

Tables 3 and 4 display the range and percentiles of cut scores at or above which postsecondary education institutions reported students were deemed to be academically prepared and below which the need for remedial courses was indicated. The data suggest an appreciable amount of variability in the cut scores reported by postsecondary institutions, as evidenced by the overall cut score ranges and the interquartile ranges for the tests displayed in the tables. Because the overall cut score ranges appear extreme in at least several of the cases, the analysis below focuses on the interquartile ranges.

The data suggest an appreciable amount of variability in the cut scores reported by postsecondary institutions

The ACT mathematics test has a score scale of 1 to 36 and a standard deviation of 5.3. For the ACT mathematics test, the cut scores reported range from 10 to 25. For all institutions, the 25th, 50th, and 75th percentiles are 17, 19, and 20 respectively, with an interquartile range of 3, or .57 of a standard deviation.

The SAT mathematics test has a score scale of 200-800 with a standard deviation of 117. The range of cut scores reported for the SAT mathematics test is 330 to 600. For all institutions, the 25th, 50th, and 75th percentiles are 440, 470, and 500 respectively, with an interquartile range of 60, or .51 of a standard deviation.

The ACCUPLACER mathematics tests have a score scale of 20 to 120. The standard deviation is 27.3 for the Elementary Algebra test and 19.8 for the College-level Mathematics test.

Cut scores reported for the ACCUPLACER Elementary Algebra test ranged from 25 to 110. For all institutions, the 25th, 50th, and 75th percentiles are 61, 71, and 81 respectively, with an interquartile range of 20, or .73 of a standard deviation.

For the ACCUPLACER College-level Mathematics test, the range was 30 to 93. For all institutions, the 25th, 50th, and 75th percentiles are 45, 51, and 63 respectively, with an interquartile range of 18, or .91 of a standard deviation.

The COMPASS mathematics tests have a score range of 1 to 99. The standard deviation is 19.2 for the COMPASS Algebra test and 20.1 for the COMPASS College Algebra test. For the COMPASS Algebra test, the reported cut scores ranged from 15 to 86. For all institutions, the 25th, 50th, and 75th percentiles are 38, 45, and 64 respectively, with an interquartile range of 26, or 1.35 standard deviations.

Cut scores reported for the COMPASS College Algebra test ranged from 20 to 76. For all institutions, the 25th, 50th, and 75th percentiles are 36, 40, and 46 respectively, with an interquartile range of 10, or .50 of a standard deviation.

Mathematics Tests	Interquartile Range in Standard Deviation Units
ACT	.57
SAT	.51
ACCUPLACER Elementary Algebra	.73
ACCUPLACER College-level Mathematics	.91
COMPASS Algebra	1.35
COMPASS College Algebra	.50

Table 3 Ranges of mathematics test scores below which entering students were identified as in need of developmental or remedial courses in mathematics, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Ranges of scores for mathematics tests											
	ACT		SAT[1]		ACCUPLACER				COMPASS			
	Mathematics		Mathematics		Elementary Algebra		College-Level Mathematics		Algebra		College Algebra	
	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score
All institutions[2]	10	25	330	600	25	110	30	93	15	86	20	76
Institution level[2]												
2-year	10	25	380	600	25	110	33	93	15	86	26	76
4-year	12	24	330	600	29	109	30	86	25	76	—	—
Institution type[2]												
Public 2-year	10	25	380	600	25	110	33	93	15	86	26	76
Public 4-year	12	24	330	600	34	109	30	75	26	76	—	—
Private not-for-profit 4-year	14	24	340	590	—	—	—	—	—	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Some institutions reported interpolated SAT mathematics scores. Where applicable, the scores were rounded to the nearest ten for presentation in this table.

[2] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table 4 Percentiles for mathematics test cut scores below which entering students were identified as in need of developmental or remedial courses in mathematics, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Percentiles for mathematics test cut scores																	
	ACT			SAT[1]			ACCUPLACER						COMPASS					
	Mathematics			Mathematics			Elementary Algebra			College-Level Mathematics			Algebra			College Algebra		
	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th
All institutions[2]	17	19	20	440	470	500	61	71	81	45	51	63	38	45	64	36	40	46
Institution level[2]																		
2-year	18	19	21	450	480	500	57	67	76	45	49	63	39	50	65	35	40	46
4-year	17	18	19	440	460	500	62	72	84	45	61	72	38	40	47	—	—	—
Institution type[2]																		
Public 2-year	18	19	21	450	480	510	61	70	76	45	49	63	39	50	65	35	40	46
Public 4-year	18	19	19	450	460	500	63	72	82	46	59	63	38	40	47	—	—	—
Private not-for-profit 4-year	17	18	19	430	460	495	—	—	—	—	—	—	—	—	—	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Some institutions reported interpolated SAT mathematics scores. Where applicable, the scores were rounded to the nearest ten for presentation in this table.

[2] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Other Criteria Used by Postsecondary Institutions

To round out the factors that are considered in placement determinations by postsecondary education institutions, respondents were asked to report on the use of criteria other than the tests reported in the preceding subsection. Overall, 21 percent of institutions reported using some other criteria. Eleven percent reported using Advanced Placement or International Baccalaureate scores; 10 percent used high school grades; 10 percent considered highest mathematics course taken; 3 percent looked at high school graduation tests or end-of-course tests, or faculty recommendations; and 2 percent considered other criteria than these.

Similar patterns were found by institution level. Seven to twelve percent of 2-year and 4-year institutions reported using Advanced Placement or International Baccalaureate scores, high school grades, and highest mathematics course taken. Two to four percent reported using high school graduation tests or end-of-course tests, faculty recommendations, or other criteria. Again, similar patterns were found for public 2-year, public 4-year, and private not-for-profit 4-year postsecondary education institutions.

Table 5 Estimated percentage of institutions using criteria other than postsecondary mathematics tests to evaluate entering students for developmental or remedial courses in mathematics, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any criteria other than mathematics tests	Percentage of institutions using specific mathematics tests					
		High school graduation tests or end-of-course tests	High school grades (including grade point average)	Highest school mathematics course completed	Advanced Placement or International Baccalaureate scores	Faculty recommendation	Other criteria
All institutions	21	3	10	10	11	3	2
Institution level							
2-year	20	3	7	9	12	4	3
4-year	22	3	12	10	11	3	2
Institution type							
Public 2-year	27	4	8	12	17	5	4
Private 2-year	—	—	—	—	—	—	—
Public 4-year	27	5	8	8	15	4	4
Private not-for-profit 4-year	25	4!	17	14	11	4	1!
Private for-profit 4-year	—	—	—	—	—	—	—

! Interpret data with caution; the coefficient of variation is greater than or equal to 30 percent but less than 50 percent.

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

NOTE: Details for the number of institutions may not sum to totals because of rounding.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Reading

During survey development, five nationally available standardized testing programs were consistently identified by advisors and preliminary study participants as being used in making determinations about student need for remediation for reading. The five testing programs are the ACT and SAT admissions tests, and the ACCUPLACER, ASSET, and COMPASS placement tests. Respondents also were given the opportunity to report on whether other tests are used, but they were not asked to report the cut scores on those tests, because it would not be feasible to make national comparisons or link performance on NAEP with performance on these tests.

Frequency of Use of Reading Tests

Table 6 displays the frequency of use of the various reading tests. About half (53 percent) of postsecondary education institutions reported using some reading test for determining the need of entry-level students for remedial courses in reading. The range was from 9 percent for the ASSET Reading Skills test to 22 percent for the COMPASS Reading test.

Nineteen percent of institutions reported using the ACCUPLACER Reading Comprehension test; 16 percent reported using the ACT Reading test; and 11 percent reported using the SAT Critical Reading test. Ten percent of respondents reported using other reading tests.

Table 6 Estimated percentage of institutions using selected reading tests to evaluate entering students for developmental or remedial courses in reading, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any reading test	Percentage of institutions using specific reading tests					Other reading tests
		ACT	SAT	ACCUPLACER	ASSET	COMPASS	
		Reading	Critical Reading	Reading Comprehension	Reading Skills	Reading	
All institutions	53	16	11	19	9	22	10
Institution level							
2-year	73	21	10	29	19	43	12
4-year	39	13	12	12	2	9	8
Institution type							
Public 2-year	94	28	14	39	28	61	10
Private 2-year	33	6!	3!	8!	—	—	16!
Public 4-year	51	18	16	18	6	21	12
Private not-for-profit 4-year	31	14	13	5	#	5	5
Private for-profit 4-year	44	—	—	26	—	—	13

Rounds to zero.

! Interpret data with caution; the coefficient of variation is greater than or equal to 30 percent but less than 50 percent.

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

NOTE: Details for the number of institutions may not sum to totals because of rounding or suppressed data.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Considering differences by institution type, 94 percent of 2-year public institutions compared with 51 percent of 4-year public institutions used some reading test for placement. In addition, 31 to 44 percent of private 2-year and 4-year institutions reported using some reading test for placement. Details on the frequency of use of the five specific national standardized reading tests or other tests by institution level and type are displayed in Table 6.

Mean Cut Scores on Reading Tests by Institution Level and Type

Overall Estimates

Table 7 displays the mean reading test cut scores reported by postsecondary education institutions that demarcate the point at or above which students were deemed to be academically prepared for credit-bearing entry-level courses that require college level reading and below which student need for remedial/developmental instruction was indicated.

The overall mean cut scores reported for the five standardized reading tests were:

- 18 on ACT Reading on a scale of 1 to 36
- 456 on SAT Critical Reading on a scale of 200 to 800
- 76 on ACCUPLACER Reading Comprehension on a scale of 20 to 120
- 41 on ASSET Reading Skills on a scale of 23 to 55
- 76 on COMPASS Reading on a scale of 1 to 99

Statistically Significant Differences by Institution Level and Institution Type

For the five tests in Table 7, comparisons of statistical significance were made by institution level and by institution type.

By institution level, the mean scores for 2-year institutions were higher than for 4-year institutions for the ACT and the SAT reading tests.

By institution type, the only instance of statistically significant differences was for the SAT Critical Reading test – the mean cut score for 2-year public institutions was higher than the scores for 4-year public institutions and 4-year private not-for-profit institutions.

Table 7 Mean reading test scores below which entering students were identified as in need of developmental or remedial courses in reading, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Mean reading test scores				
	ACT	SAT	ACCUPLACER	ASSET	COMPASS
	Reading	Critical Reading	Reading Comprehension	Reading Skills	Reading
All institutions[1]	18	456	76	41	76
Institution level[1]					
2-year	19	471	77	41	76
4-year	18*	447*	76	40	77
Institution type[1]					
Public 2-year	18	470	77	41	76
Public 4-year	18	449**	77	—	77
Private not-for-profit 4-year	18	446**	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

* Indicates a significant difference between 2-year and 4-year institutions reporting by institution level.

** Indicates a significant difference between 2-year public and the comparison group by institution type.

NOTE: For each test, mean scores are based on the number of institutions reporting the use of the test to evaluate students for remedial or developmental reading courses in fall 2011.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Variability of Cut Scores on Reading Tests by Institution Level and Type

Tables 8 and 9 display the range and percentiles, respectively, of cut scores at or above which postsecondary education institutions reported students were deemed to be academically prepared and below which the need for remedial courses was indicated. The data suggest an appreciable amount of variability in the cut scores reported by postsecondary institutions, as evidenced by the overall cut score ranges and the interquartile ranges for the tests displayed in the tables. Because the overall cut score ranges appear extreme in at least several of the cases, the analysis below focuses on the interquartile ranges.

The ACT Reading test has a score scale of 1 to 36 with a standard deviation of 6.2. For the ACT reading test, the cut scores range from 14 to 25. For all institutions, the 25th, 50th, and 75th percentiles are 17, 18, and 19 respectively, with an interquartile range of 2, or about .32 of a standard deviation.

The SAT Critical Reading test has a score scale of 200 to 800 with a standard deviation of 114. The range of cut scores reported for the SAT reading test is 320 to 750. For all institutions, the 25th, 50th, and 75th percentiles are 430, 450, and 480 respectively, with an interquartile range of 50, or about .44 of a standard deviation.

The ACCUPLACER Reading Comprehension test has a score scale of 20 to 120 with a standard deviation of 22. Cut scores reported for the ACCUPLACER Reading Comprehension test range from 50 to 106. For all institutions, the 25th, 50th, and 75th percentiles are 71, 78, and 80 respectively, with an interquartile range of 9, or .41 of a standard deviation.

The ASSET Reading Skills test has a score scale of 23 to 53 with a standard deviation of 6.5. The range of scores reported for the ASSET Reading Skills test is 35 to 47. For all institutions, the 25th, 50th, and 75th percentiles are 40, 40, and 41 respectively, with an interquartile range of 1, or about .15 of a standard deviation.

The Compass Reading test has a score scale of 1 to 99 with a standard deviation of 16.7. For the COMPASS Reading test, the reported cut scores range from 19 to 91. For all institutions, the 25th, 50th, and 75th percentiles are 73, 79, and 81 respectively, with an interquartile range of 8, or .48 of a standard deviation.

Reading Tests	Interquartile Range in Standard Deviation Units
ACT	.32
SAT	.44
ACCUPLACER Reading Comprehension	.41
ASSET Reading Skills	.15
COMPASS Reading	.48

Table 8 Ranges of reading test scores below which entering students were identified as in need of developmental or remedial courses in reading, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Ranges of scores for reading tests									
	ACT		SAT[1]		ACCUPLACER		ASSET		COMPASS	
	Reading		Critical Reading		Reading Comprehension		Reading Skills		Reading	
	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score	Lowest score	Highest score
All institutions[2]	14	25	320	750	50	106	35	47	19	91
Institution level[2]										
2-year	14	25	340	550	50	106	35	47	20	91
4-year	14	25	320	750	52	103	35	43	19	88
Institution type[2]										
Public 2-year	14	25	340	550	50	106	35	47	20	91
Public 4-year	14	25	320	550	55	90	—	—	19	88
Private not-for-profit 4-year	14	21	340	750	—	—	—	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Some institutions reported interpolated SAT mathematics scores. Where applicable, the scores were rounded to the nearest ten for presentation in this table.

[2] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table 9 Percentiles for reading test cut scores below which entering students were identified as in need of developmental or remedial courses in reading, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Percentiles for reading test cut scores														
	ACT			SAT[1]			ACCUPLACER			ASSET			COMPASS		
	Reading			Critical Reading			Reading Comprehension			Reading Skills			Reading		
	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th
All institutions[2]	17	18	19	430	450	480	71	78	80	40	40	41	73	79	81
Institution level[2]															
2-year	17	18	19	450	470	490	75	78	80	40	40	41	74	80	81
4-year	17	18	19	420	440	480	69	77	79	38	40	41	73	79	80
Institution type[2]															
Public 2-year	17	18	19	440	470	490	76	78	80	40	40	41	74	80	81
Public 4-year	16	18	19	430	440	470	74	78	80	—	—	—	74	79	81
Private not-for-profit 4-year	17	18	19	400	440	480	—	—	—	—	—	—	—	—	—

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

[1] Some institutions reported interpolated SAT mathematics scores. Where applicable, the scores were rounded to the nearest ten for presentation in this table.

[2] Data for private for-profit 4-year institutions and all private 2-year institutions are included in the totals but are not shown by institution type because of small cell sizes.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Other Criteria Used by Postsecondary Institutions

Respondents were asked to report on other criteria that are considered in placement determinations in addition to the admissions and placement tests.

Overall, 13 percent of institutions reported using some other criteria. Six percent reported using Advanced Placement or International Baccalaureate scores; 6 percent used high school grades; 3 percent considered highest English course taken; and 2 percent looked at each of the remaining criteria — high school graduation tests or end-of-course tests, faculty recommendations, and other criteria.

By institution level, 14 percent of 2-year and 12 percent of 4-year institutions reported using other criteria. Eight percent of 2-year and 4 percent of 4-year institutions reported using Advanced Placement or International Baccalaureate scores. High school grades were considered by 4 percent of 2-year institutions and 7 percent of 4-year institutions. All other criteria were used by 3 percent or less of 2-year and 4-year postsecondary education institutions. Similar patterns were found by institution type.

Table 10 Estimated percentage of institutions using criteria other than postsecondary reading tests to evaluate entering students for developmental or remedial courses in reading, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any criteria other than reading tests	Percentage of institutions using specific evaluation criteria other than reading tests					
		High school graduation tests or end-of-course tests	High school grades (including grade point average)	Highest school English course completed	Advanced Placement or International Baccalaureate scores	Faculty recommendation	Other criteria
All institutions	13	2	6	3	6	2	2
Institution level							
2-year	14	3	4	3	8	3	2
4-year	12	2	7	3	4	2	2
Institution type							
Public 2-year	19	4	4	4	11	4	3
Private 2-year	4!	—	—	—	—	—	—
Public 4-year	15	4	4	2	7	3	3
Private not-for-profit 4-year	14	1!	10	5	4	2	3!
Private for-profit 4-year	—	—	—	—	—	—	—

! Interpret data with caution; the coefficient of variation is greater than or equal to 30 percent but less than 50 percent.

— Reporting standards not met; too few cases in cell or the coefficient of variation is greater than or equal to 50 percent.

NOTE: Details for the number of institutions may not sum to totals because of rounding.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

V. Conclusion

NAGB is conducting a comprehensive program of research to enable NAEP to report on the academic preparedness of 12th grade students for college and job training. The first phase of the research was conducted in connection with the 2009 NAEP grade 12 assessments in reading and mathematics. It included the survey of postsecondary education institutions' use of tests and cut scores for placement. A second phase of the research is being planned in connection with the 2013 NAEP assessments.

The results of the survey of postsecondary education institutions' use of tests and cut scores for placement will be examined in relation to the results of the other research studies, especially the statistical linking studies. Immediate attention will be paid to how the overall means and medians for each test compare with results from the linking studies. Subsequent analysis by the Governing Board will involve a finer grained examination of the cut scores and inter-quartile variation by institution type. The analysis by institution type may include subcategories within 2-year and 4-year institutions, as well. The typical 2-year versus 4-year and public versus private categories may mask important patterns within subcategories of institutions, especially the broad access institutions that enroll the majority of students. The goal will be to determine whether a "best fit" among the tests and cut scores exists for locating points on the NAEP reading and mathematics scales that represent academic preparedness for college without remediation.

Summary of Findings

Use of Tests

The majority of postsecondary education institutions use student performance on tests in determining entry-level students' need for remedial courses in mathematics and reading. However, the frequency of use is higher for mathematics than for reading. Overall, 71 percent of postsecondary education institutions reported using some mathematics test and 53 percent some reading test in evaluating student need for remediation in those two subject domains.

The majority of postsecondary education institutions use student performance on tests in determining entry-level students' need for remedial courses in mathematics and reading. However, the frequency of use is higher for mathematics than for reading.

Public 2-year and 4-year institutions are the most frequent users of tests for this purpose. All (100 percent) of 2-year public institutions reported using some mathematics test and 94 percent reported some reading test. Among 4-year public institutions, 85 percent reported using some mathematics test and 51 percent some reading test.

The most frequently used national standardized mathematics tests were the ACT (23 percent); COMPASS Algebra test (20 percent); SAT (17 percent); and ACCUPLACER Elementary Algebra test (16 percent). The remaining ACCUPLACER, and COMPASS mathematics tests were each used by 5 percent or less of the institutions.

Twenty-two percent of postsecondary education institutions used tests other than national standardized mathematics tests, including tests developed by the institution or state.

For reading, 22 percent of institutions reported using COMPASS Reading, 19 percent ACCUPLACER Reading Comprehension, 16 percent ACT Reading, 11 percent SAT Critical Reading, and 9 percent ASSET Reading Skills. Ten percent of postsecondary education institutions used tests other than national standardized reading tests.

Frequency of test use will be a factor the Governing Board considers in weighing the relevance, utility, and limitations of particular tests and cut scores for locating points on the NAEP scales that represent academic preparedness for college.

Mean Cut Scores for Mathematics

The overall mean cut scores reported for the most frequently used standardized national mathematics tests were:

- 19 on ACT mathematics on a scale of 1 to 36
- 471 on SAT mathematics on a scale of 200 to 800
- 70 on ACCUPLACER Elementary Algebra on a scale of 20 to 120
- 57 on ACCUPLACER College-Level Mathematics on a scale of 20 to 120
- 49 on COMPASS Algebra on a scale of 1 to 99
- 43 on COMPASS College Algebra on a scale of 1 to 99

Comparing 2-year and 4-year institutions, the mean cut scores for the ACT, SAT, and COMPASS Algebra tests were higher for 2-year institutions while the mean for the ACCUPLACER Elementary Algebra test was higher for 4-year institutions.

Mean Cut Scores for Reading

The overall mean cut scores reported for the most frequently used standardized national reading tests were:

- 18 on ACT Reading on a scale of 1 to 36
- 456 on SAT Critical Reading on a scale of 200 to 800
- 76 on ACCUPLACER Reading Comprehension on a scale of 20 to 120
- 41 on ASSET Reading Skills on a scale of 23 to 55
- 76 on COMPASS Reading on a scale of 1 to 99

Comparing 2-year and 4-year institutions, the mean cut scores for the ACT and SAT reading tests were higher for 2-year institutions. For the other reading tests, there were no instances of statistical significance in comparing the mean cut scores set by 2-year and by 4-year institutions.

Use of Other Criteria

Criteria other than college admissions and placement tests were used by 21 percent and 13 percent of institutions, respectively, for evaluating student need for remedial/developmental instruction in mathematics and reading. Other criteria include high school graduation and end-of-course tests; high school grades; highest mathematics or English course taken; Advanced Placement or International Baccalaureate scores; and faculty recommendations. In addition, respondents were given the option of describing any other criteria they use. Whether for determinations about academic preparedness in mathematics or reading, no single "other criterion" was used by more than 11 percent of institutions overall.

Because the reported frequency of use of other criteria is relatively low, their use does not pose a challenge to a key assumption underlying the study: that the cut scores on the tests are likely to be a good indicator of the institutions' conceptualization of "just academically prepared."

Variability of Cut Scores

In addition to the mean cut score for each test, the overall range and 25th, 50th, and 75th percentiles were reported. The size of the interquartile range on each test for all institutions was converted to standard deviation units as a way of comparing the variability in cut scores across tests.

As noted previously, an underlying assumption in this survey is that each postsecondary education institution's conception of the reading and mathematics knowledge and skills needed to be "just academically prepared" for credit-bearing entry-level courses is operationalized in the cut scores used. The variability of those cut scores is exemplified in the size of the interquartile range, converted to standard deviation units, for each test.

The variability is appreciable in each case. It is smallest for ASSET Reading Skills, with one score point across the interquartile range and standard deviation of .15, and largest for COMPASS Algebra, with 26 score points across the interquartile range and standard deviation of 1.35.

To the extent that the underlying assumption holds, the data in this analysis support the proposition that postsecondary education institutions across the nation do not hold a single, common conception of "just academically prepared."

The implications of this proposition are great, for individuals, families, and the nation. For example, Venezia, Kirst, and Antonio (2003) and others have documented the failure of postsecondary education institutions to convey postsecondary entry-level academic requirements clearly to students, parents, and K-12 educators. They point to the immediate victims of this absence of clarity: the students who graduate high school only to find themselves — often quite unexpectedly — placed into remedial/developmental non-credit courses, facing the added costs of money and time in pursuing a degree, and the attendant weight of discouragement. These students, disproportionately from minority backgrounds, are less likely to finish a degree. In addition, there is the associated waste of K-12 and postsecondary resources in graduating high school students who need remedial instruction and the harm to the nation in failing to maximize the human capital potential inherent in its citizens.

The data support the proposition that postsecondary education institutions do not hold a single, common conception of "just academically prepared." The implications are great, for individuals, families, and the nation.

Questions for Further Research

This survey is part of the Governing Board's broader program of research to transform NAEP into an indicator of academic preparedness for entry-level credit-bearing college courses and job training, without remediation. The survey results will be examined in relation to results from other components of the Board's preparedness research

program. Thus, this survey was designed to address a two-fold primary research question:

(1) Which national standardized tests are used by postsecondary education institutions to determine the need of entry-level students for remedial/developmental instruction in reading or mathematics?

(2) What are the cut scores on those national standardized tests below which students are deemed to need remedial/developmental instruction in reading or mathematics and at or above which students would be just academically qualified for entry-level credit-bearing college courses?

Further research could help determine the extent to which the academic knowledge and skills needed to qualify for job training in various occupations is similar to those needed to qualify for college.

With gratitude to the many respondents that helped achieve a nationally representative sample of postsecondary institutions, there is now an answer to this question. However, there are some questions of importance that the survey did not address, and others that surfaced from the survey results that researchers and policymakers may want to pursue.

What Tests and Cut Scores are used for Job Training Programs?

There is widespread consensus among national and state leaders that all high school students should graduate academically prepared for college and job training, without remediation. Implicit is the aspiration that 12th graders leave high school with the knowledge and skills needed to follow unimpeded whatever path they choose — be it college or job training. This survey was designed to gather information about the academic knowledge and skills needed to qualify for entry into college. It was not designed to answer this question for job training.

Further research could help determine the extent to which the academic knowledge and skills needed to qualify for job training in various occupations is similar to those needed to qualify for college.

What Explains the Variability of Cut Scores Within the Tests Used and the Higher Mean Cut Scores Where They Exist for 2-Year or 4-Year Institutions?

The survey documents variability in the cut scores set by postsecondary institutions from .15 standard deviations for the ASSET Reading Skills test to 1.35 standard deviations for COMPASS Algebra. In comparisons of ten reading and mathematics tests, 2-year institutions had higher mean cut scores than 4-year institutions on five tests, 4-year institutions had a higher mean cut score on one test, and there was no difference on four tests.

Of the five tests for which 2-year institutions had higher mean cut scores, four were the ACT and SAT mathematics and reading tests. There were no differences in mean cut scores on the three reading placement tests — ACCUPLACER, ASSET and COMPASS. The picture was mixed for the mathematics placement tests, with 2-year institutions higher for Compass Algebra and 4-year institutions higher for ACCUPLACER Elementary Algebra.

Further research could examine how institutions set cut scores on the tests; the predictive validity of cut scores set by institutions in terms of first-year student grades and degree completion; the relationship between the academic knowledge and skills postsecondary education institutions view as needed to qualify for entry-level credit bearing courses and the knowledge and skills represented by the cut score on the test; and the characteristics of institutions with higher and lower cut scores.

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Appendix A:
Technical Report

This appendix contains the technical report for the survey on "Evaluating Student Need for Developmental or Remedial Courses at Postsecondary Education Institutions." The technical report was prepared by Westat, the contractor that conducted the survey for the National Assessment Governing Board.

National Assessment Governing Board Survey on Evaluating Student Need for Developmental or Remedial Courses at Postsecondary Education Institutions

Technical Report

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Contents

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Introduction

The National Assessment Governing Board oversees and sets policy for the National Assessment of Educational Progress (NAEP), also known as the Nation's Report Card. NAEP is the only continuing source of comparable national and state data available to the public on the achievement of students at grades 4, 8, and 12 in core subjects. The Governing Board is currently engaged in a research effort to support the validity of statements that might be made in NAEP reports about 12th-grade student academic preparedness in reading and mathematics for entry-level credit-bearing college courses and for job training. The survey on Evaluating Student Need for Developmental or Remedial Courses at Postsecondary Education Institutions is one component of this larger program of research. This particular study was aimed at collecting information on the tests and test scores used by postsecondary institutions to evaluate the need for remediation among degree-seeking undergraduate college students; it was not designed to collect information related to academic preparedness for job training.

The program of research consists of five types of studies:

1. Content coverage (in which the content of the NAEP 12th-grade reading and mathematics assessments is compared with the ACT, SAT, and ACCUPLACER reading and mathematics college admissions/placement tests);
2. Statistical relationship studies (in which students take both NAEP and one of the other admissions/placement tests);
3. Standard-setting studies (in which panels of experts identify the skills and knowledge in reading and mathematics on NAEP needed to qualify for entry-level credit-bearing courses without remediation for college and for selected job training programs);
4. Benchmarking studies (in which selected reference groups take NAEP); and
5. The survey of postsecondary institutions' use of tests and cut-scores for determining student need for remediation described in this report.

Westat conducted the survey between August and December 2011 with a nationally representative sample of about 1,670 2-year and 4-year postsecondary education institutions. The questionnaire consisted of eight questions addressing the tests, cut-scores, and other criteria used in fall 2011 to evaluate entering students' need for developmental or remedial courses in mathematics and reading. Slightly different questionnaires were used for 2-year and 4-year institutions to account for the differing academic structures of these institutions. The final questionnaire for 2-year institutions is provided in Appendix A, and the final 4-year questionnaire is in Appendix B.

Survey Development

Survey development took place between October 2009 and May 2011. Westat began survey development by revising an initial draft of the questionnaire prepared by the Governing Board. Work at this stage focused on revising the questionnaire format and question wording to reflect current best practices in survey design. Subsequent activities included reviews by expert panels, small-scale tests of draft questionnaires, and a field test with a diverse sample of 120 institutions designed to assess both questionnaire content and survey administration procedures. These activities are described below.

Technical Review Panel

A draft questionnaire was shared with an external Technical Review Panel (TRP) in November 2009 (see Appendix G). The TRP made a number of recommendations regarding the questionnaire content, sample design, and data collection methodology that were incorporated into the survey design going forward. Key recommendations included adding items to capture information about criteria other than tests used to evaluate student need for remediation (e.g., grades in high school) and suggestions for clarifying definitions of key survey terms (e.g., placement tests, remedial courses).

Pilot Test

Following the TRP meeting, a draft questionnaire was pilot tested with six institutions. The draft questionnaire addressed academic preparedness both for college and for job training. The pilot test respondents were asked to review the questionnaire and provide feedback about 1) the clarity of the project's purpose as described on the instrument; 2) the clarity of instructions; 3) the clarity, quality, and appropriateness of the items to collect the information necessary for the study; 4) an estimation of the time necessary for completing the instrument; and 5) any suggestions for determining the entry-level programs for which respondents were asked to provide course-placement information. In addition, those participating in this review phase were asked to provide any information they had of other existing sources of the data needed for this study, including the name of the source and, if known, the frequency of collection, reporting format, and data elements recorded. Lastly, the pilot test was used to explore issues that could arise in data collection, notably the best way to identify the appropriate survey respondent. The pilot test findings pointed to problems with respondents' interpretation of some questionnaire items and

definitions. Another major finding was that the survey did not provide adequate coverage of the various approaches used by institutions to evaluate student need for remediation. In addition, the pilot test demonstrated that inconsistency across institutions, particularly 2-year institutions, in categorizing career training programs and the academic prerequisites for certificate versus non-certificate programs would require the development of a detailed survey so burdensome as to deter respondents from completing it. Key questionnaire changes following the pilot test included the removal of a section of questions addressing evaluation of students enrolled in career training programs and the reorganization of survey items into two sections focused on mathematics and reading assessment.

Feasibility Study

To test the changes made following the the pilot test, Westat conducted a second exploratory study of a revised questionnaire with eight additional postsecondary institutions in spring 2010. The feasibility study was designed to gain a better understanding of the problems encountered in the pilot test, with the goal of identifying those that could pose significant risk to a full-scale data collection. Among the key issues explored were the dual use of ACT and SAT tests for both admissions and placement purposes, how to define the appropriate student population for reporting on the survey, and the best way to operationalize in the questionnaire the study's key objective of capturing cut scores that indicate student preparedness for entry-level college courses. Following the feasibility study, several changes were made to the questionnaire to address these and other areas found to be potentially problematic.

Content Expert Panel and Field Test

The issues uncovered in the pilot test and feasibility study prompted a recommendation for a larger scale test of the questionnaire to ensure that key problems had been resolved prior to conducting a full-scale survey administration. This work was carried out in two stages. First, feedback on the survey was sought from a panel of content experts during a half-day teleconference. Seven content experts participated to provide feedback on a revised questionnaire. Findings from the discussion confirmed the use of varied and complex approaches to evaluate student preparedness and the potential for further refinement of the questionnaire. Critically, the feedback from the panel resulted in a recommendation to use slightly different reporting instructions for 2-year and 4-year institutions, resulting in different questionnaires for the two institution types.

Second, a field test was conducted with a diverse sample of 120 postsecondary institutions in fall 2010 to explore questionnaire issues and potential hurdles to full-scale data collection. Those findings were used to inform additional changes to the survey instrument and data collection approaches. As a result of the field test, the use of separate forms for 2-year and 4-year institutions was supported; the test lists were revised; minor adjustments were made to ensure that the survey items are correctly understood; and the president's office was confirmed as the appropriate starting point to identify the survey respondent.

Cognitive Lab and Usability Study

A final round of testing was conducted after the field test. Westat carried out a small "cognitive lab" and web usability study with nine institutions to confirm that changes made to the questionnaire (including a graphical instruction for reporting the correct test score) and the addition of new web-based data checks would help address the issues encountered during the field test and previous survey testing. The results of this activity indicated that the revised questionnaire and online data checks had effectively addressed many of the problems identified in previous testing. Minor changes, including a change in the reference period to fall 2011, were made to the questionnaire and web survey data checks following this round of tests.

Sample Design

The sample consisted of about 1,670 postsecondary education institutions. The sampling frame or respondent universe from which the sample of institutions was drawn was constructed from the 2009–10 Institutional Characteristics (IC) component of the Integrated Postsecondary Education Data System (IPEDS) maintained by the National Center for Education Statistics (NCES). To be eligible for the study, 2-year and 4-year degree-granting institutions had to be located in the 50 states or the District of Columbia and must have offered an undergraduate course of study, although the institution may have also offered graduate degrees. As with many other sample surveys of postsecondary institutions, the current study excluded non-Title IV institutions because these institutions are generally too few in the universe to be reported separately. The sampling frame for the study comprised 4,220 institutions.

The sampling frame was stratified by instructional level (four-year, two-year), control (public, private not-for-profit, private for-profit), highest level of offering (doctor's/doctoral-professional practice, master's, bachelor's, less than bachelor's), and total fall enrollment. Within each strata, institutions were sorted by region (Northeast, Southeast, Central, West) and by level of minority enrollment (high black enrollment, high total minority enrollment but not high black enrollment, and low minority enrollment). The sample of about 1,670 institutions was allocated to the strata in proportion to the aggregate square root of total enrollment. Institutions within a stratum were sampled with equal probabilities of selection.

Data Collection and Response Rates

Cover letters were mailed to the president of each sampled institution in August 2011. The letter introduced the study and requested that the president identify a respondent for the survey by completing and returning an enclosed respondent information form. Also accompanying the letter were a copy of the questionnaire and background information on the Governing Board and its program of research (see Appendix C for a copy of the president's letter and Appendix D for the informational material about the Governing Board).

Once a respondent was identified by the president's office, survey materials were sent directly to the respondent via email, mail, or fax, with email being the primary method. Materials sent to the survey respondent included a cover letter providing an overview of the survey and instructions for logging on to the online survey, a copy of the questionnaire, and the informational material about the Governing Board and its research program. A copy of the letter sent to respondents is provided in Appendix E. Respondents were encouraged to complete the survey online, but they could complete it via mail, email, or fax. Follow-up for survey recruitment, nonresponse, and data clarification was initiated in September 2011 and completed in January 2012. Telephone calls and email were used to follow up with respondents.

Of the about 1,670 institutions in the sample, approximately 100 were found to be ineligible for the survey because they did not meet one of the following eligibility criteria in fall 2011:

- Enrollment of entering students in a degree program designed to transfer to a 4-year institutions (applies to 2-year institutions only); or
- Enrollment of entering students in an undergraduate degree program in the liberal arts and sciences (applies to 4-year institutions only).

In addition to the approximately 100 ineligible institutions, about five institutions were found to be outside of the study's scope because of closure, leaving about 1,560 eligible institutions in the sample. Completed questionnaires were received from about 1,340 institutions (Table 1). Of the institutions that completed the survey, 83 percent completed it via the web, 15 percent completed it by telephone, and 2 percent completed it by mail, fax, or email. The unweighted response rate for the survey was 86 percent, and the weighted response rate was 81 percent using the initial base weights. The weighted number of eligible institutions in the survey represents the estimated universe of postsecondary education institutions in the 50 states and the District of Columbia that offer a degree program at the bachelor's or associate's level and enroll entering students per the study's eligibility criteria noted above.

Table 1. Number and percent of responding postsecondary education institutions in the study sample, and estimated number and percent of institutions the sample represents, by institution characteristics: Fall 2011

Institution characteristic	Responding institutions (unweighted)		National estimate (weighted)	
	Number	Percent	Number	Percent
All institutions	1,340	100	3,650	100
Institution level				
2-year	460	34	1,470	40
4-year	880	66	2,180	60
Institution type				
Public 2-year	410	31	970	27
Private 2-year	50	4	500	14
Public 4-year	420	31	620	17
Private not-for-profit 4-year	390	29	1,230	34
Private for-profit 4-year	80	6	330	9

NOTE: Detail may not sum to total due to rounding.
SOURCE: The National Assessment Governing Board, survey on "Evaluating Student Need for Developmental or Remedial Courses at Postsecondary Education Institutions," fall 2011.

Nonresponse Bias Analysis

The weighted response rate for the National Assessment Governing Board (NAGB) survey of institutions was 81 percent and the unweighted response rate was 86 percent. As specified in the NCES Statistical Standards (2002), a nonresponse bias analysis is required if the weighted unit response rate for a survey is less than 85 percent (Standard 4-4-1). Thus, a nonresponse bias analysis was conducted to (a) assess and document the impact nonresponse may have on estimates derived from the survey, and (b) assess the extent to which the non-response-adjusted sampling weights developed for analysis are effective in reducing potential nonresponse biases. A summary of the analysis is available in Appendix F.

Response rates varied considerably by sector, type of control, and enrollment size class (see Appendix F, Table 1). For example, by sector, the weighted response rates were 91 percent for four-year public institutions; 89 percent for two-year public institutions; 84 percent for four-year private, not-for-profit institutions; 74 percent for two-year private, not-for-profit institutions; 68 percent for four-year private for-profit institutions; and 56 percent for two-year, private for-profit institutions. To compensate for the differential survey response rates, weight adjustments were developed and applied to the base weights within appropriate weight adjustment classes. In general, such weight adjustments will reduce nonresponse bias if the variables used in forming the weight adjustment classes are correlated with response propensity (the probability that a sampled institution will respond to the survey) and with the characteristics obtained from the survey.

There are reasons to believe that the nonresponse-adjusted weights developed for the survey of institutions will be reasonably effective in reducing potential biases. First, the weight adjustments removed most of the disparities between the weighted distributions of the respondents and the distributions of the total sample. Second, a comparison of weighted estimates of selected data items available in the IPEDS files showed that the weight adjustment procedures were effective in reducing the difference between the weighted estimate for the respondent sample and the corresponding base-weighted estimate for the total sample. Further evidence of the potential bias reductions is given by a comparison of weighted estimates of selected survey items before and after nonresponse adjustment. For example, among the eight numeric variables examined, none of the differences between the adjusted and unadjusted estimates are statistically significant at the 0.05 level, and none are significant at the more stringent 0.01 level. This suggests that the degree of nonresponse experienced in the survey is unlikely to have an appreciable impact on estimates of mean test scores.

Based on this analysis, it appears that the estimates derived from the study using the nonresponse adjusted weights are nationally representative. Although it is possible to conduct more in-depth analysis and possibly refine the weighting procedures, the results of this analysis suggest that any potential improvements will be modest.

Item Nonresponse

Item nonresponse was reported for question 2 (mathematics tests) and question 6 (reading tests). For both questions, some respondents reported using tests to evaluate entering students' need for developmental or remedial courses but did not provide cut scores below which such courses were needed. In the vast majority of these cases, respondents indicated they could not report a single cut score (e.g., because the cut score varied depending on some other factor). In other cases, the test score was unreported with no reason given. Table 2 displays the number of institutions unable to report a single cut score and the number with missing cut scores and with no reason provided for mathematics and reading tests on questions 2 and 6. As shown in the table, item nonresponse rates were low and do not require any adjustments.

Table 2. Number of postsecondary education institutions with missing cut scores for mathematics and reading tests

Test name	Respondent unable to report a single cut score	Cut score missing with no reason provided
Question 2: Mathematics tests		
ACT Mathematics	7	1
ACT Composite	3	0
SAT Mathematics	3	0
SAT total score including writing	1	0
SAT total score excluding writing	1	0
ACCUPLACER Arithmetic	6	0
ACCUPLACER Elementary Algebra	6	0
ACCUPLACER College-Level Mathematics	3	0
ASSET Numerical Skills	1	0
ASSET Elementary Algebra	1	0
COMPASS Pre-Algebra placement domain	3	0
COMPASS Algebra placement domain	3	0
COMPASS College Algebra placement domain	4	0
Question 6: Reading tests		
ACT Reading	1	0
ACT Composite	1	1
SAT Critical Reading	2	0
SAT total score including writing	1	1
SAT total score excluding writing	1	0
ACCUPLACER Reading Comprehension	11	0
ASSET Reading Skills	1	0
COMPASS Reading placement domain	2	1
Nelson-Denny Reading	7	2

NOTE: The first data column displays the number of institutions that could not report a single cut score for a given test (e.g., because the score varied depending on some other factor). The second data column displays the number of institutions with a missing cut score and no reason given for the missing score.
SOURCE: The National Assessment Governing Board, survey on "Evaluating Student Need for Developmental or Remedial Courses at Postsecondary Education Institutions," Fall 2011.

Data Quality

While the survey was designed to account for sampling error and to minimize nonsampling error, estimates produced from the data collected are subject to both types of error. Sampling error occurs because the data are collected from a sample rather than a census of the population, and nonsampling errors are errors made during the collection and processing of the data.

Sampling Errors

The responses were weighted to produce national estimates (see Table 1). The weights were designed to adjust for the variable probabilities of selection and differential nonresponse. The findings are estimates based on the sample selected and, consequently, are subject to sampling variability. General sampling theory was used to estimate the sampling variability of the estimates.

The standard error is a measure of the variability of an estimate due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percentage of postsecondary institutions that used the ACT Mathematics test to evaluate entering students' need for developmental or remedial mathematics courses is 23 percent and the standard error is 0.8 percent. The 95 percent confidence interval for the statistic extends from [23 – (0.8 x 1.96)] to [23 + (0.8 x 1.96)], or from 21 to 25 percent. The 1.96 is the *critical value* for a two-tailed Z test at the 0.05 significance level (where 0.05 indicates the 5 percent of all possible samples that would be outside the range of the confidence interval).

Because the data from the survey were collected using a complex sampling design, the variances of the estimates from this survey (e.g., estimates of proportions) are typically different from what would be expected from data collected with a simple random sample. Not taking the complex sample design into account can lead to an underestimation of the standard errors associated with such estimates. To generate accurate standard errors for the estimates in this report, standard errors were computed using a technique known as jackknife replication. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of

interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic. To construct the replications, 50 stratified subsamples of the full sample were created and then dropped one at a time to define 50 jackknife replicates. A computer program (WesVar) was used to calculate the estimates of standard errors.

Nonsampling Errors

Nonsampling error is the term used to describe variations in the estimates that may be caused by population coverage limitations and data collection, processing, and reporting procedures. The sources of nonsampling errors are typically problems like unit and item nonresponse, differences in respondents' interpretations of the meaning of questions, response differences related to the particular time the survey was conducted, and mistakes made during data preparation. It is difficult to identify and estimate either the amount of nonsampling error or the bias caused by this error. To minimize the potential for nonsampling error, this study used a variety of procedures, including the various tests described in the Survey Development section above. In addition, extensive editing of the questionnaire responses was conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone to resolve problems. Data were keyed with 100 percent verification for surveys received by mail, fax, or telephone.

Definitions of Analysis Variables

- **Institution level:** 2-year and 4-year institutions. 2-year institutions are defined as institutions at which the highest level of offering is at least 2 but less than 4 years (below the baccalaureate degree); 4-year institutions are those at which the highest level of offering is 4 or more years (baccalaureate or higher degree).[1]

- **Institution type:** public 2-year, private 2-year, public 4-year, private not-for-profit 4-year, private for-profit 4-year. Institution type was created from a combination of institution level (2-year, 4-year) and institution control (public, private not-for-profit, private for-profit). Private for-profit 2-year and private not-for-profit 2-year institutions are combined in the private 2-year category due to the small number of private not-for-profit 2-year institutions in the sample.

[1] Definitions for level are from the data file documentation for the IPEDS Institutional Characteristics file, U.S. Department of Education, National Center for Education Statistics.

Contact Information

For additional information about the study, contact Ray Fields, Assistant Director for Policy and Research, National Assessment Governing Board, 800 North Capitol Street, NW, Washington, DC 20002; telephone (202) 357-0395; e-mail Ray.Fields@ed.gov.

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Appendix A

Questionnaire for Two-Year Institutions

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National Assessment Governing Board WASHINGTON, D.C. 20002 **EVALUATING STUDENT NEED FOR DEVELOPMENTAL OR REMEDIAL COURSES AT POSTSECONDARY EDUCATION INSTITUTIONS**	FORM APPROVED O.M.B. No.: 3098-0006 EXPIRATION DATE: 6/30/2014

Please respond for the institution that matches the institution name and IPEDS ID number printed on the label below. If the information for the institution shown is incorrect, please update directly on the label before returning the survey questionnaire.

VERSION FOR TWO-YEAR INSTITUTIONS

This survey can be completed online at www.nagb-survey.org. We encourage you to complete the survey online if possible. You will need the User ID and Password shown on the label above to log in to the website. Please contact Liam Ristow at nagb-mailbox@westat.com, 1-888-429-6827 (toll-free), or 240-314-2456 if you do not have your User ID or Password.

If you prefer, you may complete this paper version. If you complete the paper version, please provide the following information, keep a copy of the completed questionnaire for your files, and return the original to Westat at the address shown below. We have enclosed a postage-paid envelope for your convenience. You may also fax a copy of the completed questionnaire to 1-800-254-0984.

Name:_____

Title/position: _____

Institution name:_____

Telephone number: _____ E-mail:_____

Thank you. Please keep a copy of the survey for your records.
Please see page 8 for a list of Frequently Asked Questions (FAQs) regarding the purpose of this study.

	PLEASE RETURN COMPLETED FORM TO:	**IF YOU HAVE ANY QUESTIONS OR COMMENTS, CONTACT:**
Mail:	NAGB Survey (8756.05.02) Westat 1600 Research Boulevard, TA 1006F Rockville, Maryland 20850-3195	Liam Ristow at Westat 1-888-429-6827 or 240-314-2456 E-mail: nagb-mailbox@westat.com
Fax:	1-800-254-0984	

Survey Overview and Instructions

This survey examines the test scores used by postsecondary institutions to evaluate whether entering students are academically prepared or in need of developmental or remedial courses in mathematics or reading. The goal of the survey is to identify the test scores **below which** students are deemed in need of developmental or remedial courses (i.e., academically unprepared for entry-level courses). The scores may come from a variety of tests, including:

- Admissions tests such as the ACT or SAT;
- Placement tests such as ACCUPLACER, ASSET, and COMPASS; or
- Institution- or state-developed tests.

Please report based on the tests your institution uses to evaluate entering students who are pursuing a degree program that is designed to transfer to a four-year institution.

Answer all relevant sections, even if your institution does not offer developmental or remedial courses or offers only one or two such courses. Use data from your institutional records whenever possible. If exact data are not available, then give your best estimate.

Definitions

Developmental or remedial courses are generally designed to improve the skills of entering students who are not academically prepared for entry-level college courses, as determined by your institution. This survey focuses on developmental or remedial courses that address skills in **mathematics** and **reading.**

Please note:

- In most cases, developmental or remedial courses are not credit-bearing and they do not count toward general education or degree requirements.
- Your institution may use other names such as “preparatory,” "compensatory," or "basic skills" or some other term to refer to developmental or remedial courses.

Entry-level college courses are first-year credit-bearing courses that require college-level mathematics or reading skills, as these skills are defined by your institution. Entry-level college courses typically count toward general education or degree requirements. Please note that a variety of entry-level courses may require college-level mathematics or reading skills, including entry-level humanities, mathematics, and science courses.

Entering students include full-time and part-time students who are new to your institution and are subject to your institution’s policy for determining need for developmental or remedial courses.

Instructions for reporting test scores on questions 2 and 6

Questions 2 and 6 ask for the test scores **below which** entering students were identified as in need of remedial or developmental mathematics or reading courses in fall 2011. This is one of many student placement determinations using tests such as the ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or tests developed within an institution or state).

The example of a placement test score scale below shows different placement outcomes at different score ranges or points. In this example, **the correct score point to report on questions 2 and 6 is indicated with an arrow.** Please note that the scores shown do not represent those on an actual test and may not match your institution's placement policy.

Example of a placement test score scale (0–100)

On questions 2 and 6, report only the score **below which** students needed developmental or remedial courses →

Score	Placement outcome
80 or above	Students are placed into college courses above entry-level or into academic programs with advanced skills requirements (e.g., engineering, physics, and mathematics programs)
50 to 79	Students are placed into entry-level college courses
50	Students scoring **below** this level are in need of remedial or developmental courses. Students scoring at or above this level are placed into entry-level college courses
40 to 49	Students are placed into the highest level of remedial or developmental courses
39 or below	Students are placed into lower levels of remedial or developmental courses

Directions: If your institution did not have **any** entering students in fall 2011 who were pursuing a degree program designed to transfer to a four-year institution, please check this box ☐, complete the cover page, and return the questionnaire.

Section A. Evaluating Need for Developmental or Remedial **Mathematics** Courses

1. In fall 2011, did your institution use ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or other tests developed by your institution or state) to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills)?

   - *Consider tests used to evaluate entering students who were pursuing a degree program designed to transfer to a four-year institution.*
   - *Consider any use of ACT, SAT, or placement test scores to determine the need for remediation, even if your institution does not offer developmental or remedial mathematics courses or offers only one or two such courses.*

   Yes..... 1 *(Continue with question 2.)*
   No ..... 2 *(Skip to question 3.)*

2. In Column B, please check the box for each ACT, SAT, or placement test that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial mathematics courses. In Column C, for each test used, write the score **below which** students were identified as in need of developmental or remedial mathematics courses.

   - *If different scores were used to identify students for different levels of developmental or remedial mathematics courses, report the score used for the highest level of remedial mathematics course.*
   - *If different scores were used for either requiring or recommending developmental or remedial mathematics courses, report the highest score used.*
   - ***Please refer to the instructions on page 3 for an example of how to report test scores for this question.***

A. ACT, SAT, or placement test (Score ranges shown in parentheses)	**B. Test used to evaluate entering students**	**C. Score <u>below which</u> developmental or remedial mathematics courses were needed**
ACT Subject Tests		
a. Mathematics (1-36)	☐	_____
b. Composite score (1-36)	☐	_____
SAT Reasoning Test		
c. Mathematics (200-800)	☐	_____
d. SAT total score including Writing (600-2400)	☐	_____
e. SAT total score excluding Writing (400-1600)	☐	_____
ACCUPLACER		
f. Arithmetic (20-120)	☐	_____
g. Elementary Algebra (20-120)	☐	_____
h. College-Level Mathematics (20-120)	☐	_____
ASSET		
i. Numerical Skills (23-55)	☐	_____
j. Elementary Algebra (23-55)	☐	_____
k. Intermediate Algebra (23-55)	☐	_____
l. College Algebra (23-55)	☐	_____
COMPASS		
m. Pre-Algebra placement domain (1-99)	☐	_____
n. Algebra placement domain (1-99)	☐	_____
o. College Algebra placement domain (1-99)	☐	_____
Other mathematics placement tests		
p. Other test 1 (*specify*): _____ _____	☐	**Not applicable.**
q. Other test 2 (*specify*): _____ _____	☐	
r. Other test 3 (*specify*): _____ _____	☐	

COMMENT BOX FOR QUESTION 2: Please provide additional details about your response to question 2 here. For example, *if you reported more than one score for the ACCUPLACER, ASSET, or COMPASS tests, respectively, please confirm that these are scores below which students were in need of remedial or developmental mathematics.*

3. In fall 2011, did your institution use any criteria **other than** ACT/SAT tests or placement tests to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills)?

   - *Consider other criteria such as high school graduation or end-of-course exams, high school records, Advanced Placement (AP) or International Baccalaureate (IB) test scores, or faculty recommendations.*

   Yes.....1 *(Continue with question 4.)*
   No .....2 *(Skip to question 5.)*

4. Please check the box for each criterion that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills).

Criterion	Used to evaluate entering students
a. High school graduation tests or end-of-course tests	☐
b. High school grades (including grade point average)	☐
c. Highest high school mathematics course completed	☐
d. Advanced Placement (AP) or International Baccalaureate (IB) test scores	☐
e. Faculty recommendation	☐
f. Other (specify)_____	☐

COMMENT BOX FOR QUESTION 4: If you have information that may explain how the criteria were used to evaluate student need for remedial or developmental mathematics, please provide it here.

Section B. Evaluating Need for Developmental or Remedial **Reading** Courses

5. In fall 2011, did your institution use ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or other tests developed by your institution or state) to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills)?

   - *Consider tests used to evaluate entering students who were pursuing a degree program designed to transfer to a four-year institution.*
   - *Consider any use of ACT, SAT, or placement test scores to determine the need for remediation, even if your institution does not offer developmental or remedial reading courses or offers only one or two such courses.*

   Yes..... 1 *(Continue with question 6.)*
   No ..... 2 *(Skip to question 7.)*

6. In Column B, please check the box for each ACT, SAT or placement test that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial reading courses. In Column C, for each test used, write the score **below which** students were identified as in need of developmental or remedial reading courses.

   - *If different scores were used to identify students for different levels of developmental or remedial reading courses, report the score used for the highest level of remedial reading course.*
   - *If different scores were used for either requiring or recommending developmental or remedial reading courses, report the highest score used.*
   - ***Please refer to the instructions on page 3 for an example of how to report test scores for this question.***

A. ACT, SAT, or placement test (Score ranges shown in parentheses)	**B. Test used to evaluate entering students**	**C. Score <u>below which</u> developmental or remedial reading courses were needed**
ACT Subject Tests		
a. Reading (1-36)	☐	_____
b. Composite score (1-36)	☐	_____
SAT Reasoning Test		
c. Critical Reading (200-800)	☐	_____
d. SAT total score including Writing (600-2400)	☐	_____
e. SAT total score excluding Writing (400-1600)	☐	_____
ACCUPLACER		
f. Reading Comprehension (20-120)	☐	_____
ASSET		
g. Reading Skills (23-55)	☐	_____
COMPASS		
h. Reading placement domain (1-99)	☐	_____
Nelson-Denny Reading Test		
i. Nelson-Denny Reading test (0-172)	☐	_____
Other reading placement tests		
j. Other test 1 (*specify*): _____ _____	☐	**Not applicable.**
k. Other test 2 (*specify*): _____ _____	☐	
l. Other test 3 (*specify*): _____ _____	☐	

COMMENT BOX FOR QUESTION 6: If you have information that may explain how the ACT/SAT scores or any other test scores were used to evaluate student need for remedial or developmental reading, please provide it here.

7. In fall 2011, did your institution use any criteria **other than** ACT/SAT tests or placement tests to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills)?

   - *Consider other criteria such as high school graduation or end-of-course exams, high school records, Advanced Placement (AP) or International Baccalaureate (IB) test scores, or faculty recommendations.*

   Yes.....1 *(Continue with question 8.)*
   No .....2 *(**Stop.** Complete cover page and return questionnaire.)*

8. Please check the box for each criterion that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills).

Criterion	Used to evaluate entering students
a. High school graduation tests or end-of-course tests	☐
b. High school grades (including grade point average)	☐
c. Highest high school English course completed	☐
d. Advanced Placement (AP) or International Baccalaureate (IB) test scores	☐
e. Faculty recommendation	☐
f. Other (specify)_____	☐

COMMENT BOX FOR QUESTION 8: If you have information that may explain how the criteria were used to evaluate student need for remedial or developmental reading, please provide it here.

Thank you for completing the survey. Please remember to complete the information on the cover page (name and contact information) before returning the questionnaire.

FREQUENTLY ASKED QUESTIONS

Why is this survey important?
The academic preparedness of entering students for entry-level courses is a major concern for many higher education institutions. This survey will provide otherwise unavailable nationally representative data about the tests and cut-scores used by two-year and four-year institutions to determine student need for remediation in mathematics and reading. Thus, your institution's participation will help address a knowledge gap on this vital issue.

Why was my institution selected? Do I have to do this?
Your institution was randomly chosen to participate in this study. Your institution's participation is voluntary, and there is no penalty if you choose not to answer any or all questions in this survey. Your institution's participation is very important for the success of the study because the answers you provide will be used to represent other institutions similar to yours.

Who is the sponsor of this survey?
The National Assessment Governing Board is the sponsor of this survey. An enclosure provides details about the Governing Board and how this study fits into its overall research program. The Governing Board was established by Congress in 1988 to oversee and set policy for the National Assessment of Educational Progress (NAEP), also known as the Nation's Report Card. NAEP reports regularly to the public on the academic achievement of 4th, 8th and 12th grade students in reading, writing, mathematics, science, and other subjects, such U.S. history, civics, geography, economics, and the arts. For more information about NAEP, go to http://nces.ed.gov/nationsreportcard. For more information about the National Assessment Governing Board, go to http://www.nagb.gov.

Will responses from my institution be kept private?
Yes. The information provided by your institution will be kept private to the extent permitted by law. Data for this study will be reported in aggregate form; the information provided by your institution will be combined with other participating institutions to produce statistical summaries and reports. Your institution's name or individual survey responses will not be reported.

Why is this study important? How will the information my institution provides be used?
The National Assessment Governing Board has undertaken a program of research to enable NAEP to report on the academic preparedness of 12th grade students for placement into entry-level credit-bearing college courses. This study is an important part of a program of research that involves more than 30 studies. An enclosure provides details about how this study fits into the overall research program. The data resulting from this survey will be used, along with the results of the other planned studies, to help develop valid statements that can be made about the preparedness of 12th grade students in NAEP reports. Survey results will be provided to your institution after they are finalized.

Who is conducting the survey?
Westat is conducting this survey under contract to the National Assessment Governing Board. Westat is a research company located in Rockville, Maryland.

How much time will it take to complete the survey?
The survey is designed to be completed in 30 minutes or less, including the time for reviewing instructions and completing and reviewing the collection of information.

Whom do I contact if I have questions?
For questions about the survey instructions or survey items, please contact Liam Ristow, the Westat survey manager, at 1-888-429-6827 (toll-free) or 240-314-2456, or by e-mail at nagb-mailbox@westat.com.

For questions about the National Assessment Governing Board and its research program, please contact Ray Fields, Assistant Director for Policy and Research, National Assessment Governing Board, at 202-357-0395, or by e-mail at Ray.Fields@ed.gov.

Appendix B

Questionnaire for Four-Year Institutions

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National Assessment Governing Board WASHINGTON, D.C. 20002 **EVALUATING STUDENT NEED FOR DEVELOPMENTAL OR REMEDIAL COURSES AT POSTSECONDARY EDUCATION INSTITUTIONS**	FORM APPROVED O.M.B. No.: 3098-0006 EXPIRATION DATE: 6/30/2014

Please respond for the institution that matches the institution name and IPEDS ID number printed on the label below. If the information for the institution shown is incorrect, please update directly on the label before returning the survey questionnaire.

VERSION FOR FOUR-YEAR INSTITUTIONS

This survey can be completed online at www.nagb-survey.org. We encourage you to complete the survey online if possible. You will need the User ID and Password shown on the label above to log in to the website. Please contact Liam Ristow at nagb-mailbox@westat.com, 1-888-429-6827 (toll-free), or 240-314-2456 if you do not have your User ID or Password.

If you prefer, you may complete this paper version. If you complete the paper version, please provide the following information, keep a copy of the completed questionnaire for your files, and return the original to Westat at the address shown below. We have enclosed a postage-paid envelope for your convenience. You may also fax a copy of the completed questionnaire to 1-800-254-0984.

Name:_____

Title/position: _____

Institution name:_____

Telephone number: _____ E-mail:_____

Thank you. Please keep a copy of the survey for your records.
Please see page 8 for a list of Frequently Asked Questions (FAQs) regarding the purpose of this study.

	PLEASE RETURN COMPLETED FORM TO:	**IF YOU HAVE ANY QUESTIONS OR COMMENTS, CONTACT:**
Mail:	NAGB Survey (8756.05.02) Westat 1600 Research Boulevard, TA 1006F Rockville, Maryland 20850-3195	Liam Ristow at Westat 1-888-429-6827 or 240-314-2456 E-mail: nagb-mailbox@westat.com
Fax:	1-800-254-0984	

Survey Overview and Instructions

This survey examines the test scores used by postsecondary institutions to evaluate whether entering students are academically prepared or in need of developmental or remedial courses in mathematics or reading. The goal of the survey is to identify the test scores **below which** students are deemed in need of developmental or remedial courses (i.e., academically unprepared for entry-level courses). The scores may come from a variety of tests, including:

- Admissions tests such as the ACT or SAT;
- Placement tests such as ACCUPLACER, ASSET, and COMPASS; or
- Institution- or state-developed tests.

Please report based on the tests your institution uses to evaluate entering students who are enrolled in an undergraduate degree program in the liberal arts and sciences.

Answer all relevant sections, even if your institution does not offer developmental or remedial courses or offers only one or two such courses. Use data from your institutional records whenever possible. If exact data are not available, then give your best estimate.

Definitions

Developmental or remedial courses are generally designed to improve the skills of entering students who are not academically prepared for entry-level college courses, as determined by your institution. This survey focuses on developmental or remedial courses that address skills in **mathematics** and **reading.**

Please note:

- In most cases, developmental or remedial courses are not credit-bearing and they do not count toward general education or degree requirements.
- Your institution may use other names such as “preparatory,” "compensatory," or "basic skills" or some other term to refer to developmental or remedial courses.

Entry-level college courses are first-year credit-bearing courses that require college-level mathematics or reading skills, as these skills are defined by your institution. Entry-level college courses typically count toward general education or degree requirements. Please note that a variety of entry-level courses may require college-level mathematics or reading skills, including entry-level humanities, mathematics, and science courses.

Entering students include full-time and part-time students who are new to your institution and are subject to your institution’s policy for determining need for developmental or remedial courses.

Instructions for reporting test scores on questions 2 and 6

Questions 2 and 6 ask for the test scores **below which** entering students were identified as in need of remedial or developmental mathematics or reading courses in fall 2011. This is one of many student placement determinations using tests such as the ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or tests developed within an institution or state).

The example of a placement test score scale below shows different placement outcomes at different score ranges or points. In this example, **the correct score point to report on questions 2 and 6 is indicated with an arrow.** Please note that the scores shown do not represent those on an actual test and may not match your institution's placement policy.

Example of a placement test score scale (0–100)

On questions 2 and 6, report only the score **below which** students needed developmental or remedial courses →

Score	Placement outcome
80 or above	Students are placed into college courses above entry-level or into academic programs with advanced skills requirements (e.g., engineering, physics, and mathematics programs)
50 to 79	Students are placed into entry-level college courses
50	Students scoring **below** this level are in need of remedial or developmental courses. Students scoring at or above this level are placed into entry-level college courses
40 to 49	Students are placed into the highest level of remedial or developmental courses
39 or below	Students are placed into lower levels of remedial or developmental courses

Directions: If your institution did not have **any** entering students in fall 2011 who were enrolled in an undergraduate degree program in the liberal arts and sciences please check this box ☐, complete the cover page, and return the questionnaire.

Section A. Evaluating Need for Developmental or Remedial **Mathematics** Courses

1. In fall 2011, did your institution use ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or other tests developed by your institution or state) to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills)?
   - *Consider tests used to evaluate entering students who were enrolled in an undergraduate degree program in the liberal arts and sciences.*
   - *Consider any use of ACT, SAT, or placement test scores to determine the need for remediation, even if your institution does not offer developmental or remedial mathematics courses or offers only one or two such courses.*

   Yes..... 1 *(Continue with question 2.)*
   No ..... 2 *(Skip to question 3.)*

2. In Column B, please check the box for each ACT, SAT, or placement test that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial mathematics courses. In Column C, for each test used, write the score **below which** students were identified as in need of developmental or remedial mathematics courses.
   - *If different scores were used to identify students for different levels of developmental or remedial mathematics courses, report the score used for the highest level of remedial mathematics course.*
   - *If different scores were used for either requiring or recommending developmental or remedial mathematics courses, report the highest score used.*
   - ***Please refer to the instructions on page 3 for an example of how to report test scores for this question.***

A. ACT, SAT, or placement test (Score ranges shown in parentheses)	**B. Test used to evaluate entering students**	**C. Score <u>below which</u> developmental or remedial mathematics courses were needed**
ACT Subject Tests		
a. Mathematics (1-36)	☐	_____
b. Composite score (1-36)	☐	_____
SAT Reasoning Test		
c. Mathematics (200-800)	☐	_____
d. SAT total score including Writing (600-2400)	☐	_____
e. SAT total score excluding Writing (400-1600)	☐	_____
ACCUPLACER		
f. Arithmetic (20-120)	☐	_____
g. Elementary Algebra (20-120)	☐	_____
h. College-Level Mathematics (20-120)	☐	_____
ASSET		
i. Numerical Skills (23-55)	☐	_____
j. Elementary Algebra (23-55)	☐	_____
k. Intermediate Algebra (23-55)	☐	_____
l. College Algebra (23-55)	☐	_____
COMPASS		
m. Pre-Algebra placement domain (1-99)	☐	_____
n. Algebra placement domain (1-99)	☐	_____
o. College Algebra placement domain (1-99)	☐	_____
Other mathematics placement tests		
p. Other test 1 (*specify*): _____ _____	☐	**Not applicable.**
q. Other test 2 (*specify*): _____ _____	☐	
r. Other test 3 (*specify*): _____ _____	☐	

COMMENT BOX FOR QUESTION 2: Please provide additional details about your response to question 2 here. For example, *if you reported more than one score for the ACCUPLACER, ASSET, or COMPASS tests, respectively, please confirm that these are scores below which students were in need of remedial or developmental mathematics.*

3. In fall 2011, did your institution use any criteria **other than** ACT/SAT tests or placement tests to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills)?

   - *Consider other criteria such as high school graduation or end-of-course exams, high school records, Advanced Placement (AP) or International Baccalaureate (IB) test scores, or faculty recommendations.*

   Yes.....1 *(Continue with question 4.)*
   No .....2 *(Skip to question 5.)*

4. Please check the box for each criterion that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial mathematics courses (i.e., not academically prepared for entry-level courses that require college mathematics skills).

Criterion	Used to evaluate entering students
a. High school graduation tests or end-of-course tests	☐
b. High school grades (including grade point average)	☐
c. Highest high school mathematics course completed	☐
d. Advanced Placement (AP) or International Baccalaureate (IB) test scores	☐
e. Faculty recommendation	☐
f. Other (specify)_____	☐

COMMENT BOX FOR QUESTION 4: If you have information that may explain how the criteria were used to evaluate student need for remedial or developmental mathematics, please provide it here.

Section B. Evaluating Need for Developmental or Remedial **Reading** Courses

5. In fall 2011, did your institution use ACT, SAT, or placement tests (i.e., ACCUPLACER, ASSET, COMPASS, or other tests developed by your institution or state) to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills)?

   - *Consider tests used to evaluate entering students who were enrolled in an undergraduate degree program in the liberal arts and sciences.*
   - *Consider any use of ACT, SAT, or placement test scores to determine the need for remediation, even if your institution does not offer developmental or remedial reading courses or offers only one or two such courses.*

   Yes ..... 1 *(Continue with question 6.)*
   No ..... 2 *(Skip to question 7.)*

6. In Column B, please check the box for each ACT, SAT or placement test that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial reading courses. In Column C, for each test used, write the score **below which** students were identified as in need of developmental or remedial reading courses.

   - *If different scores were used to identify students for different levels of developmental or remedial reading courses, report the score used for the highest level of remedial reading course.*
   - *If different scores were used for either requiring or recommending developmental or remedial reading courses, report the highest score used.*
   - ***Please refer to the instructions on page 3 for an example of how to report test scores for this question.***

A. ACT, SAT, or placement test (Score ranges shown in parentheses)	**B. Test used to evaluate entering students**	**C. Score <u>below which</u> developmental or remedial reading courses were needed**
ACT Subject Tests		
a. Reading (1-36)	☐	_____
b. Composite score (1-36)	☐	_____
SAT Reasoning Test		
c. Critical Reading (200-800)	☐	_____
d. SAT total score including Writing (600-2400)	☐	_____
e. SAT total score excluding Writing (400-1600)	☐	_____
ACCUPLACER		
f. Reading Comprehension (20-120)	☐	_____
ASSET		
g. Reading Skills (23-55)	☐	_____
COMPASS		
h. Reading placement domain (1-99)	☐	_____
Nelson-Denny Reading Test		
i. Nelson-Denny Reading test (0-172)	☐	_____
Other reading placement tests		
j. Other test 1 (*specify*): _____ _____	☐	**Not applicable.**
k. Other test 2 (*specify*): _____ _____	☐	
l. Other test 3 (*specify*): _____ _____	☐	

COMMENT BOX FOR QUESTION 6: If you have information that may explain how the ACT/SAT scores or any other test scores were used to evaluate student need for remedial or developmental reading, please provide it here.

7. In fall 2011, did your institution use any criteria **other than** ACT/SAT tests or placement tests to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills)?

   - *Consider other criteria such as high school graduation or end-of-course exams, high school records, Advanced Placement (AP) or International Baccalaureate (IB) test scores, or faculty recommendations.*

   Yes.....1 *(Continue with question 8.)*
   No .....2 *(**Stop.** Complete cover page and return questionnaire.)*

8. Please check the box for each criterion that your institution used in fall 2011 to evaluate whether entering students were in need of developmental or remedial reading courses (i.e., not academically prepared for entry-level courses that require college reading skills).

Criterion	Used to evaluate entering students
a. High school graduation tests or end-of-course tests	☐
b. High school grades (including grade point average)	☐
c. Highest high school English course completed	☐
d. Advanced Placement (AP) or International Baccalaureate (IB) test scores	☐
e. Faculty recommendation	☐
f. Other (specify)_____	☐

COMMENT BOX FOR QUESTION 8: If you have information that may explain how the criteria were used to evaluate student need for remedial or developmental reading, please provide it here.

Thank you for completing the survey. Please remember to complete the information on the cover page (name and contact information) before returning the questionnaire.

FREQUENTLY ASKED QUESTIONS

Why is this survey important?
The academic preparedness of entering students for entry-level courses is a major concern for many higher education institutions. This survey will provide otherwise unavailable nationally representative data about the tests and cut-scores used by two-year and four-year institutions to determine student need for remediation in mathematics and reading. Thus, your institution's participation will help address a knowledge gap on this vital issue.

Why was my institution selected? Do I have to do this?
Your institution was randomly chosen to participate in this study. Your institution's participation is voluntary, and there is no penalty if you choose not to answer any or all questions in this survey. Your institution's participation is very important for the success of the study because the answers you provide will be used to represent other institutions similar to yours.

Who is the sponsor of this survey?
The National Assessment Governing Board is the sponsor of this survey. An enclosure provides details about the Governing Board and how this study fits into its overall research program. The Governing Board was established by Congress in 1988 to oversee and set policy for the National Assessment of Educational Progress (NAEP), also known as the Nation's Report Card. NAEP reports regularly to the public on the academic achievement of 4th, 8th and 12th grade students in reading, writing, mathematics, science, and other subjects, such U.S. history, civics, geography, economics, and the arts. For more information about NAEP, go to http://nces.ed.gov/nationsreportcard. For more information about the National Assessment Governing Board, go to http://www.nagb.gov.

Will responses from my institution be kept private?
Yes. The information provided by your institution will be kept private to the extent permitted by law. Data for this study will be reported in aggregate form; the information provided by your institution will be combined with other participating institutions to produce statistical summaries and reports. Your institution's name or individual survey responses will not be reported.

Why is this study important? How will the information my institution provides be used?
The National Assessment Governing Board has undertaken a program of research to enable NAEP to report on the academic preparedness of 12th grade students for placement into entry-level credit-bearing college courses. This study is an important part of a program of research that involves more than 30 studies. An enclosure provides details about how this study fits into the overall research program. The data resulting from this survey will be used, along with the results of the other planned studies, to help develop valid statements that can be made about the preparedness of 12th grade students in NAEP reports. Survey results will be provided to your institution after they are finalized.

Who is conducting the survey?
Westat is conducting this survey under contract to the National Assessment Governing Board. Westat is a research company located in Rockville, Maryland.

How much time will it take to complete the survey?
The survey is designed to be completed in 30 minutes or less, including the time for reviewing instructions and completing and reviewing the collection of information.

Whom do I contact if I have questions?
For questions about the survey instructions or survey items, please contact Liam Ristow, the Westat survey manager, at 1-888-429-6827 (toll-free) or 240-314-2456, or by e-mail at nagb-mailbox@westat.com.

For questions about the National Assessment Governing Board and its research program, please contact Ray Fields, Assistant Director for Policy and Research, National Assessment Governing Board, at 202-357-0395, or by e-mail at Ray.Fields@ed.gov.

Appendix C

Letter to the President or Chancellor

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PRESIDENT NAME
TITLE
INSTITUTION NAME
ADDRESS
CITY, STATE, ZIP

August 2011

Dear PRESIDENT NAME:

INSTITUTION NAME has been selected to participate in a federally sponsored survey on the tests used by postsecondary institutions to determine whether students are academically prepared for college or in need of developmental or remedial courses.

I am writing to request your help in identifying the appropriate person at your institution to complete this survey. We believe that the results of this survey and other planned research may be of interest and use to postsecondary institutions that are addressing issues of student academic preparedness, persistence, and success. The survey results will provide otherwise unavailable nationally representative data on the tests and cut-scores used by postsecondary institutions in determining whether students are prepared for entry-level courses. An enclosure describes the study sponsor—the National Assessment Governing Board (**an independent Federal board affiliated with the U.S. Department of Education**)—and how this study fits into the Board's overall research program on 12th grade academic preparedness.

The Federal Office of Management and Budget (OMB) has approved this survey (OMB No.: 3098-0006). This study has been endorsed by a number of national higher education organizations that encourage your participation (see reverse side of this letter). Westat, a research company in Rockville, Maryland, is contracted to conduct the survey.

Please use the enclosed Respondent Information Form to identify the **person at your institution most knowledgeable about the evaluation of entering students to determine need for developmental or remedial courses in mathematics and reading.** This may include individuals in offices of academic deans or provosts, academic departments (e.g., mathematics or English departments), or offices that handle institutional research, student assessment, student services, student counseling, new student orientation, or admissions. If more than one individual is involved, please identify one person who will have overall responsibility for completing the survey.

You may return the completed form to Westat in the enclosed postage-paid envelope or by e-mail or fax using the information provided on the form. The individual you identify will be asked to complete an eight-question survey questionnaire designed to be completed in 30 minutes or less. We are aware that you and the staff at your institution are confronted with many competing demands and survey requests and we have designed the survey, with input from an earlier small-scale study, to be as efficient as possible to complete. An informational copy of the questionnaire is enclosed. Answers to frequently asked questions (FAQs) about the study can be found on page 8 of the questionnaire.

Your institution's participation is very important for the success of the study because the answers provided will be used to represent other institutions similar to yours. The information provided by your institution will be kept private to the extent permitted by law. Data for this study will be reported in aggregate form; the information provided by your institution will be combined with other participating institutions to produce statistical summaries and reports. Your institution's name or individual survey responses will not be reported. Participation in this survey is voluntary. Survey results will be provided to your institution after they are finalized.

If you have any questions about the survey, please contact Liam Ristow, the Westat survey manager, at 1-888-429-6827 (toll-free) or 240-314-2456, or by e-mail at nagb-mailbox@westat.com. Thank you for your assistance.

Sincerely,

Ray Fields

Ray Fields
Assistant Director for Policy and Research

Enclosures

800 NORTH CAPITOL STREET, NW, SUITE 825, WASHINGTON, DC 20002

C-3

The following organizations have endorsed this study and encourage your institution's participation:

The American Association of Community Colleges
One Dupont Circle NW
Suite 410
Washington, DC 20036

The American Association of State Colleges and Universities
1307 New York Avenue NW
Washington, DC 20005

The American Council on Education
One Dupont Circle NW
Washington, DC 20036

The Association of Public and Land-grant Universities
1307 New York Avenue NW
Suite 400
Washington, DC 20005-4722

The National Association for College Admission Counseling
1050 N. Highland Street, Suite 400
Arlington, VA 22201

The State Higher Education Executive Officers
3035 Center Green Drive
Suite 100
Boulder, CO 80301-2205

Appendix D

Enclosure About the National Assessment Governing Board

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Program of Research on Academic Preparedness for Postsecondary Education and Training

The National Assessment of Educational Progress (NAEP) is also known as The Nation's Report Card. NAEP is the only continuing source of comparable national and state data available to the public on the achievement of students at grades 4, 8, and 12 in core subjects. For more than 40 years, NAEP has reported to the public on the status and progress of student achievement in the United States.

The National Assessment Governing Board oversees and sets policy for NAEP. It is an independent, bi-partisan Board, appointed by the U.S. Secretary of Education, comprising state and local policymakers, public and non-public educators, curriculum experts, measurement experts, representatives of business, and the general public. NAEP and the Governing Board are congressionally authorized under the National Assessment of Educational Progress Authorization Act (P.L.107-279) (see www.nagb.gov).

Following the recommendations of a blue-ribbon commission in 2004,[1] the Governing Board has embarked on a comprehensive program of research, with more than 30 studies authorized, to transform NAEP 12th grade reporting into an indicator of academic preparedness for college and job training. The commission concluded that having a measure of the "output" of K-12 education in the United States, as an indicator of the nation's human capital potential at the transition point to adult pursuits, is essential for the economic well-being and security of the United States.

As the only source of nationally representative student achievement data at grade 12, NAEP has unique potential to serve as such an indicator.

The program of preparedness research for NAEP was developed by a panel of experts in measurement, research, industrial organizational psychology, and postsecondary policy, and adopted by the Governing Board.[2]

The survey in which you are being invited to participate is one component of this larger program of research.

The program of research consists of five types of studies: (1) content coverage (in which the content of the NAEP 12th grade reading and mathematics assessments is compared with the ACT, SAT, and ACCUPLACER reading and mathematics admissions/placement tests); (2) statistical relationship (in which students take both NAEP and one of the other admissions/placement tests); (3) standard setting (in which panels of experts identify the skills and knowledge in reading and mathematics on NAEP needed to qualify for entry-level credit-bearing courses without remediation for college and for selected job training programs); (4) benchmarking (in which selected reference groups take NAEP); and (5) the survey of postsecondary institutions' use of tests and cut-scores for determining student need for remediation—the study that is part of this package.

As the Governing Board has been developing ways to implement the commission's recommendations, there has been a wider recognition—among federal and state policymakers, K-12 and postsecondary educators, and the business community—of the importance of a rigorous high school program that results in meaningful high school diplomas and prepares students for college and for training for good jobs.

This study will provide valuable, otherwise unavailable information about the use of tests and test scores for placing first-year students into entry-level credit bearing courses or into remedial/developmental courses in mathematics and reading. The data resulting from this survey will be used, along with the results of the other planned studies, to help develop valid statements that can be made about the preparedness of 12th grade students in NAEP reports.[3] The Governing Board believes that the results of the preparedness research program also will be of benefit to the K-12 and postsecondary communities, to inform their efforts in ensuring that our nation's students are well-prepared for college and job training. More information about the research program and study results can be found under the Grade 12 and Preparedness headings at http://www.nagb.gov/publications/reports-papers.htm and http://www.nagb.gov/newsroom/press-releases.htm.

[1] *12th Grade Student Achievement in America: A New Vision for NAEP*; www.nagb.gov/publications/12_gr_commission_rpt.pdf.
[2] *Making New Links: 12th Grade and Beyond*; www.nagb.gov/publications/PreparednessFinalReport.pdf.
[3] Note: By law, NAEP only reports group results; it does not produce individual student scores.

800 North Capitol Street, N.W. · Suite 825 · Washington, DC 20002-4233 · Telephone: (202) 357-6938 · Fax: (202) 357-6945 · www.nagb.org

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Appendix E

Letter to the Survey Respondent

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RESPONDENT NAME
INSTITUTION NAME
ADDRESS
CITY, STATE, ZIP

DATE

Dear RESPONDENT NAME:

I am writing to request your participation in a federally sponsored survey on the **tests used by postsecondary institutions to determine whether students are academically prepared for college or in need of developmental or remedial courses.** We received your name as the appropriate person to complete the survey through our contact with your institution's president or chancellor.

We believe that the results of this survey and other planned research may be of interest and use to postsecondary institutions that are addressing issues of student academic preparedness, persistence, and success. The survey results will provide otherwise unavailable nationally representative data on the tests and cut-scores used by postsecondary institutions in determining whether students are prepared for entry-level courses. An enclosure describes the study sponsor—the National Assessment Governing Board (**an independent Federal board affiliated with the U.S. Department of Education**)—and how this study fits into the Board's overall research program on 12th grade academic preparedness.

Answers to frequently asked questions (FAQs) about the study can be found on page 8 of the enclosed survey questionnaire. The survey consists of eight questions and is designed to be completed in 30 minutes or less. We are aware that you have many demands on your time, and we have designed the survey, with input from an earlier small-scale study, to be as efficient as possible for you to complete.

The Federal Office of Management and Budget (OMB) has approved this survey (OMB No.: 3098-0006). This study has been endorsed by a number of national higher education organizations that encourage your participation (see reverse side of this letter). Westat, a research company in Rockville, Maryland, is contracted to conduct the survey.

You were identified as the person most knowledgeable about your institution's policy on evaluating entering students to determine need for developmental or remedial courses in mathematics and reading. We greatly appreciate your efforts to respond to the survey and, as needed, collaborate with other offices or personnel to gather the information requested on the survey.

Your participation is very important for the success of the study because the answers provided will be used to represent other institutions similar to yours. The information you provide will be kept private to the extent permitted by law. Data for this study will be reported in aggregate form; the information provided by your institution will be combined with other participating institutions to produce statistical summaries and reports. Your institution's name or individual survey responses will not be reported. Participation in this survey is voluntary. Survey results will be provided to your institution after they are finalized.

We encourage you to complete the survey online at **www.nagb-survey.org**. To log in, use the User ID and Password shown on the accompanying Web Information Sheet.

If you prefer, the questionnaire may be completed and returned by mail using the enclosed postage-paid envelope or by toll-free fax at 1-800-254-0984. **The survey should be completed only once, using either the online or paper version.**

We ask that you complete the survey within three weeks, and that a copy is kept for your files. If you have any questions about the survey, please contact Liam Ristow, the Westat survey manager, at 1-888-429-6827 (toll-free) or 240-314-2456, or by e-mail at nagb-mailbox@westat.com. Thank you for your assistance.

Sincerely,

Ray Fields

Ray Fields
Assistant Director for Policy and Research

Enclosures

800 NORTH CAPITOL STREET, NW, SUITE 825, WASHINGTON, DC 20002

E-3

The following organizations have endorsed this study and encourage your institution's participation:

The American Association of Community Colleges
One Dupont Circle NW
Suite 410
Washington, DC 20036

The American Association of State Colleges and Universities
1307 New York Avenue NW
Washington, DC 20005

The American Council on Education
One Dupont Circle NW
Washington, DC 20036

The Association of Public and Land-grant Universities
1307 New York Avenue NW
Suite 400
Washington, DC 20005-4722

The National Association for College Admission Counseling
1050 N. Highland Street, Suite 400
Arlington, VA 22201

The State Higher Education Executive Officers
3035 Center Green Drive
Suite 100
Boulder, CO 80301-2205

Appendix F

Nonresponse Bias Analysis

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The weighted response rate for the National Assessment Governing Board (NAGB) survey of institutions was 81 percent and the unweighted response rate was 86 percent. As specified in the NCES Statistical Standards (2002), a nonresponse bias analysis is required if the weighted response rate for a survey is less than 85 percent (Standard 4-4-1). This report provides a summary of the findings of an analysis of nonresponse in the NAGB survey. The goals of the analysis are: (a) to assess and document the impact nonresponse may have on estimates derived from the survey, and (b) assess the extent to which the non-response-adjusted sampling weights developed for analysis are effective in reducing potential nonresponse biases.

This report is divided into eight sections. Section 1 provides an overview of the sample design and a description of the base weights used to compute the weighted response rates. In Section 2, the survey response rates by selected institution characteristics are summarized. In Section 3, the distributions of the responding institutions by selected characteristics are compared with the corresponding distributions of the nonresponding institutions. Section 4 summarizes the procedures used to adjust the sampling weights to compensate for nonresponse, and Sections 5 through 7 provide an assessment of the effectiveness of the weight adjustments in reducing potential nonresponse biases. Section 8 provides a summary and conclusions.

1. Sample Design and Construction of Base Weights

About 1,670 institutions were selected for the NAGB survey from a sampling frame derived from data files in the 2009 Integrated Postsecondary Education Data System (IPEDS). The sample was stratified by level (four-year versus two-year), type of control (public, private not-for-profit, and private for profit), highest level of offering (doctorate, masters, bachelors, other), and enrollment size class. Forty-three strata were specified for sampling purposes. The sampling rates used to select institutions varied by stratum, ranging from approximately 1 in 10 of small nonprofit institutions to 1 in 1 of large public and private institutions. Prior to sampling, institutions were sorted by region and minority status where feasible to induce additional implicit substratification. A systematic sample was then selected from the sorted file of institutions at the rate specified for the sampling stratum.

For subsequent weighting and analysis purposes, a base weight was computed for each sampled institution. The base weight, w_{hi}^{base}, for institution i in sampling stratum h was computed as $w_{hi}^{base} = 1/P_{hi}$, where P_{hi} is the corresponding probability of selecting the institution from the stratum. The base weights are theoretically unbiased in the absence of survey nonresponse. When survey nonresponse is relatively high, use of the base weights to derive estimates from the survey can result in biases. To minimize the potential for nonresponse bias, adjustments were made to the base weights to compensate for differential nonresponse losses (additional details about the weighting adjustments are provided in Section 4 below).

2. Response Rates by Selected Institution Characteristics

To examine the variation in response rates across different types of institutions, response rates were calculated for subsets of the sample based on selected characteristics of institutions. The characteristics included level, type of control, enrollment size class, highest level of offering, and geographic region. The results are summarized in table 1. Of the 1,668 sample institutions, 105 were determined to be ineligible for the survey (e.g., closed, inactive, or did not enroll incoming students in a degree granting program) and are excluded from the calculation of the response rates. The last column of the table shows the p-value of a test of association between response status and each of the selected characteristics. A p-value of 0.05 or less indicates that there is a statistically significant association between the (weighted) response rate and the specified characteristic.

As can be seen in Table 1, sector (a cross-classification of institutions defined by level and type of control), type of control (across all levels), and enrollment size class are all strongly correlated with response status (p-value < 0.0005). By sector, (weighted) response rates are highest among the public four-year and two-year institutions and lowest among the two-year private for-profit institutions. Across all levels, public institutions generally had the highest response rates (90 percent) followed by private nonprofit institutions (83 percent) and private for-profit institutions (61 percent). By enrollment size class, response rates were generally higher among large institutions than smaller ones.

3. Comparison of Respondents and Nonrespondents by Selected Characteristics

The base-weighted distributions of the respondents and nonrespondents were compared for the same categories of institutional characteristics shown in table 1. The base-weighted distributions of responding institutions can be compared with the corresponding base-weighted distributions of the *total* sample to obtain a measure of the potential nonresponse bias. These comparisons, which are presented in table 2, provide an alternative way of examining the variation in response rates across selected subgroups of the sample. The p-value shown in the *sixth* column of the table corresponds to an overall test of the hypothesis that the base-weighted distribution of the respondent sample is the same as the distribution of the total sample for the given characteristic. A p-value of 0.05 or less indicates that the two distributions are significantly different, which implies that the distribution of respondents is significantly different from that of the nonrespondents. Shown in the fifth column of the table is the relative bias of the estimated percentage of a particular level of a characteristic if no adjustment is made to the base weights to compensate for nonresponse. (The tests associated with the p-values shown in the *last* column of this table are discussed later in Section 4.)

Consistent with the results of Section 2, the p-values given in column 6 of table 2 indicate that there are significant differences between the distributions of the respondents and nonrespondents by sector, type of control, and enrollment size class. These are essentially the same results presented earlier in table 1, but viewed in a different way. For example, by sector, the respondent sample has a much smaller percentage of two-year private for-profit institutions (12.7 percent) than the total sample (8.7 percent). Correspondingly, there are greater percentages of two-year (28.6 percent) and four-year public institutions (18.8 percent) in the respondent sample than in the total sample (26.1 and 16,7 percent, respectively). This disparity is also reflected in the relatively large spread of the relative biases shown in column 5 of the table. Similarly, by type of control, the percentage of public institutions in the respondent sample (47.4 percent) is higher than the percentage of public institutions in the total sample (42.8 percent), reflecting the generally higher response rates among the public institutions. By enrollment size class, the percentage of responding institutions with fewer than 1,000 students (26.1 percent) is lower than the corresponding percentage for the total sample (30.7 percent), reflecting the generally lower response rates among the small institutions.

4. Derivation of Nonresponse-Adjusted Weights

As noted in the previous section, the base-weighted distribution of the responding institutions differed significantly from the total sample for a number of characteristics. In general, weighting adjustments are used to compensate for distributional differences resulting from differential response rates. To be effective in reducing potential nonresponse biases, the nonresponse adjustment should be made within subsets of institutions (or "weighting classes") that have similar propensities for responding to the survey. To start construct the weighting classes, the 43 strata specified for sampling was crossed by a four-level region code. Region was one of the variables used as an implicit stratifier in sampling and was expected to be correlated with response rates to a moderate degree. Where necessary, small cells were collapsed with other cells to ensure a minimum sample size per cell.

Since nonresponse could occur either before or after eligibility for the survey was ascertained, the weighting adjustment was conducted in two phases. The purpose of the first-phase adjustment was to compensate for the loss of about 140 sample institutions that did not return a questionnaire (and for which eligibility for the study is not known). Let w_{ki}^{base} denote the base weight for the *i*th sampled institution in weighting class *k* that returned a questionnaire. This group of institutions includes ineligible and nonresponding eligible institutions, as well as those that completed the NAGB survey. The first-phase adjusted weight for the *i*th sampled institution in weighting class *k* that returned a questionnaire was computed as:

$$w_{ki}^{NR1} = (1/R_k)\, w_{ki}^{base},$$

where R_k is the base-weighted percentage of institutions in weighting class *k* that returned a questionnaire. Within first-phase weighting class *k*, the adjustment had the effect of distributing the weight of the cases that did not return a questionnaire to those cases that returned a questionnaire.

Let w_{gi}^{NR1} denote the first-stage adjusted weight of the *i*th *responding* institution in second-phase adjustment class *g* (the second-phase adjustment classes may differ from those used in the first-phase adjustment). The final weight for the *i*th responding institution in second-phase adjustment class *g* was then computed as:

$$w_{gi}^{final} = (1/S_g)\, w_{gi}^{NR1},$$

where S_g is the w_{gi}^{NR1}-weighted percentage of institutions in weighting class *k* returning a questionnaire that were determined to be eligible for the study and completed the questionnaire. In this case, the second-phase adjustment had the effect of distributing a portion of adjusted weight of the cases that returned questionnaires to the eligible responding institutions in the weighting class. The w_{gi}^{final}'s defined above are the weights used to calculate estimates derived from the survey.

5. Comparisons Before and After Nonresponse Adjustment for Selected Distributions

The last three columns of table 2 summarize results related to distributions of the respondent sample using the nonresponse-adjusted weights described above. Column 7 shows the (nonresponse-adjusted) weighted distributions. Column 8 shows the corresponding relative bias. Column 9 shows the p-value for a test comparing the nonresponse-adjusted weighted distribution in column 7 with the corresponding base-weighted distribution in column 2. While significant differences were observed for some characteristics prior to nonresponse adjustment (see column 6), the differences for most of these characteristics have essentially disappeared after nonresponse adjustment, as can be seen by the small relative biases in column 8 and the non-significant p-values in column 9. The only exception is for

type of control, for which the difference remains significant; however, the corresponding relative biases are considerably smaller after the nonresponse adjustment, suggesting that the observed differences may not have an appreciable effect on the survey-based estimates.

6. Comparisons of Estimates of IPEDS Data Items Before and After Nonresponse Adjustment

Another way of gauging the effectiveness of the weighting procedures is to compare weighted estimates of institution-level data items available from the IPEDS sampling frame before and after nonresponse adjustment. Table 3 summarizes such a comparison. The statistics presented in these tables are based on items available (or derived) from the 2009 IPEDS data files. The p-value given in column 6 of the table corresponds to a test comparing the base-weighted estimate for respondents with the corresponding base-weighted estimate for the total sample (which is an unbiased estimate of the true population value in the IPEDS files). The p-value shown in the column 9 of the tables corresponds to a test comparing the nonresponse-adjusted estimate for respondents with the corresponding base-weighted estimate for the total sample. In Table 3, the six items listed under "numeric variables" are estimated means of selected counts reported in IPEDS. The five items under "attribute variables" are estimated percentages derived from categorical data reported in IPEDS.

For three of the six numeric variables presented in table 3 (applications, admissions, and full-time enrollment), the base-weighted mean of the respondents is significantly different from the base-weighted mean of the total sample (p-value < 0.0005 in column 6 of the table). The corresponding relative biases range from 6 to 7 percent, indicating that the responding institutions tend to report higher IPEDS counts than nonresponding institutions. However, after nonresponse adjustment, it can be seen in column 8 of the table that the corresponding relative biases have been reduced considerably to around 2-3 percent. At the 0.01 significance level, none of the nonresponse-adjusted estimates shown in column 7 are significantly different from the corresponding unbiased estimate in column 2 (p-value = 0.047 or greater in column 9). This suggests that the nonresponse adjustments used to create the final weights may be effective in reducing the bias of survey estimates that are correlated with the variables listed in table 3.

A similar comparison was made for the five attribute variables listed in table 3. As indicated by the p-values in column 6 of the table, the unadjusted estimates for the respondent sample shown in column 3 are significantly different from the corresponding unbiased estimates in column 2 (p-value < 0.05) for three of the five items (dual credit, advance placement credit, and remedial services). However, after nonresponse adjustment, none of the weighted estimates (column 7) differ significantly from the unbiased estimate (column 9).

7. Comparisons Before and After Nonresponse Adjustments for Selected Survey Results

The final set of comparisons conducted in the nonresponse bias analysis involved a comparison of weighted estimates of selected survey characteristics using the base weights (unadjusted estimates) and nonresponse-adjusted weights (adjusted estimates). The results are summarized in table 4. The p-value given in column 5 of this table corresponds to a test of the hypothesis that there is no difference between the two weighted estimates. The statistics under the heading "numeric variables" are estimates of mean test scores. The statistics under the heading "attribute variables" are estimates of the percentage of institutions using various tests.

Among the eight numeric variables examined, none of the differences between the adjusted and unadjusted estimates are statistically significant at the 0.05 level, and none are significant at the more stringent 0.01 level. This suggests that that the degree of nonresponse experienced in the NAGB survey is

unlikely to have an appreciable impact on estimates of mean test scores. On the other hand, there are significant differences between the adjusted and unadjusted estimates for several of the attribute variables considered. Where there is a significant difference between the two estimates, the relative bias (column 4) provides a measure of the amount of bias that is potentially corrected for when using the adjusted estimate.

8. Summary and Conclusions

The weighted response rate for the NAGB survey of institutions was 81 percent. Response rates varied considerably by sector, type of control, and enrollment size class. To compensate for the differential survey response rates, weight adjustments were developed and applied to the base weights within appropriate weight adjustment classes (Section 4). In general, such weight adjustments will reduce nonresponse bias if the variables used in forming the weight adjustment classes are correlated with response propensity (the probability that a sampled institution will respond to the survey) and with the characteristics obtained from the survey.

There are reasons to believe that the nonresponse-adjusted weights developed for the survey of institutions will be reasonably effective in reducing potential biases. First, the weight adjustments removed most of the disparities between the weighted distributions of the respondents and the distributions of the total sample (Section 5). Second, a comparison of weighted estimates of selected data items available in the IPEDS files showed that the weight adjustment procedures was effective in reducing the difference between the weighted estimate for the respondent sample and the corresponding base-weighted estimate for the total sample (Section 6). Further evidence of the potential bias reductions is given by a comparison of weighted estimates of selected survey items before and after nonresponse adjustment (Section 7).

Based on this analysis, it appears that the estimates derived from the study using the nonresponse adjusted weights are nationally representative. Although it is possible to conduct more in-depth analysis and possibly refine the weighting procedures, the results of this analysis suggest that any potential improvements will be modest.

Table F-1. Sample sizes by response status, response rates, and test of association between response status and selected characteristics of sampled institutions

Characteristic	Sample sizes by response status				Unweighted response rate (%)	Weighted response rate (%)[1]	Test of association (p-value)[2]
	Total	Response	Nonresponse	Ineligible			
1	2	3	4	5	6	7	8
All institutions	1,668	1,338	225	105	85.6	81.0	
Sector							*0.000#*
Four-year Public	469	415	39		91.4	91.0	
Four-year Private, non-profit	468	385	65		85.6	84.0	
Four-year Private, for profit	159	80	36		69.0	68.0	
Two-year Public	468	410	52		88.7	89.0	
Two-year Private, non-profit	22	13	4		76.5	74.0	
Two-year Private, for profit	82	35	29		54.7	56.0	
Type of control							*0.000#*
Public	*937*	*825*	*91*	*21*	90.1	90.0	
Private, non profit	*490*	*398*	*69*	*23*	85.2	83.0	
Private, for profit	*241*	*115*	*65*	*61*	63.9	61.0	
Level							*0.114*
Four year	*1,096*	*880*	*140*	*76*	86.3	83.0	
Two year	*572*	*458*	*85*	*29*	84.3	78.0	
Enrollment size class							*0.000#*
Under 1,000	261	141	55	64	71.9	69.0	
1,000 to 2,999	332	257	50	25	83.7	83.0	
3,000 to 9,999	496	429	56	11	88.5	89.0	
10,000 or more	579	511	64	4	88.9	89.0	
Highest level of offering							*0.103*
Doctorate	470	397	54	19	88.0	85.0	
Masters	369	314	44	11	87.7	86.0	
Bachelors	257	169	42	46	80.1	79.0	
NA	572	458	85	29	84.3	78.0	
OE Region							*0.218*
Northeast	368	301	52	15	85.3	82.0	
Southeast	408	313	68	27	82.2	77.0	
Central	413	345	42	26	89.1	87.0	
West	479	379	63	37	85.7	80.0	

Rounds to zero.

[1] Weighted response rates are calculated using base weights.

[2] Test of association between response status and institution characteristic.

NOTE: Detail may not sum to totals because of rounding. Institution characteristics are based on data available on the frame at the time of sampling and may differ from classification variables used in other reports.

Table F-2. Comparison of weighted distributions of sampled institutions, by response status and selected characteristics

Characteristic	Base-weighted data					Nonresponse-adjusted data		
	Percent distribution of sample							
	Total	Respondents	Nonrespondents	Relative bias (percent)[1]	Test of association (p-value)[2]	Respondents (percent)	Relative bias (percent)[3]	Test of association (p-value)[4]
1	2	3	4	5	6	7	8	9
All institutions	100.0	100.0	100.0			100.0		
Sector					*0.000*			*0.166*
Four-year Public	16.7	18.8	7.7	12.5		17.1	2.0	
Four-year Private, non-profit	33.2	34.3	28.5	3.2		33.7	1.7	
Four-year Private, for profit	9.6	8.0	16.5	-16.7		9.0	-6.0	
Two-year Public	26.1	28.6	15.1	9.7		26.6	2.0	
Two-year Private, non-profit	1.7	1.6	2.4	-8.4		2.0	17.6	
Two-year Private, for profit	12.7	8.7	29.8	-31.1		11.5	-9.0	
Type of control					*0.000*			*0.006*
Public	42.8	47.4	22.8	10.8		43.7	2.0	
Private, non profit	34.9	35.8	30.9	2.7		35.8	2.5	
Private, for profit	22.3	16.7	46.3	-24.9		20.6	-7.7	
Level					*0.115*			*0.205*
Four year	59.5	61.1	52.7	2.6		59.8	0.5	
Two year	40.5	38.9	47.3	-3.9		40.2	-0.8	
Enrollment size class					*0.000*			*0.090*
Under 1,000	30.7	26.1	50.7	-15.0		29.2	-4.8	
1,000 to 2,999	27.7	28.4	24.5	2.7		28.5	2.9	
3,000 to 9,999	26.2	28.7	15.7	9.3		26.6	1.3	
10,000 or more	15.4	16.8	9.1	9.4		15.8	2.3	
Highest level of offering					*0.065*			*0.326*
Doctorate	17.8	18.6	14.7	4.0		17.7	-1.0	
Masters	23.3	24.6	17.5	5.7		23.9	2.8	
Bachelors	18.4	17.9	20.5	-2.7		18.2	-0.8	
NA	40.5	38.9	47.3	-3.9		40.2	-0.8	
OE Region					*0.065*			*0.424*
Northeast	22.4	22.6	21.5	0.9		22.7	1.4	
Southeast	26.4	24.9	33.0	-5.8		25.2	-4.4	
Central	25.2	27.0	17.5	7.0		26.2	3.8	
West	26.0	25.5	28.0	-1.8		25.9	-0.4	

[1] Relative bias defined to be 100*(B-A)/A, where A = base-weighted estimate for total sample and B = base-weighted estimate for respondent sample.
[2] Test comparing distribution of total sample versus respondent sample using base weights.
[3] Relative bias defined to be 100*(C-A)/A, where A = base-weighted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.
[4] Test comparing distribution of respondent sample using nonresponse-adjusted weights with distribution of total sample using base weights.

NOTE: Detail may not sum to totals because of rounding. Institution characteristics are based on data available in either the sampling frame or IPEDS files at the time of sampling and may differ from classification variables used elsewhere in this report.

Table F-3. Comparison of weighted estimates of selected IPEDS statistics for sampled institutions, by response status

IPEDS data item	Base-weighted data: Estimates of IPEDS data items: Total	Respondents	Nonrespondents	Relative bias[1]	T-test[2]	Nonresponse-adjusted data: Estimates of IPEDS data items for respondents	Relative bias[3]	T-test[4]
1	2	3	4	5	6	7	8	9
Numeric variables[5]		(Mean)		(Percent)	(P-value)	(Mean)	(Percent)	
Total applications	2,316	2,484	1,475	7.3	0.000	2,376	3.0	0.086
Total admissions	4,067	4,325	2,772	6.0	0.000	4,147	2.0	0.211
Total part-time enrollment	46	47	43	1.0	0.704	48	5.0	0.302
Total full-time enrollment	768	822	492	7.0	0.000	788	3.0	0.095
Number of first-time degree/certificate seeking students submitting SAT scores	568	577	486	2.0	0.130	565	0.0	0.592
Number of first-time degree/certificate seeking students submitting ACT scores	479	485	429	1.0	0.295	470	-2.0	0.047
Attribute variables[5]		(Percent)			(P-value)	(Percent)		(P-value)
Institutions offering dual credit	77	80	61	5.0	0.000	78	1.0	0.199
Institutions with advanced placement credits	82	86	65	5.0	0.000	83	1.0	0.150
Institutions with remedial services	75	77	68	2.0	0.048	76	1.0	0.509
Institutions with academic/career counseling	98	98	96	1.0	0.166	98	0.0	0.437
Institutions with employment services	88	89	88	0.0	0.676	88	-1.0	0.477

[1] Relative bias defined to be 100*(B-A)/A, where A = base-weighted estimate for total sample and B = base-weighted estimate for respondent sample.

[2] Test comparing base-weighted estimate of total sample with base-weighted estimate of respondent sample.

[3] Relative bias defined to be 100*(C-A)/A, where A = base-weighted estimate for total sample and C = nonresponse-adjusted estimate for respondent sample.

[4] Test comparing nonresponse-adjusted estimate of respondent sample with base-weighted estimate of total sample.

[5] Excludes missing values in IPEDS institutional characteristics(IC) file.

Table F-4. Comparison of selected weighted survey estimates for responding institutions before and after nonresponse adjustment

Survey variable	Survey respondents			
	Base-weighted estimates[1]	Nonresponse-adjusted estimates[1]	Relative bias[2]	T-test[3]
1	2	3	4	5
Numeric variables (mean score needing remediation)	(Mean)		(Percent)	(P-value)
ACT mathematics	19	19	0.2	0.091
SAT mathematics	466	465	0.1	0.405
ACCUPLACER elementary algebra	68	68	0.6	0.221
COMPASS algebra	48	48	0.0	0.972
ACT reading	18	18	-0.1	0.556
Used SAT critical reading	450	450	0.0	0.989
Used ACCUPLACER reading comprehension	73	72	0.7	0.151
Used COMPASS reading	76	76	0.1	0.417
Attribute variables	(Percent)		(Percent)	(P-value)
Used any mathematics test to evaluate students	*73*	*71*	*3.2*	*0.000*
Used ACT mathematics	34	33	1.9	0.013
Used SAT mathematics	24	24	0.6	0.538
Used ACCUPLACER elementary algebra	23	23	-0.2	0.741
Used COMPASS algebra	29	28	3.5	0.004
Used any reading test to evaluate students	*54*	*53*	*2.9*	*0.001*
Used ACT reading	31	31	2.1	0.009
Used SAT critical reading	22	21	1.1	0.452
Used ACCUPLACER reading comprehension	36	36	-0.3	0.675
Used COMPASS reading	44	43	3.4	0.003

[1] For numeric variables, estimates are means. For attributes, estimates are percentages of institutions. Responses exclude missing values.
[2] Relative bias defined to be 100*(B-A)/A, where B = base-weighted estimate for respondents and A = nonresponse-adjusted estimates for respondents.
[3] Test of difference between base-weighted and nonresponse-adjusted estimates using a variant of a nonparametric mean test.

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Appendix G

Technical Review Panel Members

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Appendix B:
Standard Error Tables

This appendix contains companion tables of standard errors for the tables of estimates displayed in the report.

Table B.1 Standard errors for the estimated number of postsecondary institutions in the population and the percentage of institutions using selected mathematics tests to evaluate entering students for developmental or remedial courses in mathematics, by institution level and type: Fall 2011

Institution level and type	Estimated number of institutions in the population	Percentage of institutions using any mathematics test	Percentage of institutions using specific mathematics tests						
			ACT	SAT	ACCUPLACER		COMPASS		Other mathematics tests
			Mathematics	Mathematics	Elementary Algebra	College Level Mathematics	Algebra	College Algebra	
All institutions	58.5	1.6	0.8	0.8	0.8	0.4	0.9	0.5	1.2
Institution level									
2-year	41.0	3.2	1.5	1.0	1.4	0.8	1.8	1.0	2.2
4-year	41.7	1.9	1.0	1.1	0.8	0.4	0.8	0.4	1.4
Institution type									
Public 2-year	16.4	0.2	2.4	1.3	2.0	1.2	2.3	1.3	1.2
Private 2-year	35.8	7.8	—	1.5	2.2	—	—	—	6.3
Public 4-year	6.4	1.2	1.5	1.4	1.0	0.8	1.3	0.7	1.7
Private not-for-profit 4-year	23.5	2.7	1.9	2.0	0.8	0.5	1.2	—	2.0
Private for-profit 4-year	30.4	4.9	2.8	2.9	4.1	—	—	—	3.3

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.2 Standard errors for the mean mathematics test scores below which entering students were identified as in need of developmental or remedial courses in mathematics, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Mean mathematics test scores					
	ACT	SAT	ACCUPLACER		COMPASS	
	Mathematics	Mathematics	Elementary Algebra	College Level Mathematics	Algebra	College Algebra
All institutions	0.1	3.3	1.1	1.4	0.9	1.2
Institution level						
2-year	0.3	5.7	1.1	1.4	1.2	1.5
4-year	0.1	4.0	2.0	2.6	0.9	—
Institution type						
Public 2-year	0.2	4.9	1.1	1.4	1.3	1.6
Public 4-year	0.1	2.7	1.3	2.0	0.8	—
Private not-for-profit 4-year	0.2	6.0	—	—	—	—

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.3 Standard errors for the percentiles for mathematics test cut scores below which entering students were identified as in need of developmental or remedial courses in mathematics, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Percentiles for mathematics test cut scores																	
	ACT			SAT			ACCUPLACER						COMPASS					
	Mathematics			Mathematics			Elementary Algebra			College Level Mathematics			Algebra			College Algebra		
	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th
All institutions	0.2	0.1	0.2	3.9	5.8	3.6	2.0	1.0	2.0	0.8	3.2	2.5	0.8	1.4	2.6	1.7	0.5	3.8
Institution level																		
2-year	0.4	0.4	0.3	4.4	9.4	9.4	2.2	1.9	1.8	0.8	1.4	3.1	1.2	2.2	0.6	1.8	0.6	6.1
4-year	0.1	0.1	0.2	4.7	5.4	3.2	3.7	1.2	1.0	2.6	3.3	4.5	1.0	0.9	1.4	—	—	—
Institution type																		
Public 2-year	0.2	0.3	0.3	4.4	9.1	7.0	2.1	2.3	2.1	0.8	1.4	3.1	1.2	2.3	0.6	1.7	0.8	6.1
Public 4-year	0.2	0.1	0.2	3.1	0.7	3.7	1.6	0.7	1.1	3.4	3.0	2.4	0.6	0.7	1.4	—	—	—
Private not-for-profit 4-year	0.2	0.2	0.3	9.5	9.4	3.3	—	—	—	—	—	—	—	—	—	—	—	—

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.4 Standard errors for the estimated percentage of institutions using criteria other than postsecondary mathematics tests to evaluate entering students for developmental or remedial courses in mathematics, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any criteria other than mathematics tests	Percentage of institutions using specific evaluation criteria other than mathematics tests					
		High school graduation tests or end of-course tests	High school grades (including grade point average)	Highest school mathematics course completed	Advanced Placement or International Baccalaureate scores	Faculty recommendation	Other criteria
All institutions	1.1	0.5	0.8	0.7	0.8	0.4	0.3
Institution level							
2-year	1.8	0.5	1.3	1.2	1.1	0.8	0.7
4-year	1.3	0.7	1.2	0.9	1.0	0.5	0.3
Institution type							
Public 2-year	2.3	0.8	1.1	1.6	1.8	1.2	0.8
Private 2-year							
Public 4-year	1.7	0.4	1.4	0.9	1.1	0.8	0.7
Private not-for-profit 4-year	2.1	1.2	1.9	1.5	1.6	0.8	0.4
Private for-profit 4-year	—	—	—	—	—	—	—

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.5 Standard errors for the estimated percentage of institutions using selected reading tests to evaluate entering students for developmental or remedial courses in reading, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any reading test	Percentage of institutions using specific mathematics tests					Other reading tests
		ACT	SAT	ACCUPLACER	ASSET	COMPASS	
		Reading	Critical reading	Reading comprehension	Reading Skills	Reading	
All institutions	1.4	1.0	0.8	0.9	0.8	1.1	0.9
Institution level							
2-year	2.4	1.9	1.2	1.6	1.7	2.4	2.0
4-year	1.7	1.0	1.1	1.0	0.4	0.7	0.7
Institution type							
Public 2-year	1.0	2.7	1.4	2.3	2.4	2.4	1.1
Private 2-year	5.9	2.4	1.5	3.5	—	—	5.2
Public 4-year	1.8	1.1	1.2	1.0	0.8	1.2	0.7
Private not-for-profit 4-year	2.4	1.6	1.7	1.0	0.2	1.1	1.0
Private for-profit 4-year	6.5	—	—	6.3	—	—	3.4

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.6 Standard errors for the mean reading test scores below which entering students were identified as in need of developmental or remedial courses in reading, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Mean reading test scores				
	ACT	SAT	ACCUPLACER	ASSET	COMPASS
	Reading	Critical Reading	Reading Comprehension	Reading Skills	Reading
All institutions	0.1	4.3	0.6	0.2	0.9
Institution level					
2-year	0.2	6.7	0.6	0.2	1.2
4-year	0.2	5.4	1.3	0.9	0.5
Institution type					
Public 2-year	0.2	6.7	0.6	0.2	1.2
Public 4-year	0.2	3.3	0.6	—	0.4
Private not-for-profit 4-year	0.2	8.3	—	—	—

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.7 Standard errors for the percentiles for reading test cut scores below which entering students were identified as in need of developmental or remedial courses in reading, for selected tests reported by postsecondary institutions, by institution level and type: Fall 2011

Institution level and type	Percentiles for reading test cut scores														
	ACT			SAT			ACCUPLACER			ASSET			COMPASS		
	Reading			Critical Reading			Reading Comprehension			Reading Skills			Reading		
	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th	25th	50th	75th
All institutions	0.2	0.1	0.2	5.7	6.6	3.0	1.6	0.1	0.2	0.2	0.1	0.2	1.4	0.3	0.1
Institution level															
2-year	0.2	0.2	0.3	8.0	7.4	5.3	1.9	0.2	0.3	0.2	0.1	0.2	1.6	0.4	0.1
4-year	0.3	0.2	0.2	7.9	2.4	4.1	1.9	0.7	0.8	--	0.8	--	1.2	0.6	0.1
Institution type															
Public 2-year	0.2	0.2	0.2	9.3	7.3	6.4	1.7	0.2	0.2	0.2	0.1	0.2	1.5	0.3	0.1
Public 4-year	0.2	0.2	0.1	4.7	2.1	3.2	2.0	0.1	0.5	—	—	0.1	0.7	0.4	0.1
Private not-for-profit 4-year	0.5	0.3	0.3	10.7	10.6	7.6	—	—	—	—	—	—	—	—	—

-- Not available.

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table B.8 Standard errors for the estimated percentage of institutions using criteria other than postsecondary reading tests to evaluate entering students for developmental or remedial courses in reading, by institution level and type: Fall 2011

Institution level and type	Percentage of institutions using any criteria other than reading tests	Percentage of institutions using specific evaluation criteria other than reading tests					
		High school graduation tests or end of-course tests	High school grades (including grade point average)	Highest school English course completed	Advanced Placement or International Baccalaureate scores	Faculty recommendation	Other criteria
All institutions	0.9	0.3	0.7	0.5	0.5	0.3	0.4
Institution level							
2-year	1.7	0.6	0.7	0.7	0.8	0.7	0.6
4-year	0.9	0.2	1.0	0.6	0.6	0.3	0.5
Institution type							
Public 2-year	2.0	0.8	0.8	0.9	1.3	1.1	0.5
Private 2-year	1.8	—	—	—	—	—	—
Public 4-year	1.2	0.5	0.7	0.4	0.9	0.5	0.6
Private not-for-profit 4-year	1.6	0.3	1.7	1.1	1.0	0.5	0.8
Private for-profit 4-year	—	—	—	—	—	—	—

— Not applicable: estimate not reported.

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Appendix C:
Additional Tables

This appendix contains tables for mathematics and reading, respectively, displaying estimates of the frequency of use of all tests for which data were collected. These tables are followed by the companion standard error tables for these estimates.

Table C.1 Percentage of postsecondary institutions using various mathematics tests to evaluate entering students for developmental or remedial courses in mathematics: Fall 2011

	Mathematics Test	Percent
Any mathematics test		71
ACT	Mathematics	23
	Composite score	5
SAT	Mathematics	17
	Total score including Writing	1
	Total score excluding Writing	1
ACCUPLACER	Arithmetic	5
	Elementary Algebra	16
	College-Level Mathematics	5
ASSET	Numerical Skills	1
	Elementary Algebra	4
	Intermediate Algebra	4
	College Algebra	2
COMPASS	Pre-Algebra	5
	Algebra	20
	College Algebra	4
Other mathematics tests		22

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table C.2 Percentage of postsecondary institutions using various reading tests to evaluate entering students for developmental or remedial courses in reading: Fall 2011

	Reading Test	Percent
Any reading test		53
ACT	Reading	16
	Composite score	4
SAT	Critical Reading	11
	Total score including Writing	1
	Total score excluding Writing	1
ACCUPLACER	Reading Comprehension	19
ASSET	Reading Skills	9
COMPASS	Reading	22
Nelson-Denny	Reading	2
Other reading tests		10

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table C.3 Standard errors for the percentage of postsecondary institutions using various mathematics tests to evaluate entering students for developmental or remedial courses in mathematics: Fall 2011

	Mathematics Test	Percent
Any mathematics test		1.6
ACT	Mathematics	0.8
	Composite score	0.6
SAT	Mathematics	0.8
	Total score including Writing	0.2
	Total score excluding Writing	0.4
ACCUPLACER	Arithmetic	0.7
	Elementary Algebra	0.8
	College-Level Mathematics	0.4
ASSET	Numerical Skills	0.3
	Elementary Algebra	0.6
	Intermediate Algebra	0.5
	College Algebra	0.4
COMPASS	Pre-Algebra	0.8
	Algebra	0.9
	College Algebra	0.5
Other mathematics tests		1.2

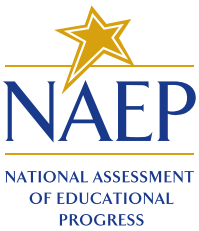
SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

Table C.4 Standard errors for the percentage of postsecondary institutions using various reading tests to evaluate entering students for developmental or remedial courses in reading: Fall 2011

	Reading Test	Percent
Any reading test		1.4
ACT	Reading	1.0
	Composite score	0.5
SAT	Critical Reading	0.8
	Total score including Writing	0.2
	Total score excluding Writing	0.4
ACCUPLACER	Reading Comprehension	0.9
ASSET	Reading Skills	0.8
COMPASS	Reading	1.1
Nelson-Denny	Reading	0.3
Other reading tests		0.9

SOURCE: National Assessment Governing Board. (Fall 2011). Evaluating Student Need for Developmental or Remedial Coursework at Postsecondary Education Institutions [Survey]. Washington, DC: Author.

The survey on which this report is based — "Evaluating Student Need for Remedial or Developmental Courses at Postsecondary Education Institutions" — was conducted for the National Assessment Governing Board by Westat under contract ED NAG 09 C 0002.



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