

# 2006-2007 INSTITUTIONAL REPORT

University of Montana - Missoula

**collegiate  
learning  
assessment**

council for aid to education

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# Message from the President



The Collegiate Learning Assessment (CLA) offers a new approach to assessment and improvement in higher education. Including University of Montana - Missoula and its students, over 300 institutions and 70,000 students have participated to date. This shows a growing commitment on the part of higher education to assess student learning, and it's a good point in time to review the distinguishing features of the CLA and how it connects to improvement on your campus.

The CLA presents realistic problems that require students to analyze complex materials varying in reliability and accuracy, and to construct written responses that demonstrate their abilities to think critically, reason analytically, solve problems and communicate clearly and cogently. The institution—not the student—is the primary unit of analysis. The CLA is designed to measure an institution's contribution, or value added, to the development of these competencies, including the effects of changes to curriculum and pedagogy.

The CLA approach is designed primarily to assist faculty in improving teaching and learning, in particular as a means toward strengthening higher order skills. The CLA approach also assumes that multiple assessment indicators are required; no single test to benchmark student learning in higher education is feasible or desirable. This, however, does not mean certain skills judged to be important by most faculty and administrators cannot be measured; the higher order skills the CLA focuses on fall into this measurable category. Moreover, the CLA, based on scientifically developed scoring rubrics, permits and encourages institutions to compare their student learning results on the CLA with similarly situated institutions.

The comparative signaling quality of the CLA is important because institutions need the ability to benchmark where they stand in comparison to other institutions. Otherwise, how do they know how well they are doing? Once institutions assess their students' skills, the question becomes how to interpret the results and what to do to improve subsequent performance on the CLA.

As noted in the Executive Summary (page 2), our estimate of your value added placed you in decile group 8; you performed better than 70 percent of four-year institutions. In 2005–2006, your institution's estimated value added placed you in decile group N/A; you performed better than N/A percent of four-year institutions. Additionally, given your student and school characteristics, we calculated your performance on other outcomes: first-year retention rate (At Expected), four-year graduation rate (At Expected) and six-year graduation rate (At Expected).

## Summary of Results

### University of Montana - Missoula

Result	Performance Level
Value Added Estimate (06-07)	Decile Group 8
Value Added Estimate (05-06)	N/A
First-Year Retention Rate	At Expected
Four-Year Graduation Rate	At Expected
Six-Year Graduation Rate	At Expected

Potential next steps include linking your student-level data to other outcomes or inputs to identify possible explanations or differences across sub-groups, which you can investigate more precisely by pursuing CLA in-depth sampling. I also encourage you to use the presentation that accompanies this report to engage others on campus in a conversation about these results. In doing so, please let your faculty know that we will be launching a new initiative this fall called CLA in the Classroom and through it we will retire one of our Performance Tasks for use as an instructional tool, complete with an adapted scoring guide. In our view, the Performance Tasks are tests worth teaching to. This new program will provide faculty with the chance to work with students to understand why they achieved the scores they did, and what to do next to improve their higher order skills.

Without your contributions of effort and resources, the CLA would not be on the exciting path that it is today. We look forward to your continued involvement! Thank you.

Roger Benjamin, Ph.D.  
President  
Council for Aid to Education



# Contents

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## Note to Readers

We encourage non-technical readers to focus on Sections I-V. Section VI and portions of Section VII provide more technical information.

Sections I, IV and VI all present your institution's CLA results. As such, there is some duplication of content across these sections. However, to reach multiple audiences, each section frames this content differently. Section I is non-technical, Section IV adds details and Section VI is intended to provide comprehensive and technical information underpinning your results. Sections II, III and V are contextual. Section II helps readers understand CLA results. Section III describes the school and student samples and Section V describes the CLA tasks and scoring process. Section VII is designed to provide supplemental information for more technically-versed readers.

# I. Institutional Executive Summary

This 2006–2007 Collegiate Learning Assessment (CLA) Institutional Report for University of Montana - Missoula provides information in several formats to assist you in conveying CLA results to a variety of campus constituents. As you know, the CLA assesses your institution's value added to your students' key higher order skills: critical thinking, analytic reasoning, problem solving, and written communication. These skills are intertwined, and the CLA measures them holistically. The CLA also allows you to do further research, measure the impact of changes in your curricula and teaching, and compare your school with our national sample of over 115 four-year institutions. Three questions of interest to many CLA schools are:

## 1. How did our students score after taking into account their incoming academic abilities?

We used our national database of four-year schools to examine whether your students performed (as a group) better or worse than what would be expected. Their "expected" CLA score is based on two factors, namely: (a) their mean SAT score and (b) the typical relationship between a school's average SAT score and its average CLA score. We designate five performance levels for an institution: *well below expected*, *below expected*, *at expected*, *above expected*, and *well above expected*. We report scores for freshmen and seniors separately and then combine them to estimate your institution's value added, which we divide into ten groups (decile groups) of roughly equal size (see pages 8-10). Your 2006-2007 results were as follows:

	Performance Level										Expected Value	Actual Value
Freshmen	Well Below	Below	At	Above	Well Above						1058	1036
Seniors	Well Below	Below	At	Above	Well Above						1205	1204
Difference	1	2	3	4	5	6	7	8*	9	10	146	168

\* A value of 8 means that you performed better than at least 70 percent of four-year institutions.

## 2. How does my institution perform on other outcomes after taking into account institutional and student characteristics?

We also examined if other outcomes at your school—retention and graduation rates—were consistent with what would be expected given the characteristics of your students and institution. Using a regression modeling approach, we report your school's actual performance, what would be expected based on the models, and assign a performance level relative to all four-year institutions (see pages 13 and 21):

	Performance Level					Expected Value	Actual Value
First-year retention rate	Well Below	Below	At	Above	Well Above	73	70
4-year graduation rate	Well Below	Below	At	Above	Well Above	22	20
6-year graduation rate	Well Below	Below	At	Above	Well Above	48	44

## 3. How should schools use these results?

We encourage schools to (1) communicate results across campus, (2) link student-level CLA results with other data sources, (3) pursue in-depth sampling and/or longitudinal studies, and (4) engage faculty in CLA in the Classroom—a new initiative.

A PowerPoint presentation accompanies this report to help you communicate CLA results and the CLA approach to campus constituencies. While institution-level CLA results operate as a signaling tool of overall institutional performance, student-level CLA results (see page 26 for detail) are provided for you to link with other data sources (e.g., course-taking patterns, grades, portfolio assessments, student satisfaction and engagement, major-specific tests, etc.). These internal analyses can help you identify hypotheses for additional research, which you can pursue through CLA in-depth sampling and/or longitudinal studies in subsequent years. Finally, CLA in the Classroom will launch in fall 2007 as a new initiative for participating institutions to connect the CLA results to work done by individual faculty. If a faculty member would like to assess the higher order skills of students in her/his class, these new materials will provide a way to begin that process. CLA in the Classroom resources—provided free of charge to institutions participating in the 2007–2008 CLA—will include one retired CLA task that can be administered locally, as well as an adapted scoring guide (so faculty can evaluate their students' work), and a discussion guide to be used with individual and/or groups of students.

## II. Understanding CLA Results

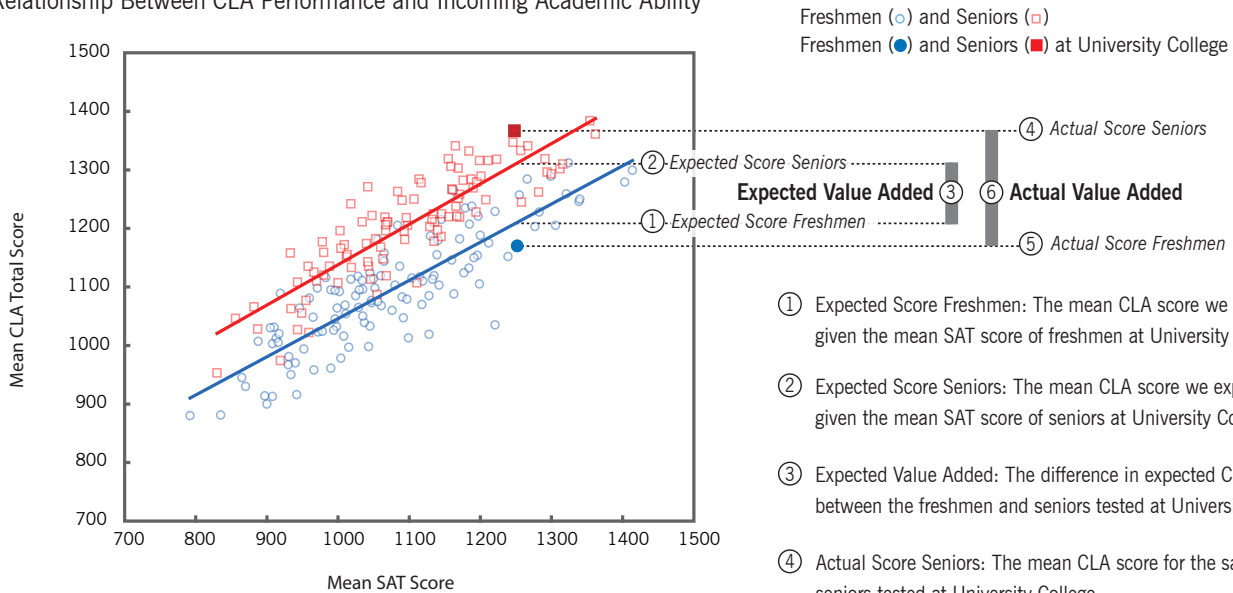
For a number of reasons, we cannot measure improvement by simply examining differences in average CLA scores between freshmen and senior samples within a school or between schools. The samples of freshmen and seniors tested at a school may not perfectly represent their respective classes at that college. For example, participating freshmen may have higher SAT scores than their classmates while the reverse may be true for seniors. In addition, colleges also differ in the entering abilities of their students. To address these concerns, we make an adjustment by comparing a school's actual CLA score to its expected CLA score. Expected scores are derived from the typical relationship between a college's average SAT score (or average ACT score converted to the SAT scale) and its average CLA score. For example, college freshmen with an average SAT score of 1290 would be expected to have an average CLA score of 1235. If their actual average CLA score is substantially higher than that, then they would be classified as scoring above expected.

We report differences between actual and expected scores in two ways: (1) "points" on the CLA scale and (2) standard errors. We use the latter to facilitate comparisons and define the performance levels as follows. Colleges with actual scores between -1.00 and +1.00 standard errors from their expected scores are categorized as being At Expected. Institutions with actual scores greater than one standard error (but less than two standard errors) from their expected scores are in the Above Expected or Below Expected categories (depending on the direction of the deviation). The schools with actual scores greater than two standard errors from their expected scores are in the Well Above Expected or Well Below Expected categories. See pages 8-10 and page 16 for technical information on computing expected scores and the classification of scores into the five different performance levels.

Differences between expected and actual scores for freshmen could stem from several factors, such as differences in college admissions policies that result in students who perform at similar levels on standardized multiple choice tests (e.g., the SAT) but differently on constructed response tasks that require short answers and essays (e.g., the CLA). Differences between expected and actual scores for seniors could be due to admissions policies and/or differences in the relative effectiveness of their institution's educational programs.

By comparing actual to expected scores, colleges can estimate their value added by measuring performance differences between the freshmen and senior years at their school. We divide schools into ten groups of roughly equal size ("decile groups") to classify performance. Schools performing in decile group 5 scored better than 40 percent of institutions, schools in decile group 6 scored better than 50 percent of schools, and so on. The graphic below illustrates our approach using a hypothetical example—University College.

Relationship Between CLA Performance and Incoming Academic Ability



Squares (for seniors) and circles (for freshmen) represent colleges or universities with a sufficient number of students with both CLA and SAT (or converted ACT) scores.

Diagonal lines (red for seniors and blue for freshmen) show the typical relationship between incoming academic ability (average ACT or SAT scores) and average CLA scores across all participating institutions. The lines represent expected CLA scores at different levels of incoming academic ability.

- ① Expected Score Freshmen: The mean CLA score we expect given the mean SAT score of freshmen at University College.
- ② Expected Score Seniors: The mean CLA score we expect given the mean SAT score of seniors at University College.
- ③ Expected Value Added: The difference in expected CLA scores between the freshmen and seniors tested at University College.
- ④ Actual Score Seniors: The mean CLA score for the sample of seniors tested at University College.
- ⑤ Actual Score Freshmen: The mean CLA score for the sample of freshmen tested at University College.
- ⑥ Actual Value Added: This estimated value added is the difference in actual CLA scores between the freshmen and seniors tested at University College.

### III. Characteristics of Participating Institutions and Students

In the fall 2006 and/or spring 2007 testing cycles, 115 four-year institutions (“CLA schools”) tested enough freshmen and seniors to provide sufficiently reliable data for the school level analyses and results presented in this report. Table 1 groups CLA schools by Basic Carnegie Classification. The spread of schools corresponds fairly well with that of the 1,710 four-year institutions across the nation.

**Table 1: 4-year institutions in the CLA and nation by Carnegie Classification**

Carnegie Classification	Nation		CLA		
	Number	Percentage	Number	Percentage	
Doctorate-granting Universities	283	17%	20	17%	<i>Source: Carnegie Foundation for the Advancement of Teaching, Carnegie Classifications Data File, July 7, 2006 edition.</i>
Master’s Colleges and Universities	690	40%	50	43%	
Baccalaureate Colleges	737	43%	45	39%	
	1,710		115		

Table 2 compares some important characteristics of the 115 four-year CLA schools with the characteristics of institutions nationally. These data suggest that the CLA schools are fairly representative of institutions nationally with respect to key institutional variables.

**Table 2: 4-year institutions in the CLA and nation by key school characteristics**

School Characteristic	Nation	CLA	<i>Source: College Results Online dataset, managed by the Education Trust, covers most 4-year Title IV-eligible higher education institutions in the United States. Data were obtained with permission from the Education Trust and constructed from IPEDS and other sources. Because all schools did not report on every measure in the table, the averages and percentages may be based on slightly different denominators.</i>
Percent public	36%	41%	
Percent Historically Black College or University (HBCU)	6%	5%	
Mean percentage of undergraduates receiving Pell grants	33%	32%	
Mean four-year graduation rate	36%	38%	
Mean six-year graduation rate	53%	54%	
Mean first-year retention rate	74%	75%	
Mean Barron’s selectivity rating	3.6	3.4	
Mean estimated median SAT score	1068	1076	
Mean number of FTE undergraduate students (rounded)	4,430	5,250	
Mean student-related expenditures per FTE student (rounded)	\$12,710	\$11,910	

CLA-participating students appeared to be generally representative of their classmates with respect to entering ability levels as measured by SAT scores. Specifically, across institutions, the average SAT score of CLA-participating freshmen (as verified by the registrar) was only 5 points higher than that of the entire freshmen class\*: 1072 versus 1067 (n=110). Similarly, the average SAT score of CLA-participating seniors was only 11 points higher than that of the entire senior class\*\*: 1104 versus 1093 (n=100). The correlation on the average SAT score between CLA-participating freshmen and their classmates was extremely high (r=.95) (n=110) as was the corresponding result for seniors (r=.94) (n=100). Across participating CLA schools, the correlation between the mean SAT score of freshmen and seniors who took the CLA at a school was also strong (r=.95) (n=102). These data suggest that as a group, (a) CLA-participating students were similar to their classmates and (b) freshmen and seniors participating in the CLA were very similar to each other as measured by their SAT scores. This correspondence increases confidence in the inferences that can be made from the results with the samples of students that were tested at a school to all the freshmen and seniors at that institution.

\* As reported by 105 school registrars in response to a fall 2006 request for information or, for the remaining 5 cases, derived from IPEDS using fall 2006 data and the methodology used by the Education Trust (see: [www.collegeresults.org/aboutthedata.aspx](http://www.collegeresults.org/aboutthedata.aspx)).

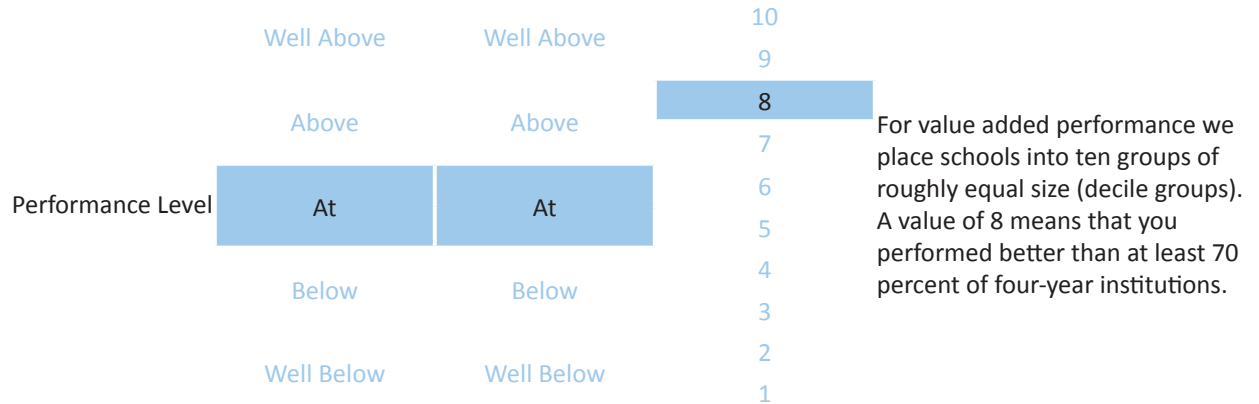
\*\* As reported by 100 school registrars in response to a spring 2007 request for information.



## IV. 2006–2007 Institutional Results for

### University of Montana - Missoula

	Freshmen	Seniors	Value Added	
Mean SAT Score	1034	1120		
Expected CLA Score	1058	1205	146	
Actual CLA Score	1036	1204	168	
Actual versus Expected	-22	-1	22	differences in scale score points
Actual versus Expected	-0.5	0.0	0.5	differences in standard errors



#### Freshmen

Based on the average SAT score (1034) of freshmen sampled at your institution, we would expect their average CLA score to be 1058. Your freshmen scored 1036, which is At Expected.

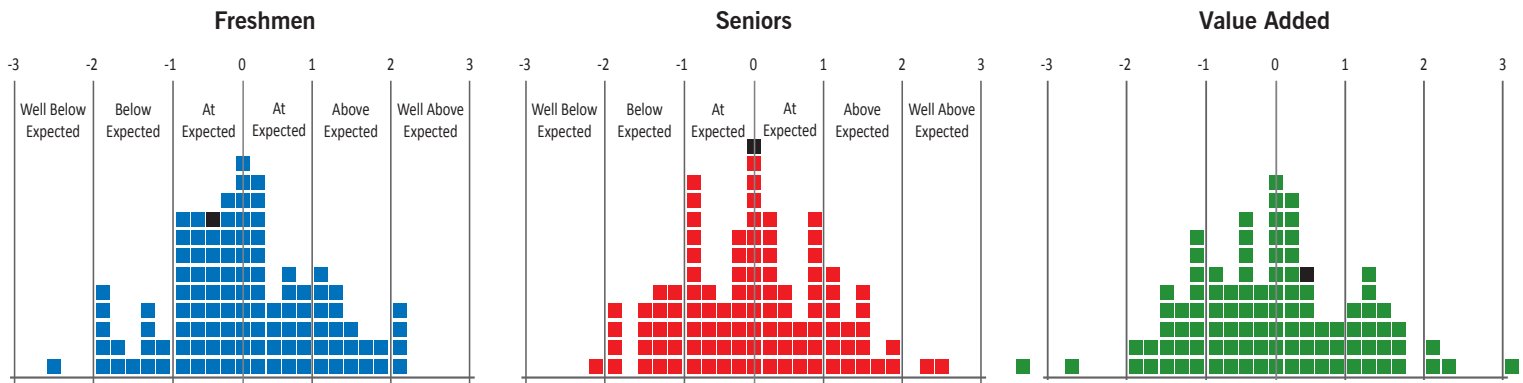
#### Seniors

Based on the average SAT score (1120) of seniors sampled at your institution, we would expect their average CLA score to be 1205. Your seniors scored 1204, which is At Expected.

#### Value Added

Based on the average SAT scores of freshmen and seniors sampled at your institution, we would expect a difference of 146 points on the CLA. This difference is our estimate of the expected value added at your school. The difference between how your seniors scored (1204) and freshmen scored (1036) was 168 points, which places you in decile group 8. As such, you performed better than 70 percent of four-year institutions.

#### Distribution of schools by actual versus expected scores (in standard errors) and performance levels



Each solid square represents one CLA school. Solid black squares (■) represent your school as applicable within the distribution of actual minus expected scores for freshmen (■) or seniors (■) or estimates of the actual value added (■) between freshmen and senior years.

## V. CLA Tasks and Scores

The CLA uses various types of tasks, all of which require students to construct written responses to open-ended questions. There are no multiple-choice questions.

### Performance Task

Each Performance Task requires students to use an integrated set of critical thinking, analytic reasoning, problem solving, and written communication skills to answer several open-ended questions about a hypothetical but realistic situation. In addition to directions and questions, each Performance Task also has its own document library that includes a range of information sources, such as letters, memos, summaries of research reports, newspaper articles, maps, photographs, diagrams, tables, charts, and interview notes or transcripts. Students are instructed to use these materials in preparing their answers to the Performance Task's questions within the allotted 90 minutes.

The first portion of each Performance Task contains general instructions and introductory material. The student is then presented with a split screen. On the right side of the screen is a list of the materials in the document library. The student selects a particular document to view by using a pull-down menu. On the left side of the screen are a question and a response box. There is no limit on how much a student can type. When a student completes a question, he or she then selects the next question in the queue. Some of these components are illustrated below:

Introductory Material: You advise Pat Williams, the president of DynaTech, a company that makes precision electronic instruments and navigational equipment. Sally Evans, a member of DynaTech's sales force, recommended that DynaTech buy a small private plane (a SwiftAir 235) that she and other members of the sales force could use to visit customers. Pat was about to approve the purchase when there was an accident involving a SwiftAir 235. Your document library contains the following materials:

1. Newspaper article about the accident
2. Federal Accident Report on in-flight breakups in single-engine planes
3. Internal Correspondence (Pat's e-mail to you & Sally's e-mail to Pat)
4. Charts relating to SwiftAir's performance characteristics
5. Excerpt from magazine article comparing SwiftAir 235 to similar planes
6. Pictures and descriptions of SwiftAir Models 180 and 235

Sample Questions: Do the available data tend to support or refute the claim that the type of wing on the SwiftAir 235 leads to more in-flight breakups? What is the basis for your conclusion? What other factors might have contributed to the accident and should be taken into account? What is your preliminary recommendation about whether or not DynaTech should buy the plane and what is the basis for this recommendation?

No two Performance Tasks assess the same combination of abilities. Some ask students to identify and then compare and contrast the strengths and limitations of alternative hypotheses, points of view, courses of action, etc. To perform these and other tasks, students may have to weigh different types of evidence, evaluate the credibility of various documents, spot possible bias, and identify questionable or critical assumptions.

Performance Tasks also may ask students to suggest or select a course of action to resolve conflicting or competing strategies and then provide a rationale for that decision, including why it is likely to be better than one or more other approaches. For example, students may be asked to anticipate potential difficulties or hazards that are associated with different ways of dealing with a problem including the likely short- and long-term consequences and implications of these strategies. Students may then be asked to suggest and defend one or more of these approaches. Alternatively, students may be asked to review a collection of materials or a set of options, analyze and organize them on multiple dimensions, and then defend that organization.

Performance Tasks often require students to marshal evidence from different sources; distinguish rational from emotional arguments and fact from opinion; understand data in tables and figures; deal with inadequate, ambiguous, and/or conflicting information; spot deception and holes in the arguments made by others; recognize information that is and is not relevant to the task at hand; identify additional information that would help to resolve issues; and weigh, organize, and synthesize information from several sources.

All of the Performance Tasks require students to present their ideas clearly, including justifying their points of view. For example, they might note the specific ideas or sections in the document library that support their position and describe the flaws or shortcomings in the arguments' underlying alternative approaches.

### **Analytic Writing Task**

Students write answers to two types of essay prompts, namely: a “Make-an-Argument” question that asks them to support or reject a position on some issue; and a “Critique-an-Argument” question that asks them to evaluate the validity of an argument made by someone else. Both of these tasks measure a student's ability to articulate complex ideas, examine claims and evidence, support ideas with relevant reasons and examples, sustain a coherent discussion, and use standard written English.

A “Make-an-Argument” prompt typically presents an opinion on some issue and asks students to address this issue from any perspective they wish, so long as they provide relevant reasons and examples to explain and support their views. Students have 45 minutes to complete this essay. For example, they might be asked to explain why they agree or disagree with the following:

There is no such thing as “truth” in the media.  
The one true thing about the information media is that it exists only to entertain.

A “Critique-an-Argument” prompt asks students to critique an argument by discussing how well reasoned they find it to be (rather than simply agreeing or disagreeing with the position presented). For example, they might be asked to evaluate the following argument:

A well-respected professional journal with a readership that includes elementary school principals recently published the results of a two-year study on childhood obesity. (Obese individuals are usually considered to be those who are 20 percent above their recommended weight for height and age.) This study sampled 50 schoolchildren, ages 5-11, from Smith Elementary School. A fast food restaurant opened near the school just before the study began. After two years, students who remained in the sample group were more likely to be overweight—relative to the national average. Based on this study, the principal of Jones Elementary School decided to confront her school's obesity problem by opposing any fast food restaurant openings near her school.

### **Scores**

To facilitate reporting results across schools, ACT scores were converted (using the standard table in Appendix A) to the scale of measurement used to report SAT scores. These converted scores are referred to simply as SAT scores in this report.

Analytic Writing Task scoring is powered by e-rater®, an automated scoring technology developed and patented by the Educational Testing Service and licensed to CAE. The Performance Task is scored by a team of professional graders trained and calibrated on the specific task.

Students receive a single score on a CLA task because each task assesses an integrated set of critical thinking, analytic reasoning, problem solving, and written communication skills. A student's “raw” score on a Performance Task is the total number of points assigned to it by the graders. However, a student can earn more raw score points on some tasks than on others. To adjust for these differences, the raw scores on each task were converted to “scale” scores using the procedures described in Appendix B. This step allows for combining scores across different versions of a given type of task as well as across tasks, such as for the purposes of computing total scores.

## VI. Institutional Tables and Figures

Institutions participate in the CLA as either cross-sectional or longitudinal schools. Cross-sectional schools test samples of freshmen in the fall and seniors in the spring (of the same academic year). Longitudinal schools follow the same students as they progress at the college by testing them three times (in the first semester of freshmen year, the second semester of sophomore year and the second semester of senior year). Longitudinal schools in their first year follow the cross-sectional approach by testing a sample of seniors in the spring to gather comparative data.

Fall 2006 freshmen at longitudinal schools took both a Performance Task and Analytic Writing Task (i.e., Make-an-Argument and Critique-an-Argument). Fall 2006 freshmen at cross-sectional schools took either a Performance Task or Analytic Writing Task. Spring 2007 seniors at longitudinal schools and cross-sectional schools took either a Performance Task or Analytic Writing Task. A school's total scale score is the mean of its Performance Task and Analytic Writing Task scale scores.

Appendix A describes how ACT scores were converted to the same scale of measurement as used to report SAT scores. Appendix B describes how the reader-assigned "raw" scores on different tasks were converted to scale scores.

The analyses discussed in this section focus primarily on those schools where at least 25 students received a CLA score and also had an SAT score. This dual requirement was imposed to ensure that the results on a given measure were sufficiently reliable to be interpreted and that the analyses could adjust for differences among schools in the incoming abilities of the students participating in the CLA.

Table 3 shows the number of freshmen and seniors at your school who completed a CLA measure in fall 2006 and spring 2007 and also had an SAT score. The counts in this table were used to determine whether your school met the dual requirement described above.

**Table 3: Number of your freshmen and seniors with CLA and SAT scores**

	Number of Freshmen	Number of Seniors
Performance Task	52	49
Analytic Writing Task	42	46
Make-an-Argument	44	48
Critique-an-Argument	48	47
Total score	94	95

Figure 1 and Table 4 (next page) show whether your students did better, worse, or about the same as what would be expected given (1) their SAT scores and (2) the general relationship between CLA and SAT scores at other institutions. Specifically, Figure 1 shows the relationship between the mean SAT score of a college's freshmen and seniors (on the horizontal x-axis) and their mean CLA total score (on the vertical y-axis). Each data point is a college that had at least 25 fall 2006 freshmen (blue circles) or spring 2007 seniors (red squares) with both CLA and SAT scores.

The diagonal lines (blue for freshmen and red for seniors) running from lower left to upper right show the typical relationship between an institution's mean SAT score and its mean CLA score for both freshmen and seniors. The solid blue circle and solid red square correspond to your school. Schools above the line scored higher than expected whereas those below the line did not do as well as expected. Small deviations from the line in either direction could be due to chance. Thus, you should only pay close attention to relatively "large" deviations as defined below. The difference between a school's actual mean score and its expected mean score is called its "deviation" (or "residual") score. Results are reported in terms of deviation scores because the freshmen and seniors who participated at a school were not necessarily a representative sample of all the freshmen at their school. For example, they may have been generally more or less proficient in the areas tested than the typical student at that college. Deviation scores adjust for such disparities.

Figure 1: Relationship between CLA Performance and Incoming Academic Ability

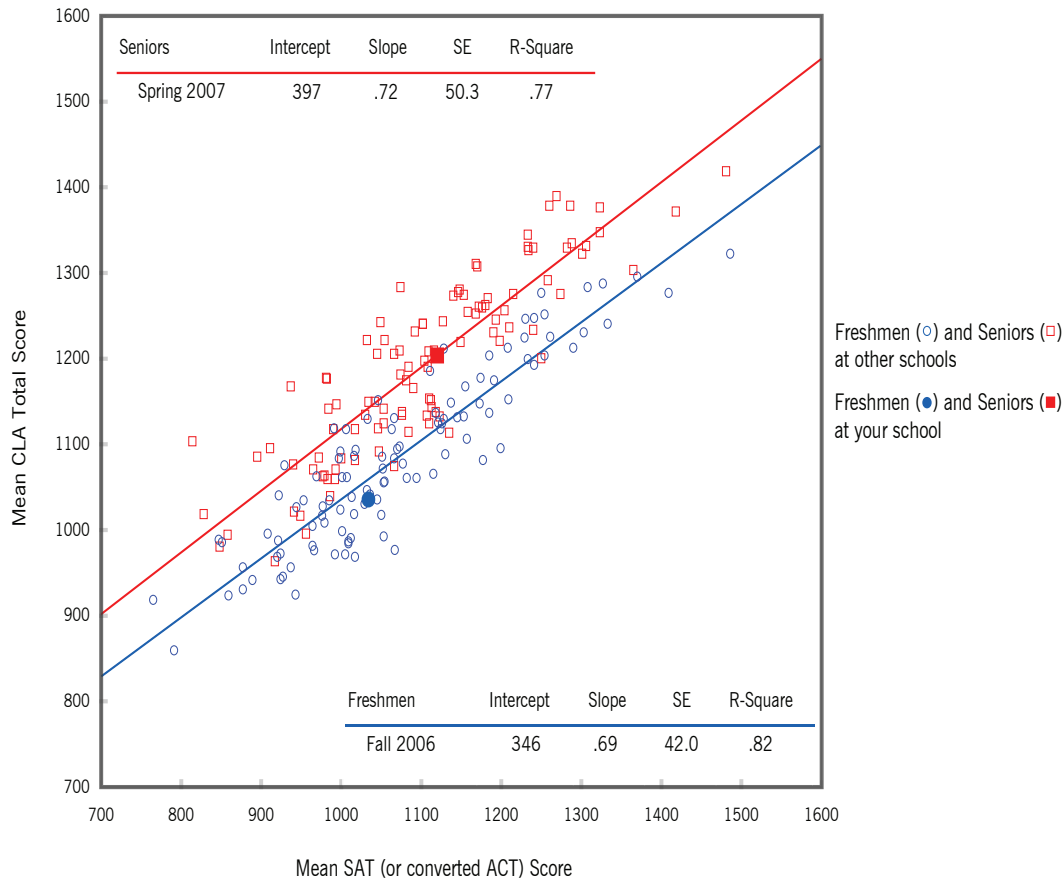


Table 4 (below) shows deviation scores for your freshmen and seniors and—given their SAT scores—whether those deviations were well above, above, at, below, or well below what would be expected.

**Table 4: Deviation scores and associated performance levels for your freshmen and seniors**

	Freshmen		Seniors	
	Deviation Score	Performance Level	Deviation Score	Performance Level
Performance Task	0.0	At	0.3	At
Analytic Writing Task	-0.8	At	-0.6	At
Make-an-Argument	-0.7	At	0.0	At
Critique-an-Argument	-0.6	At	-1.1	Below
Total score	-0.5	At	0.0	At

*Deviation (residual) scores are reported in terms of the number of standard error units the school's actual mean deviates from its expected value.*

Deviation scores are expressed in terms of standard errors to facilitate comparisons among measures. Colleges with actual scores between - 1.00 and +1.00 standard errors from their expected scores are categorized as being At Expected. Institutions with actual scores greater than one standard error (but less than two standard errors) from their expected scores are in the Above Expected or Below Expected categories (depending on the direction of the deviation). The schools with actual scores greater than two standard errors from their expected scores are in the Well Above Expected or Well Below Expected categories.

Appendix C contains the equations that were used to estimate a school's CLA score on the basis of its students' mean SAT score. Appendix D contains the expected CLA score for a school's freshmen and seniors for various mean SAT scores. Appendix E presents average scores across schools within 10 groups of roughly equal size. As such, it provides a general sense of where your school stands relative to the performance of all participating schools.

A school's actual mean CLA score often deviated somewhat from its expected value (i.e., the actual value did not always fall right on the line). Differences between expected and actual scores for freshmen could stem from several factors, such as differences in college admissions' policies that result in students who perform at similar levels on standardized multiple choice tests (e.g., the SAT) but differently on constructed response tasks that require short answers and essays (e.g., the CLA). Differences between expected and actual scores for seniors could be due to admissions policies, but they also could stem from differences in the relative effectiveness of their institution's educational programs.

The most striking feature of Figure 1 is that the line for seniors is almost perfectly parallel to but much higher than the line for freshmen. We infer from these data that the seniors within a school generally scored substantially (and statistically significantly) higher than comparable freshmen (in terms of SAT scores) at that school (the average difference was more than one standard deviation).

It is important to examine whether the deviation score for a college's seniors is larger or smaller than what would be expected given the deviation score for its freshmen. The benchmark here is the size of the difference in deviation scores that is typically observed between freshmen and seniors at other schools after controlling on these students' SAT scores. Table 5 (below) makes this comparison for the subset of schools that tested at least 25 freshmen as well as at least 25 seniors (and where those tested also had SAT scores).

The first column shows the difference between the freshmen and senior deviation scores at your college. A large positive value means the seniors did especially well relative to the freshmen. In other words, after controlling for SAT scores, the difference between the freshmen and senior mean scores was substantially greater than it was at most other schools. A large negative value means the opposite occurred. The second column reports the decile group for each difference score. All schools were rank ordered and then divided into 10 groups of roughly equal size. Higher decile groups indicate larger difference scores.

Keep in mind, however, that even at a school with a negative difference score, its seniors still usually scored higher on the CLA measures than its freshmen. This simply indicates that the degree of improvement between freshmen and seniors was not as great as it was at most other schools and does not mean the school's freshmen earned higher scores than its seniors. An "N/A" signifies that there were not enough freshmen and seniors at the school who had both an SAT and a CLA score to compute a reliable difference score for the institution.

**Table 5: Difference scores and associated performance levels for your school**

	Difference Score	Performance Level (Decile Group)									
Performance Task	0.3	1	2	3	4	5	6	7	8	9	10
Analytic Writing Task	0.2	1	2	3	4	5	6	7	8	9	10
Make-an-Argument	0.7	1	2	3	4	5	6	7	8	9	10
Critique-an-Argument	-0.5	1	2	3	4	5	6	7	8	9	10
Total score	0.5	1	2	3	4	5	6	7	8	9	10

*Note: Difference Score = Senior Deviation Score - Freshman Deviation Score*

*The difference score is the estimate of the actual value added at your school*

Table 6 (next page) shows the mean scores for all schools where at least 25 students had both CLA and SAT scores, as well as your school if applicable. Values in the "Your School" column represent only those students with both CLA and SAT scores and were used to calculate deviation scores. An "N/A" indicates that there were not enough students with both CLA and SAT scores to compute a reliable mean CLA score for the institution.

Differences or similarities between the values in the “All Schools” and “Your School” columns of Table 6 are not directly interpretable because colleges varied in how their students were sampled to participate in the CLA. Consequently, you are encouraged to focus on the data in Tables 4 and 5.

**Table 6: Mean scores for freshmen and seniors at all schools and your school**

	Freshmen		Seniors	
	All Schools	Your School	All Schools	Your School
Performance Task	1070	1048	1195	1215
Analytic Writing Task	1101	1023	1224	1193
Make-an-Argument	1099	1024	1197	1205
Critique-an-Argument	1094	1028	1237	1179
Total score	1081	1036	1192	1204
SAT score	1067	1034	1104	1120

*Limited to schools where at least 25 students had both CLA and SAT scores*

Tables 7 (below), 8 and 9 (next page) provide greater detail on CLA performance, including the spread of scores, at your school and all schools. These tables present summary statistics, including counts, means, 25th and 75th percentiles, and standard deviations. Units of analysis are students for Tables 7 and 8 and schools for Table 9. These CLA scale scores represent students with and without SAT scores and thus may differ from those in Table 6.

**Table 7: Summary statistics for freshmen and seniors tested at your school**

	Freshmen (fall 2006)				
	Number of Students	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	58	941	1041	1142	133
Analytic Writing Task	45	936	1021	1097	140
Make-an-Argument	48	897	1016	1198	181
Critique-an-Argument	51	823	1028	1145	155
SAT score	102	930	1029	1110	129

	Seniors (spring 2007)				
	Number of Students	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	52	1072	1208	1354	191
Analytic Writing Task	48	1097	1187	1252	126
Make-an-Argument	50	1048	1195	1349	165
Critique-an-Argument	49	984	1177	1305	167
SAT score	98	1030	1127	1230	167

**Table 8: Summary statistics for freshmen and seniors tested at all CLA schools**

	Freshmen (fall 2006)				
	Number of Students	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	7072	931	1071	1192	188
Analytic Writing Task	5450	941	1088	1177	169
Make-an-Argument	6119	897	1083	1198	193
Critique-an-Argument	6025	984	1081	1145	190
SAT score	11933	930	1073	1210	196

	Seniors (spring 2007)				
	Number of Students	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	4622	1016	1180	1320	217
Analytic Writing Task	3890	1097	1211	1327	167
Make-an-Argument	4183	1048	1191	1349	186
Critique-an-Argument	4159	1145	1221	1305	196
SAT score	8211	980	1117	1260	194

**Table 9: Summary statistics for schools that tested freshmen and seniors**

	Freshmen (fall 2006)				
	Number of Schools	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	114	989	1065	1137	103
Analytic Writing Task	103	1014	1099	1171	100
Make-an-Argument	107	1004	1096	1180	103
Critique-an-Argument	109	1007	1089	1156	102
Total score	116	994	1077	1145	101
SAT score	115	968	1059	1148	133

	Seniors (spring 2007)				
	Number of Schools	25th Percentile	Mean Scale Score	75th Percentile	Standard Deviation
Performance Task	94	1093	1180	1264	113
Analytic Writing Task	83	1145	1207	1279	93
Make-an-Argument	90	1117	1187	1256	92
Critique-an-Argument	90	1138	1218	1287	100
Total score	108	1098	1174	1256	102
SAT score	104	1003	1097	1184	127



## Other Outcome Measures

We also examined whether certain other outcomes, such as retention and graduation rates, were consistent with what would be expected given student and institutional characteristics. The data used for these analyses were provided to CAE by the Education Trust and were initially derived from IPEDS and other sources. Data on Commuter Campus status was provided by The College Board (Source of Data: the Annual Survey of Colleges of the College Board and Data Base, 2005-06. Copyright © 2003 College Board. All rights reserved). Appendix F describes the factors that were considered and the procedures that were used to make these projections. We examined the following three outcomes:

- First-year retention rate. Percentage of first-time, full-time degree-seeking undergraduates in the fall of 2004 who were enrolled at the same institution in the fall of 2005.
- Four-year graduation rate. Percentage of students who began in 1999 as first-time, full-time degree-seeking students at the institution and graduated within four years.
- Six-year graduation rate. Percentage of students who began in 1999 as first-time, full-time degree-seeking students at the institution and graduated within six years.

Table 10 shows the actual and expected values at your school for each of the outcomes listed above, the deviation between these values (in standard error units to facilitate direct comparisons), and the associated performance level. Colleges with actual scores between -1.00 and +1.00 standard errors from their expected scores are categorized as being At Expected. Institutions with actual scores greater than one standard error (but less than two standard errors) from their expected scores are in the Above Expected or Below Expected categories (depending on the direction of the deviation). The schools with actual scores greater than two standard errors from their expected scores are in the Well Above Expected or Well Below Expected categories. We present deviation scores and associated performance levels for freshmen and seniors to facilitate comparisons.

**Table 10: Comparison of observed and expected outcomes at your school**

Outcome	Your School	Expected Value	Deviation Score	Performance Level
First-year retention rate	70.0	73.4	-0.5	At
4-year graduation rate	20.3	22.1	-0.2	At
6-year graduation rate	43.9	48.2	-0.5	At
Freshmen CLA score	1036	1058	-0.5	At
Senior CLA score	1204	1205	0.0	At

*Deviation (residual) scores are reported in terms of the number of standard error units the school's actual mean deviates from its expected value.*

*For a few schools, the equation resulted in a predicted 4-year graduation rate slightly less than zero. The predicted rates are reported as zero for these schools.*

## Appendix A

### Standard ACT to SAT Conversion Table

To facilitate reporting results across schools, ACT scores were converted (using the standard table below) to the scale of measurement used to report SAT scores.

ACT	to SAT
36	1600
35	1580
34	1520
33	1470
32	1420
31	1380
30	1340
29	1300
28	1260
27	1220
26	1180
25	1140
24	1110
23	1070
22	1030
21	990
20	950
19	910
18	870
17	830
16	780
15	740
14	680
13	620
12	560
11	500

Sources:

“Concordance Between ACT Assessment and Recentered SAT I Sum Scores” by N.J. Dorans, C.F. Lyu, M. Pommerich, and W.M. Houston (1997), *College and University*, 73, 24-31; “Concordance between SAT I and ACT Scores for Individual Students” by D. Schneider and N.J. Dorans, *Research Notes (RN-07)*, College Entrance Examination Board: 1999; “Correspondences between ACT and SAT I Scores” by N.J. Dorans, *College Board Research Report 99-1*, College Entrance Examination Board: 1999; *ETS Research Report 99-2*, Educational Testing Service: 1999.

## Appendix B

### Procedures for Converting Raw Scores to Scale Scores

There is a separate scoring guide for each Performance Task and the maximum number of points a student can earn may differ across Performance Tasks. Consequently, it is easier to earn a given reader-assigned “raw” score on some Performance Tasks than it is on others. To adjust for these differences, reader-assigned “raw” scores on a Performance Task were converted to “scale” scores.

This process involved transforming the raw scores on a measure to a score distribution that had the same mean and standard deviation as the SAT scores of the students who took that measure. This process also was used with the Analytic Writing Tasks.

This type of scaling essentially involves assigning the highest raw score that was earned on a task by any freshman the same value as the highest SAT score of any freshman who took that task (i.e., not necessarily the same person). The second highest raw score is then assigned the same value as the second highest SAT score, and so on.

As a result of the scaling process, we can combine scores from different tasks to compute a school’s mean Performance Task scale score. The same procedures also were used to compute scale scores for the Analytic Writing Task.

## Appendix C

### Equations Used to Estimate CLA Scores on the Basis of Mean SAT Scores

Some schools may be interested in predicting CLA scores for other SAT scores. The table below provides the necessary parameters from the regression equations that will allow you to carry out your own calculations. Also provided for each equation is the standard error and R-square values.

Fall 2006 Freshmen	Intercept	Slope	Standard Error	R-square
Performance Task	310	0.71	37.0	0.87
Analytic Writing Task	407	0.64	57.9	0.67
Make-an-Argument	423	0.63	63.3	0.62
Critique-an-Argument	368	0.68	58.3	0.68
Total Score	346	0.69	42.0	0.82

Spring 2007 Seniors	Intercept	Slope	Standard Error	R-square
Performance Task	303	0.80	53.4	0.79
Analytic Writing Task	577	0.58	52.3	0.68
Make-an-Argument	562	0.57	54.6	0.68
Critique-an-Argument	567	0.60	56.0	0.68
Total Score	397	0.72	50.3	0.77

## Appendix D

### Expected CLA Score for Any Given Mean SAT Score for Freshmen and Seniors

The tables below and on the next page present the expected CLA score for a school's freshmen and seniors for various mean SAT scores.

Mean SAT Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score	Mean SAT Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score
	Freshmen					Seniors						Freshmen					Seniors				
1600	1452	1435	1428	1448	1448	1583	1497	1472	1525	1551	1290	1231	1236	1233	1239	1235	1335	1319	1296	1339	1327
1590	1445	1428	1422	1441	1441	1575	1492	1466	1519	1544	1280	1224	1229	1227	1232	1228	1327	1313	1290	1333	1320
1580	1438	1422	1415	1435	1435	1567	1486	1461	1513	1536	1270	1217	1223	1221	1225	1221	1319	1308	1284	1327	1313
1570	1431	1415	1409	1428	1428	1559	1480	1455	1507	1529	1260	1209	1216	1214	1219	1214	1311	1302	1279	1321	1306
1560	1424	1409	1403	1421	1421	1551	1474	1449	1501	1522	1250	1202	1210	1208	1212	1207	1303	1296	1273	1315	1298
1550	1417	1403	1397	1414	1414	1543	1469	1444	1495	1515	1240	1195	1203	1202	1205	1200	1295	1290	1267	1309	1291
1540	1409	1396	1390	1408	1407	1535	1463	1438	1489	1507	1230	1188	1197	1196	1198	1193	1287	1285	1262	1303	1284
1530	1402	1390	1384	1401	1400	1527	1457	1432	1483	1500	1220	1181	1191	1189	1192	1186	1279	1279	1256	1297	1277
1520	1395	1383	1378	1394	1393	1519	1451	1427	1477	1493	1210	1174	1184	1183	1185	1180	1271	1273	1250	1291	1270
1510	1388	1377	1371	1387	1386	1511	1446	1421	1471	1486	1200	1167	1178	1177	1178	1173	1263	1267	1244	1285	1262
1500	1381	1370	1365	1381	1379	1503	1440	1415	1465	1479	1190	1159	1171	1170	1171	1166	1255	1262	1239	1279	1255
1490	1374	1364	1359	1374	1373	1495	1434	1409	1459	1471	1180	1152	1165	1164	1165	1159	1247	1256	1233	1273	1248
1480	1367	1358	1353	1367	1366	1487	1428	1404	1453	1464	1170	1145	1159	1158	1158	1152	1239	1250	1227	1268	1241
1470	1359	1351	1346	1360	1359	1479	1423	1398	1447	1457	1160	1138	1152	1152	1151	1145	1231	1244	1222	1262	1234
1460	1352	1345	1340	1354	1352	1471	1417	1392	1441	1450	1150	1131	1146	1145	1144	1138	1223	1239	1216	1256	1226
1450	1345	1338	1334	1347	1345	1463	1411	1387	1435	1443	1140	1124	1139	1139	1138	1131	1215	1233	1210	1250	1219
1440	1338	1332	1327	1340	1338	1455	1405	1381	1429	1435	1130	1117	1133	1133	1131	1124	1207	1227	1205	1244	1212
1430	1331	1325	1321	1333	1331	1447	1400	1375	1423	1428	1120	1110	1126	1127	1124	1118	1199	1221	1199	1238	1205
1420	1324	1319	1315	1327	1324	1439	1394	1370	1417	1421	1110	1102	1120	1120	1117	1111	1191	1216	1193	1232	1197
1410	1317	1313	1309	1320	1317	1431	1388	1364	1411	1414	1100	1095	1114	1114	1111	1104	1183	1210	1188	1226	1190
1400	1309	1306	1302	1313	1311	1423	1382	1358	1405	1407	1090	1088	1107	1108	1104	1097	1175	1204	1182	1220	1183
1390	1302	1300	1296	1306	1304	1415	1377	1353	1399	1399	1080	1081	1101	1101	1097	1090	1167	1198	1176	1214	1176
1380	1295	1293	1290	1300	1297	1407	1371	1347	1393	1392	1070	1074	1094	1095	1090	1083	1159	1193	1171	1208	1169
1370	1288	1287	1284	1293	1290	1399	1365	1341	1387	1385	1060	1067	1088	1089	1084	1076	1151	1187	1165	1202	1161
1360	1281	1281	1277	1286	1283	1391	1359	1336	1381	1378	1050	1060	1082	1083	1077	1069	1143	1181	1159	1196	1154
1350	1274	1274	1271	1279	1276	1383	1354	1330	1375	1371	1040	1052	1075	1076	1070	1062	1135	1175	1153	1190	1147
1340	1267	1268	1265	1273	1269	1375	1348	1324	1369	1363	1030	1045	1069	1070	1063	1056	1127	1170	1148	1184	1140
1330	1259	1261	1258	1266	1262	1367	1342	1318	1363	1356	1020	1038	1062	1064	1057	1049	1119	1164	1142	1178	1133
1320	1252	1255	1252	1259	1255	1359	1336	1313	1357	1349	1010	1031	1056	1057	1050	1042	1111	1158	1136	1172	1125
1310	1245	1248	1246	1252	1249	1351	1331	1307	1351	1342	1000	1024	1049	1051	1043	1035	1103	1152	1131	1166	1118
1300	1238	1242	1240	1246	1242	1343	1325	1301	1345	1334	990	1017	1043	1045	1036	1028	1095	1147	1125	1160	1111

## Appendix D (Continued)

Mean SAT Score	Freshmen					Seniors					Mean SAT Score	Freshmen					Seniors				
	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score		Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score	Performance Task	Analytic Writing Task	Make-an-Argument	Critique-an-Argument	Total Score
980	1010	1037	1039	1030	1021	1087	1141	1119	1154	1104	680	795	844	850	827	814	847	968	949	974	887
970	1002	1030	1032	1023	1014	1079	1135	1114	1148	1097	670	788	838	844	820	808	839	963	943	968	880
960	995	1024	1026	1016	1007	1071	1129	1108	1142	1089	660	781	831	838	814	801	831	957	937	962	873
950	988	1017	1020	1009	1000	1063	1124	1102	1136	1082	650	774	825	831	807	794	823	951	932	956	866
940	981	1011	1013	1003	994	1055	1118	1097	1130	1075	640	767	818	825	800	787	815	945	926	950	859
930	974	1004	1007	996	987	1047	1112	1091	1124	1068	630	760	812	819	793	780	807	940	920	944	851
920	967	998	1001	989	980	1039	1106	1085	1118	1060	620	753	805	813	787	773	799	934	914	938	844
910	960	992	995	982	973	1031	1101	1079	1112	1053	610	745	799	806	780	766	791	928	909	932	837
900	952	985	988	976	966	1023	1095	1074	1106	1046	600	738	793	800	773	759	783	922	903	926	830
890	945	979	982	969	959	1015	1089	1068	1100	1039	590	731	786	794	766	752	775	917	897	920	823
880	938	972	976	962	952	1007	1083	1062	1094	1032	580	724	780	787	760	746	767	911	892	914	815
870	931	966	970	955	945	999	1078	1057	1088	1024	570	717	773	781	753	739	759	905	886	908	808
860	924	960	963	949	938	991	1072	1051	1082	1017	560	710	767	775	746	732	751	899	880	902	801
850	917	953	957	942	932	983	1066	1045	1076	1010	550	703	761	769	739	725	743	894	875	896	794
840	910	947	951	935	925	975	1060	1040	1070	1003	540	695	754	762	733	718	735	888	869	890	786
830	902	940	944	928	918	967	1055	1034	1064	996	530	688	748	756	726	711	727	882	863	884	779
820	895	934	938	922	911	959	1049	1028	1058	988	520	681	741	750	719	704	719	876	858	878	772
810	888	927	932	915	904	951	1043	1023	1052	981	510	674	735	743	712	697	711	871	852	872	765
800	881	921	926	908	897	943	1037	1017	1046	974	500	667	728	737	706	690	703	865	846	866	758
790	874	915	919	901	890	935	1032	1011	1040	967	490	660	722	731	699	684	695	859	840	860	750
780	867	908	913	895	883	927	1026	1005	1034	960	480	653	716	725	692	677	687	853	835	854	743
770	860	902	907	888	876	919	1020	1000	1028	952	470	645	709	718	685	670	679	848	829	848	736
760	852	895	900	881	870	911	1014	994	1022	945	460	638	703	712	679	663	671	842	823	842	729
750	845	889	894	874	863	903	1009	988	1016	938	450	631	696	706	672	656	663	836	818	836	722
740	838	882	888	868	856	895	1003	983	1010	931	440	624	690	699	665	649	655	830	812	830	714
730	831	876	882	861	849	887	997	977	1004	923	430	617	683	693	658	642	647	825	806	824	707
720	824	870	875	854	842	879	991	971	998	916	420	610	677	687	652	635	639	819	801	818	700
710	817	863	869	847	835	871	986	966	992	909	410	603	671	681	645	628	631	813	795	812	693
700	810	857	863	841	828	863	980	960	986	902	400	595	664	674	638	622	623	807	789	806	686
690	802	850	856	834	821	855	974	954	980	895											

## Appendix E

### CLA Scale, Deviation and Difference Scores by Decile Group

The tables on the next page were prepared to help you gain further insight into your school's performance relative to other participating schools for freshmen and seniors as well as freshmen-to-senior differences. You are encouraged to compare the decile group scores in the tables to your deviation scores in Table 4, your difference scores in Table 5 and your mean (scale) scores in Table 6.

For each metric in the table, all schools were rank ordered and then divided into 10 groups of roughly equal size ("decile groups"). Only schools that successfully tested at least 25 students with ACT/SAT scores were included. For each metric, the average performance of the schools within each decile group was calculated. For example, a total scale score for freshmen of 1206 represents the average performance of schools in the 9th decile group (i.e., schools in the 81st to 90th percentile). If freshmen at your school achieved an average scale score of 1207, you could safely conclude that your school performed in the top 20 percent of participating schools on the CLA.

### Freshmen (fall 2006)

Decile Group	Performance Task		Analytic Writing Task		Total Score	
	Scale Score	Deviation Score	Scale Score	Deviation Score	Scale Score	Deviation Score
10	1268	1.7	1288	1.8	1269	1.8
9	1191	1.1	1219	1.1	1206	1.1
8	1140	0.6	1175	0.7	1147	0.7
7	1106	0.3	1139	0.4	1115	0.3
6	1068	0.1	1112	0.1	1084	0.0
5	1040	0.0	1078	-0.2	1055	-0.2
4	1013	-0.3	1047	-0.4	1033	-0.5
3	989	-0.7	1018	-0.7	1001	-0.7
2	969	-1.2	985	-1.1	974	-1.0
1	918	-1.8	953	-1.6	932	-1.7

### Seniors (spring 2007)

Decile Group	Performance Task		Analytic Writing Task		Total Score	
	Scale Score	Deviation Score	Scale Score	Deviation Score	Scale Score	Deviation Score
10	1397	1.8	1373	1.6	1368	1.7
9	1319	1.2	1323	1.1	1311	1.1
8	1274	0.7	1291	0.8	1269	0.8
7	1251	0.4	1275	0.5	1242	0.4
6	1213	-0.1	1249	0.2	1211	0.1
5	1175	-0.3	1225	-0.1	1173	-0.2
4	1130	-0.5	1191	-0.4	1141	-0.5
3	1102	-0.8	1148	-0.7	1117	-0.8
2	1063	-1.0	1114	-1.2	1077	-1.2
1	1020	-1.7	1052	-2.1	1015	-1.7

### Freshmen (fall 2006) and Seniors (spring 2007)

Decile Group	Performance Task	Analytic Writing Task	Total Score
	Difference Score	Difference Score	Difference Score
10	2.0	1.9	1.9
9	1.1	1.1	1.2
8	0.7	0.6	0.7
7	0.2	0.3	0.3
6	0.0	0.1	0.1
5	-0.2	-0.2	-0.2
4	-0.6	-0.5	-0.5
3	-0.8	-1.0	-0.9
2	-1.0	-1.4	-1.1
1	-1.9	-2.1	-1.9



## Appendix F

### Factors Considered and Procedures Used to Report Other Outcomes at Your School

The CLA staff used national data to develop equations to predict college graduation and retention rates. They then applied these models to the characteristics of the institutions that participated in the CLA 2006–2007 data collection cycle. The bottom table on page 2 and Table 10 on page 13 present the results of these analyses. The remainder of this appendix describes the data that were used for this purpose and the modeling procedures that were employed.

#### Data

The Education Trust provided most of the data that was used for model building. The dataset included institutional variables from approximately 1,400 4-year institutions that submitted data to IPEDS for the 2005–2006 academic year. Additional variables were derived from other sources (e.g., Barron's Guide to American Colleges) or constructed using specified-calculation rules. Data on Commuter Campus status was provided by The College Board (Source of Data: the Annual Survey of Colleges of the College Board and Data Base, 2005-06. Copyright © 2003 College Board. All rights reserved).

#### Modeling Procedures

Three Ordinary Least Squares (OLS) regression models were conducted on all available schools in the dataset using the first-year retention rate, 4-year graduation rate, and 6-year graduation rate as the dependent variables. Potential predictors of these outcome variables were selected based on a review of literature and the previous work of the Education Trust. The following is the final list of the predictors that were used:

- Sector (public vs. private)
- Status as an Historically Black College or University (HBCU)
- Carnegie Classification (coded as 0/1 variables based on the revised basic classification for each school)
- Estimated median SAT or ACT equivalent of freshman class
- Admissions selectivity, per Barron's Guide to American Colleges
- Number of full-time equivalent (FTE) undergraduates (in 1000s)
- Percentage of undergraduates receiving Pell grants
- Student-related expenditures / FTE student
- Percentage of FTE undergraduate students age 25 and over
- Percentage of undergraduates who are enrolled part-time
- Status as a commuter campus

Please refer to ([www.collegeresults.org/aboutthedata.aspx](http://www.collegeresults.org/aboutthedata.aspx)) for more detail on these variables. All the models used the same set of predictors. However, because of missing data, not all schools were used in each model. Schools missing any predictor or outcome data were designated "N/A." The table on the next page shows the number of schools used for model building, the resulting R-square value (R-square indicates the percentage of variance in the outcome variable that can be explained by the combination of predictors used), and the coefficients and significance of each intercept and predictor variable (\* indicates p values less than .05 and \*\* indicates p values less than .01).

## Number of Schools and R-square Values Coefficients and Significance of Intercepts and Predictor Variables for Each Outcome Model

	First-year Retention Rate	4-year Graduation Rate	6-year Graduation Rate
Number of Schools	1274	1244	1267
R-square	0.65	0.74	0.73
Intercept	31.709**	-25.521**	-5.819
Sector (public vs. private)	-1.894**	-13.173**	-7.214**
Status as an Historically Black College or University (HBCU)	4.975**	4.833**	3.109*
Carnegie Classification <sup>1</sup>			
RU/VH: Research Universities (very high research activity)	-2.212	-0.224	1.277
RU/H: Research Universities (high research activity)	-1.827	-3.629*	-1.315
DRU: Doctoral/Research Universities	0.303	-0.207	0.548
Master's L: Master's Colleges and Universities (larger programs)	1.984**	-0.254	0.757
Master's S: Master's Colleges and Universities (smaller programs)	0.163	0.342	-0.756
Bac/A&S: Baccalaureate Colleges--Arts & Sciences	-0.959	1.745	-1.214
Bac/Diverse: Baccalaureate Colleges--Diverse Fields	-2.677**	-2.758*	-2.787**
Bac/Assoc: Baccalaureate/Associate's Colleges	-0.034	3.155	-0.398
Other	-2.728*	-6.873**	-5.035**
Estimated median SAT or ACT equivalent of freshman class	0.041**	0.065**	0.060**
Admissions selectivity, per Barron's Guide to American Colleges	0.835**	1.889**	1.471**
Number of full-time equivalent (FTE) undergraduates (1000s)	0.409**	-0.179	0.251**
Percentage of undergraduates receiving Pell grants	-0.091**	-0.150**	-0.126**
Student-related expenditures / FTE student	0.091**	0.203**	0.105*
Percentage of FTE undergraduate students age 25 and over	-0.082**	-0.136**	-0.146**
Percentage of undergraduates who are enrolled part time	-0.025	-0.053	-0.073*
Status as a commuter campus	-0.979	-3.967**	-3.317**

\* p<.05    \*\* p<.01    <sup>1</sup> "Masters M" was the reference classification

The regression weights from the models were applied to the data from each participating CLA school to calculate its predicted or "expected" rate for each outcome. The predicted rate for a school was then subtracted from its actual rate to yield a deviation or "residual" score. To allow for relative comparisons across metrics, each distribution of residual scores was standardized using the standard error from the respective regression.

## Appendix G

### List of Participating Institutions (2006–2007) \*

Alaska Pacific University, AK	Indiana Wesleyan University, IN	University of Arkansas - Fort Smith, AR
Allegheny College, PA	Jackson State University, MS	University of California, Riverside, CA
Arizona State University, AZ	Juniata College, PA	University of Charleston, WV
Arkansas State University, AR	Kalamazoo College, MI	University of Evansville, IN
Auburn University, AL	Knox College, IL	University of Great Falls, MT
Aurora University, IL	Lesley University, MA	University of Hartford, CT
Austin College, TX	Louisiana State University, LA	University of Maine, Ft. Kent, ME
Averett University, VA	Loyola University of Chicago, IL	University of Montana - Missoula, MT
Barton College, NC	Loyola University, New Orleans, LA	University of North Carolina at Charlotte, NC
Belmont University, TN	Lynchburg College, VA	University of North Texas, TX
Beloit College, WI	Macalester College, MN	University of Pittsburgh, PA
Bethel University, MN	Marian College of Fond du Lac, WI	University of Saint Thomas, TX
Bluefield State College, WV	Marshall University, WV	University of San Diego, CA
Bowling Green State University, OH	McMurry University, TX	University of Texas - Pan American, TX
Cabrini College, PA	Metropolitan College of New York, NY	University of Texas at Arlington, TX
California State Polytechnic University - Pomona, CA	Michigan Technological University, MI	University of Texas at Austin, TX
California State University - Los Angeles, CA	Missouri Southern State University - Joplin, MO	University of Texas at Brownsville, TX
California State University - Stanislaus, CA	Missouri Western State University, MO	University of Texas at Dallas, TX
California State University - Northridge, CA	Monmouth College, IL	University of Texas at El Paso, TX
California State University - San Marcos, CA	Monmouth University, NJ	University of Texas at San Antonio, TX
Carleton College, MN	Morehead State University, KY	University of Texas at Tyler, TX
Centenary College, NJ	Mount Saint Mary College, NY	University of Texas of the Permian Basin, TX
Central Michigan University, MI	North Carolina A&T State University, NC	University of the Pacific, CA
Champlain College, VT	North Carolina Central University, NC	University of the Virgin Islands, VI
Charleston Southern University, SC	Northern Arizona University, AZ	University of Wyoming, WY
Cleveland State University, OH	Ohio Northern University, OH	Upper Iowa University, IA
College of Saint Benedict/Saint John's University, MN	Pace University, NY	Ursinus College, PA
Colorado College, CO	Pacific University, OR	Ursuline College, OH
Concord University, WV	Rhodes College, TN	Utica College, NY
Concordia College, MN	Richard Stockton College of New Jersey, NJ	Wagner College, NY
CUNY City College, NY	Ripon College, WI	Wartburg College, IA
CUNY Herbert H. Lehman College, NY	Rockford College, IL	Washington & Lee University, VA
Delaware State University, DE	Saint Olaf College, MN	Webb Institute, NY
Dominican University of California, CA	Saint Xavier University, IL	Weber State University, UT
Fairmont State University, WV	Seton Hill University, PA	Wesley College, DE
Fayetteville State University, NC	Shepherd University, WV	West Liberty State College, WV
Florida State University, FL	Slippery Rock University, PA	West Virginia University, WV
Fort Hays State University, KS	Southwestern University, TX	West Virginia University Institute of Technology, WV
Franklin Pierce College, NH	Spelman College, GA	Westminster College, MO
Furman University, SC	Stonehill College, MA	Westminster College, UT
Glenville State College, WV	SUNY College at Buffalo, NY	Westmont College, CA
Gordon College, MA	Syracuse University, NY	Wheaton College, IL
Grand Valley State University, MI	Texas Lutheran University, TX	Whitman College, WA
Green Mountain College, VT	The College of St. Scholastica, MN	Wichita State University, KS
Harris-Stowe State University, MO	The George Washington University, DC	William Woods University, MO
Hastings College, NE	The Ohio State University, OH	Wilson College, PA
Heritage University, WA	The Pennsylvania State University, PA	Winston-Salem State University, NC
Houghton College, NY	Toccoa Falls College, GA	Winthrop University, SC
	Truman State University, MO	Wofford College, SC

\* This listing represents 99 percent of participating four-year schools and is restricted to those that agreed to release their name publicly.

## Appendix H

### CLA National Results 2005–2006 and 2006–2007

This section summarizes CLA participation and findings from 2005–2006 and 2006–2007, across which we find representative samples of schools and students as well as stability in our value-added equations.

**Participating Schools.** To gauge the representativeness of participating four-year schools (that tested enough students to provide sufficiently reliable data), we compare them to four-year schools nationally across Basic Carnegie Classifications (Table A) and important school characteristics (Table B).

**Table A: Four-year institutions in the CLA and nation by Carnegie Classification, 2005–06 and 2006–07**

Carnegie Classification	Nation		CLA 2005–06		CLA 2006–07	
	Number	Percentage	Number	Percentage	Number	Percentage
Doctorate-granting Universities	283	17%	29	26%	20	17%
Master’s Colleges and Universities	690	40%	43	38%	50	43%
Baccalaureate Colleges	737	43%	41	36%	45	39%
	1,710		113		115	

Source: Carnegie Foundation for the Advancement of Teaching, Carnegie Classifications Data File, July 7, 2006 edition.

**Table B: Four-year institutions in the CLA and nation by key school characteristics, 2005–06 and 2006–07**

School Characteristic	Nation	CLA 2005–06	CLA 2006–07
Percent public	36%	42%	41%
Percent Historically Black College or University (HBCU)	6%	10%	5%
Mean percentage of undergraduates receiving Pell grants	33%	32%	32%
Mean four-year graduation rate	36%	38%	38%
Mean six-year graduation rate	53%	55%	54%
Mean first-year retention rate	74%	77%	75%
Mean Barron’s selectivity rating	3.6	3.5	3.4
Mean estimated median SAT score	1068	1079	1076
Mean number of FTE undergraduate students (rounded)	4,430	6,160	5,250
Mean student-related expenditures per FTE student (rounded)	\$12,710	\$11,820	\$11,910

Source: College Results Online dataset, managed by and obtained with permission from the Education Trust, covers most 4-year Title IV-eligible higher-education institutions in the United States. Data were constructed from IPEDS and other sources. Because all schools did not report on every measure in the table, the averages and percentages may be based on slightly different denominators.

**Participating Students.** To ascertain whether the samples of students taking the CLA are similar to their classmates with respect to incoming academic ability, we compare mean SAT scores and examine the correlation across all schools between the CLA student sample and the student cohort from which it was drawn. Table C reports high correlations as well as similar mean (of sample/cohort mean) SAT scores. These findings increase the confidence in inferences made from results of a school's CLA student sample to all students in a particular cohort (e.g., freshmen or seniors).

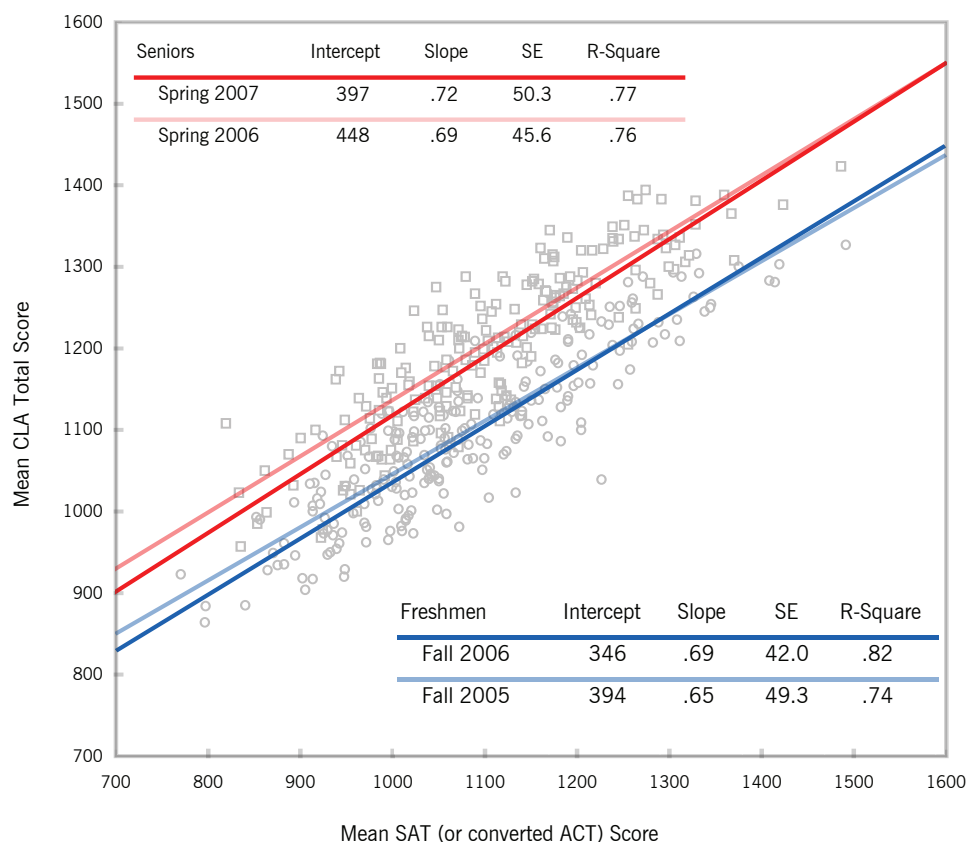
**Table C: Student Samples, 2005–06 and 2006–07**

Metric	Fall 05 Freshmen		Spring 06 Seniors		Fall 06 Freshmen		Spring 07 Seniors	
	Sample	Cohort	Sample	Cohort	Sample	Cohort	Sample	Cohort
Mean (of sample/cohort mean) SAT score	1094	1079	1104	N/A*	1072	1067	1104	1093
Correlation of sample and cohort mean SAT scores	0.96		N/A*		0.95		0.94	

\* Mean ACT/SAT scores for the entire cohort (e.g., native seniors) were not requested from participating schools prior to fall 2006

**Regression Equations.** Our regression equations (depicted in Figure A) exhibit stability over time as indicated by the small range of slopes and R-Square values of the regression models (mean CLA Total Score on mean SAT or converted ACT score). These similarities increase the confidence in comparing results across administrations.

**Figure A: Relationship between CLA Performance and Incoming Academic Ability**



## Appendix I

### CLA Student Data File

In tandem with this report, we provide a CLA Student Data File, which includes over 60 variables across three categories: (1) CLA scores and identifiers; (2) information provided/verified by the registrar; and (3) self-reported information from students in their CLA on-line profile:

We provide student-level information for linking with other data you collect (e.g., from NSSE, CIRP, portfolios, local assessments, course-taking patterns, participation in specialized programs, etc.) to help you hypothesize about campus-specific factors related to overall institutional performance. Student-level scores are not designed to be diagnostic at the individual level and should be considered as only one piece of evidence about a student's skills.

CLA Scores and Identifiers	Registrar Data	Self-Reported Data
<ul style="list-style-type: none"> <li>CLA scores for Performance Task, Analytic Writing Task, Make-an-Argument, Critique-an-Argument, and Total CLA Score (depending on the number of tasks taken and completeness of responses): <ul style="list-style-type: none"> <li>CLA scale scores;</li> <li>Student Performance Level categories (i.e., well below expected, below expected, at expected, above expected, well above expected) if CLA scale score and SAT equivalent scores are available;</li> <li>Percentile Rank in the CLA (among students in the same class year; based on scale score); and</li> <li>Percentile Rank at School (among students in the same class year; based on scale score).</li> </ul> </li> <li>e-rater® raw scores for Make-an-Argument and/or Critique-an-Argument</li> <li>Unique CLA numeric identifiers</li> <li>Name (first, middle initial, last), E-mail address, SSN/Student ID</li> <li>Year, Administration (Fall or Spring), Type of Test (90 or 180-minute), Date of test</li> </ul>	<ul style="list-style-type: none"> <li>Class Standing</li> <li>High School GPA</li> <li>Freshman Year GPA</li> <li>Cumulative Undergraduate GPA</li> <li>Transfer Student Status</li> <li>Credit Hours (only for coursework at institution)</li> <li>Total Credit Hours</li> <li>Credit Hours (at institution) as percent (%) of total credits needed for graduation</li> <li>Program ID and Name (for classification of students into difference colleges, schools, fields of study, majors, programs, etc.)</li> <li>SAT Equivalent Score (SAT composite or converted ACT composite)</li> <li>SAT I - Math</li> <li>SAT I - Verbal</li> <li>SAT Total (Math + Verbal)</li> <li>SAT I - Writing</li> <li>SAT I - Writing (Essay sub-score)</li> <li>SAT I - Writing (Multiple Choice sub-score)</li> <li>ACT - Composite</li> <li>ACT - English</li> <li>ACT - Reading</li> <li>ACT - Mathematics</li> <li>ACT - Science Reasoning</li> <li>ACT - Writing</li> </ul>	<ul style="list-style-type: none"> <li>Student Class: Freshman/First-Year (1) Sophomore (2) Junior (3) Senior (4) Unclassified (5) Other (6)</li> <li>Age</li> <li>Gender</li> <li>Race/Ethnicity</li> <li>Primary and Secondary Academic Major (34 categories)</li> <li>Field of Study (6 categories; based on primary academic major)</li> <li>English as primary language</li> <li>Total years at school</li> <li>Attended school as Freshman, Sophomore, Junior, Senior</li> </ul>



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