Information from the College Board on College Readiness

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The College Board

Spotlight on Assessment Series
Neag School of Education
University of Connecticut
Storrs, CT
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Overview

1. Overview of the College Board’s Research & Analysis Department;
2. Types of information available from and types of data housed at the College Board;
3. Share preliminary results of the College Board’s linking data across high school to college;
4. Discuss research topics and opportunities for collaborating to link state data with College Board data;
5. Types of other research collaborations
The College Board’s mission is to connect students to college success and opportunity. We are a not-for-profit membership organization committed to excellence and equity in education.
The Research & Analysis (R&A) Department is responsible for applied research, assessment design, evaluation, psychometric, and statistical analysis efforts associated with supporting the College Board mission, programs and services.

- R&A undertakes projects that support the College Board mission and divisional needs.
- R&A houses substantial capabilities and expertise in areas related to the core competencies associated with any R&D functions worldwide.
- The basis for our ability to undertake projects successfully is anchored in our capability to utilize data from a variety of sources.
Major Areas of Work for Research & Analysis

1. **Validity** – examine the relationship of College Board assessments, high school academic preparation and/or non-cognitive factors in predicting college success.
   - Implement national validity study for the SAT.
   - Manage institutional and university-system admissions and placement validity studies (ACES).
   - Gather, process, and analyze college outcome data (e.g., National Student Clearinghouse) to examine the efficacy of College Readiness.

2. **Program Evaluations** – design and execute evaluations for both formative and summative evaluations.
   - Assist in formative and summative evaluations for College Board Schools, EXCElRator, Florida Partnership, NOSCA, and Springboard.
   - Assist in formative evaluations for College Ed, Chinese Initiative and College Readiness System.
   - Develop program evaluation framework and models to help in future planning and decision-making about what to evaluate and how.

3. **Oversee psychometric work for College Board assessments** – review work by vendors; provide recommendations for analyses and research to maintain the quality of the assessments; provide psychometric operations for ACCUPLACER.
   - ACCUPLACER, AP, CLEP, PSAT/NMSQT, SAT.
   - Develop a maintenance schedule for each assessment that indicates the ongoing psychometric and research work needed to maintain quality.

4. **Research & Data Services** – support external needs for information, statistics, data and ad hoc requests.
   - Provide statistical analyses and produce College Bound Seniors and AP Report to the Nation press releases and supporting material.
   - Undertake research by collaborating with states and districts linking high school experience with college outcomes.
   - Resolve the thousands of ad hoc data and analysis requests from educators and researchers.
   - Develop and implement procedures for quality control of all data, psychometric, and statistical analyses.
   - Contribute to the development of proposals in response to RFP’s.
   - Develop and maintain benchmarks for comparative analyses.
   - Maintain and enforce the Guidelines for the Release of College Board Data.

5. **Aggregate Reports** – produce the College Bound Seniors and integrated reports including any data needed.
   - Produce and deliver over 25,000 SAT College Bound Seniors Reports.
   - Produce and deliver over 28,000 State/District/School Integrated Reports.
   - Produce the SAT and AP cohorts used for annual reporting.

6. **New Assessments** – psychometric, research and development work on new assessments and assessment enhancements.
   - New Middle School Assessment.
   - Undertake psychometric work to develop enhanced feedback on the PSAT/NMSQT and SAT.
   - Undertake psychometric work to support the redesign of AP.
   - Continue psychometric work on new study skills assessment.
   - Pilot new, non-cognitive assessments for admissions.
Overview of Reporting & Analysis Products

This schematic of products represents:

- The volume of usage
- The fact that each higher step incorporates the information from below
General Request Form for Data & Analyses

APPENDIX A: Data Request Form

Na: _____________________________________________

Title: --------------------------------------------------

In Institution: _______________________________________

SoEMAddr a: _______________________________________

City: --------------------------------- State: ______ Zip: -------

Telephone: _____________________________________________

Fax _______________________________ E-mail: _______________________

Please indicate your user category:

[D] Researcher/Policymaker
[D] State Education Department Official
[D] Other State Official (Specify: ____________________________)
[D] School District Official
[D] Institution Official
[D] Media/Press
[D] Other (Specify: ________________________________)

If you are an employee of a state, city, school, or institution, are you requesting data that pertain only to the students and/or colleges with which you have contact?

[D] Yes [D] No (Explain: ____________________________)

Funding Source (If Applicable): _____________________________

Third Party (If Applicable): _______________________________

Data request rationale: purposes for which data will be used:

________________________________________________________________

Data set being requested:

________________________________________________________________

If data tables differ matched, please attach all tables that you will provide.

Please see Appendix D for a list of items to ensure the lease mat h.

Complete list of persons having access to the data:

________________________________________________________________

Please attach your institution's internal P.ew Board (IRB) approval form.
State Order Form

State Department of Education Data Request Form

Title: ____________________________________________________________

Street Address: __________________________________________________

City: __________________________ State: __________ Zip Code: __________

Email Address: ____________________________ Phone: __________________

Are you requesting data that will be shared with non-departmental entities please list names and contact information:

Do you wish to request data that will be shared with non-departmental entities please list names and contact information:

Dam Qnry Yr.Tell lle!StLdpl!t!lt!l lterwch dam whie med:

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP (School level)</td>
<td>52500</td>
<td>52500</td>
</tr>
<tr>
<td>AP (School level)</td>
<td>52500</td>
<td>52500</td>
</tr>
<tr>
<td>SAT Subject Test (School level)</td>
<td>50000</td>
<td>50000</td>
</tr>
<tr>
<td>SAT Subject Test (School level)</td>
<td>50000</td>
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<td>SAT Subject Test (School level)</td>
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</tr>
<tr>
<td>SAT Subject Test (School level)</td>
<td>50000</td>
<td>50000</td>
</tr>
</tbody>
</table>

Available Formats:

- School level files: ASCII or S-E.-.cel
- Student level files: ASCII or SPSS

Files containing student identifying information will be provided via CD-ROM, unless otherwise requested and available.

Please send all requests to College Board Research and Analysis Department, 45 Columbus Avenue, New York, NY 10023 or fax this form to 212-649-7811. Please allow 10 business days for initial response. If no response please call 212-373-8799.

For questions or to receive the College Board catalog please call 877-777-777 or visit www.collegeboard.com/catalog.html or at www.collegeboard.com/catalog.html (available online at www.collegeboard.com/catalog.html and call 877-777-777 or visit www.collegeboard.com/catalog.html).
A realization of the College Board’s mission is the College Board’s College Readiness System

*College Board’s College Readiness System helps schools ensure more students are college ready*

1. Offers curriculum based on college readiness standards
   - College Board Standards for College Success
   - Springboard
   - Advanced Placement Program

2. Provides means of ensuring participation and success in rigorous academic courses
   - AP Potential
   - SAT Readiness Program
   - Teacher professional development

3. Provides means to monitor student progress
   - PSAT/NMSQT
   - SAT Reasoning
   - SAT Subject

4. Facilitates college, career, and financial planning
   - CollegeEd
   - My College QuickStart and MyRoad
   - Financial Aid EasyPlanner Tools
Emerging (tentative) Indicators of College Readiness

1. Academic knowledge and skills
   • 4 years of math, including Algebra II
   • 4 year of English language arts
   • 3+ years of science
   • 3+ years of social science/history
   • 2+ years of foreign language

2. Success in college-level courses taken in high school
   • In-depth subject-area knowledge
   • Higher-order thinking skills
   • Strong study skills and research skills
   • A grade of 3+ on at least one AP Examination

3. Advanced Academic Skills
   • Reasoning
   • Problem Solving
   • Analysis
   • Writing Skills
   • One way to assess these skills is by successful performance on the SAT

4. College and Career Planning Skills
   • Understanding of college and career options, the college admissions process, and options for financing a college education
     – Non-cognitive skills
     – Study skills
Based on the College Board’s mission and the efforts in college readiness, the role of R&A is to develop a research agenda. Selected aspects:

1. Define and measure academic preparation
   - Revised SAT Questionnaire
   - Validate student responses to academic preparation on SAT Questionnaire
   - Develop an indicator of academic intensity/rigor
   - Explore relationships of academic preparation and College Board test performance
   - Examine relationship of academic preparation and test performance on college outcomes
     - Examine these relationships across sub-groups to evaluate performance gaps

2. Define and measure college outcomes
   - SAT score sending patterns
   - College retention and graduate rates
   - College cumulative grade-point-averages and course grades

3. Examine relationship of academic preparation, success in college-level courses taken in high school, advanced academic skills, and college and career planning skills on college outcomes

4. Evaluate the individual components and the variety of combinations of the College Readiness System in meeting stated goals and in contributing to college success

5. Continue to provide validity evidence of the assessments
   - Continue free institutional admissions and placement validity studies for SAT
   - Undertake national validity study for SAT
   - Undertake placement validity studies for AP, CLEP, and ACCUPLACER
   - Undertake a variety of linking studies involving content standards, test specifications, and test performances

6. Continue to enhance existing assessments and develop new assessments to help in fully measuring college readiness

7. Undertake research to expand the indicators of college readiness and college outcomes
In order to undertake the research agenda outlined, the College Board must...

1. Work closely and support collaborations with state agencies at both P-12 and post-secondary levels.

2. College Board can both provide data, technical resources and facilitate the collaborations
   - Establish a mutually beneficial research agenda
   - Agree on terms for sharing data
   - Provide resources to undertake work
   - Establish review process and opportunities for discussion
   - Offer dissemination strategies
Samples of the types of collaborations

- States
  - In 1999, Connecticut shared student-level data with high school test (CAPT) scores. Data were matched and analysis of the relationship between performance on the CAPT and College Board tests were undertaken. Results (after approval by both parties) were presented at CCSSO Large Scale Assessment Conference in 2002.
  - In 2005, the Ohio Board of Regents provided student-level college outcome data for two cohorts of students. Data were matched by the College Board and results presented to both the Ohio Board of Regents and the Ohio Department of Education.
  - In 2006, the College Board provided Washington with four years of student-level PSAT/NMSQT data. Data were matched and comparisons on student performance were performed. Later, SAT and AP data were provided. Data were used to inform policy decision of providing options to high school testing that included AP, PSAT/NMST, and SAT.
  - In 2007, the College Board received student-level data from Florida data warehouse representing comprehensive high school and college data. Currently, undertaking analyses to examine relationships.

- Districts
  - In 2005 and 2006, Boston Public Schools provided student-level data to be matched with College Board test scores. Matched data were provided back to Boston Public Schools for more efficient uploads into their student data management systems.
  - In 2007, Montgomery County (MD) Public Schools agreed to provide student-level transcript data for research projects examining the (a) validity of the self-reported course-taking patterns and (b) examining the relationship of course-taking patterns on performance on College Board and local assessments. Subsequently, Prince Georges County (MD) and Harford County (MD) Public Schools joined this research collaborative. College Board sponsoring a graduate student at the University of Maryland to undertake the matching of the data and assist in the analysis.

- Organizations
  - In 2005, the National Student Clearinghouse agreed to collaborate with the College Board to match students who took any of the College Board assessments with their data of student enrollment. Two cohorts of data were matched. Indicators of student retention and graduation were developed. National trends examining participation and performance on College Board assessments and these college indicators were undertaken. Presentations are occurring as results are being produced.
  - In 2006, the College Board, at the request of the Council of Chief State School Offices, engaged the committee on Data Quality and Standards to improve the manner in which data are provided to state departments. As a result, a single point of contact with the College Board was established, an order form that was reviewed and approved by the committee was developed, an agreement that would be in place for four-years was produced, and (for the first time) a roll-out of the order form to all state departments will be undertaken in January 2008.
  - In 2007, the College Board expanded the license with the National Student Clearinghouse to provide national and state summaries of student enrollment, retention, and graduation in relation to participation and performance on College Board assessments, academic preparation, and other variables. Reports showing where seniors who took the SAT enrolled were provided to state departments in August 2007.
  - In 2005 and more actively in 2007, the New England Board of Higher Education and the College Board agreed to engage state departments and systems at both P-12 and post-secondary levels in discussions across the region about defining college readiness and undertaking research that would ultimately help inform policies.
One area of research...

- Develop scale anchors to clarify performance levels on the SAT
Results of the research led to development of SAT Skills Map

1. The SAT Skills Map shows educators and colleges the types of skills that are tested on the SAT

2. The SAT Skills Map will show which academic skills typically yield scores in designated ranges (200-290, 300-390, 400-490, etc.)

3. Sample SAT questions and answers will help students better understand the skill descriptions given

4. The Skills Map identifies the academic skills that typical students should focus on to improve their scores, depending on their target score range
1. This represents an overview page of a multi-page report.

2. After this overview the performance levels with detailed descriptions of each skill and sample items will be provided.

3. The College Board is looking for educators to offer feedback in May and October 2008.
   - The College Board wants to hear what information will be useful.
One area of research...

- Measure academic preparation
- Rely on SAT Questionnaire

✓ 2007 cohort represents 1,4494,531 (48%*) of the graduating seniors
  o 138,403 in New England with over an 80% participation rate*.

**OVERVIEW: Percent of Student Enrollment Taking SAT Reasoning Test and SAT Subject Tests**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of Students Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>'02-'03</td>
<td>80%</td>
</tr>
<tr>
<td>'03-'04</td>
<td>80%</td>
</tr>
<tr>
<td>'04-'05</td>
<td>80%</td>
</tr>
<tr>
<td>'05-'06</td>
<td>80%</td>
</tr>
<tr>
<td>'06-'07</td>
<td>80%</td>
</tr>
</tbody>
</table>

**Number of Students Taking:**
- SAT Reasoning Test Graduating Seniors: 125,144, 126,396, 130,500, 130,935, 138,403
- SAT Subject Tests Graduating Seniors: 34,038, 32,965, 32,727, 31,216, 30,488

*Note: Based on projections of graduating seniors in 2007 by the Western Interstate Commission for Higher Education (WICHE).*
Changes to the SAT Questionnaire

- In the summer of 2006 the following questions were revised on the SAT Q:
  - Majors
  - Years of Study
  - Family Income
  - Sports
  - Desired College Size
  - High School Activities
  - Education Level
Years of Study pre-July 2006

- Students are asked how many years (e.g., ½, 1, 2, 3, 4, More than 4) of study they took or plan to take in a particular subject.

<table>
<thead>
<tr>
<th>YEARS OF STUDY</th>
<th>05 - 06</th>
<th>MATHEMATICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>1/2 yr</td>
</tr>
<tr>
<td>Algebra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trigonometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-calculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Mathematics Courses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Years of Study post-July 2006

- Students are asked in which grade (e.g., 9th, 10th, 11th, 12th) they take or plan to take a particular course.

<table>
<thead>
<tr>
<th>COURSEWORK</th>
<th>06 - 07</th>
<th>MATHEMATICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before 9th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10th Grade</td>
<td></td>
<td></td>
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<tr>
<td>11th Grade</td>
<td></td>
<td></td>
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<tr>
<td>12th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td></td>
<td></td>
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<tr>
<td>Dual Enrollment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-algebra or other math course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algebra I or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometry or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algebra II, Advanced Algebra or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Math Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trigonometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-calculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other math</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Course names were changed to represent current trends in curricula.

One area of research is to validate these student responses against their transcripts.

- To do this, we need the collaboration of schools, districts, and/or state departments.
Another area of research...

- Examine relationship of academic preparation on College Board test performance (SAT)
Core: Students taking 4+ years of English, 3+ years of math, 3+ years of natural sciences, and 3+ years of social sciences and history based on SAT Questionnaire.
Academic Preparation Results

**SAT Reasoning Test:** Mathematics Performance by Trends in Academic Preparation

Core: Students taking 4+ years of English, 3+ years of math, 3+ years of natural sciences, and 3+ years of social sciences and history based on SAT Questionnaire.

**What is the rigor of these courses or the course sequence?**
Another area of research...

- Examine relationship of academic preparation on college outcomes
Preliminary Results of Relationship of Academic Intensity and College Outcomes*

Using data from the SAT Questionnaire, an academic intensity indicator was developed.

The indicator reflected a combined value on two 3-point scales of intensity (for a total of 0 to 6 scale) – one for math/science and the other for humanities/history.

- 3 represented students who took 2+ AP courses in the discipline
- 2 represented students who took 1 AP course in the discipline
- 1 represented students who did not take any AP courses,
  - but took at least ½ year of trig or ½ year of pre-calculus or ½ year of calculus in the math/science discipline
  - but took 3+ years of a foreign language and 4+ years in English and 4+ years in social science/history OR either an honors course in a foreign language or an honors course in English or an honors course in social science/history
- 0 represented students who did not take any AP courses AND had < 3 years of a foreign language AND < 4 years of English AND < 4 years of social science/history OR no honors courses in these three areas.

Using outcome data from the consortium of post-secondary institutions offering data for the national SAT validity study, a persistence variable was developed.

The indicator represented a dichotomous variable representing whether a student earned credits for four years of college.

Using the National Student Clearinghouse data, a graduation variable was developed.

The indicator represents a dichotomous variable representing whether a student graduated as reported by the Clearinghouse.

Preliminary Results of Relationship of Academic Intensity and College Outcomes* (cont’d)

- For persistence, this represented a sample of 123,311 students from 41 four-year colleges/universities.
- For graduation, this represented 514,989 students from 1,268 colleges/universities.

More work and analyses needed!

Another area of research...

- Examine college outcomes of SAT score sending

  ✓ Historically, without assistance from colleges/universities or now the National Student Clearinghouse, the College Board did not know where students enrolled after high school.
Percent of 2006 SAT cohort (n=1,465,744 students) not sending any scores by CB region

New England states: Percent of students in each state not sending any scores over time

New England: Percent of students not sending any scores by 1st generation status

Continue analysis looking at college enrollment, retention, graduation, and performance

Another area of research...

- Examine where students go to college
2006 College Bound Seniors

- Public school high school graduates
- Matched to National Student Clearinghouse
- Examined where students enrolled in college
Enrollment in College by New England state

**Nation’s Public Schools**

- **Connecticut**
  - Enrolled In-State: 11,789 (53.4%) 10,277 (46.6%)
  - Enrolled Out-of-State

- **Massachusetts**
  - Enrolled In-State: 25,313 (66.7%) 12,665 (33.3%)
  - Enrolled Out-of-State

- **Maine**
  - Enrolled In-State: 4,065 (62.1%) 2,485 (37.9%)
  - Enrolled Out-of-State

- **New Hampshire**
  - Enrolled In-State: 3,822 (51.7%) 3,575 (48.3%)
  - Enrolled Out-of-State

- **Rhode Island**
  - Enrolled In-State: 3,822 (51.7%) 3,575 (48.3%)
  - Enrolled Out-of-State

- **Vermont**
  - Enrolled In-State: 1,548 (48.0%) 1,676 (52.0%)
  - Enrolled Out-of-State

*Note: Clearinghouse institutions only.*
Another area of research...

- How do SAT scores relate to college performance?
A preliminary study by the College Board (Kobrin, 2007) found that students with scores of 1180 on the combined SAT CR and M have 65% probability of receiving a college freshman GPA of 2.7. Additionally, students with scores of 800 on the combined SAT CR and M have 65% probability to receive a college freshman GPA of 2.0.

This study is preliminary based on 1995 entering class in 41 post-secondary institutions. A larger, more recent study is underway to be release in the fall of 2008 and these benchmarks are likely to change.

For all students across the nation, the percentages in 2006 and 2007 were 30% and 29%, respectively, for the 1180 benchmark.

Another area of research...

- Is participation in the AP, PSAT/NMSQT, and SAT related to college persistence and graduation?
Students taking the AP, PSAT/NMSQT, and SAT show substantially higher rates of staying and graduating with a bachelor's from a 4-year institution.

Another area of research...

- Is participation in the Advanced Placement program significantly related to bachelor’s degree completion?
Used Matched College Board and National Student Clearinghouse data

- Statistical technique used: logistic regression
  - Outcome: Completion of Bachelor’s Degree
  - Confounding Variables:
    - Gender, Ethnicity and Socio-Economic Status
  - Variables of Interest:
    - SAT Scores, Years of Academic Study and the Number of AP Exams Taken
    - 179,010 of 442,206 students in sample took at least one AP
    - 463,262 total AP exams taken by students in sample

Conclusions:
- After controlling for many confounding factors, AP participation is positively associated with bachelor’s degree completion.

List of Key Research Topics

1. Examine the relationship of high school courses taken, performance on local/state tests, performance on College Board assessments and college outcomes using post-secondary course grades, as well as retention and graduation rates.

2. Using data from a state-wide data warehouse that has high school and college data, undertake a comprehensive descriptive analysis. Based on the descriptive analyses, design some analytical studies to further explore some relationships of the high school experience (e.g., courses taken), participation on College Board assessment, and performance in college.

3. Explore a variety of methods of developing comparable comparisons of AP and SAT scores for each state taking into account the self-selection bias of each state’s sample.
   - Link SAT and AP to state test high school scores

4. When, compared to high school transcripts, are the self-reported course taking patterns of students similar?
Types of Research Collaborations

1. State departments of education (K-12 and post-secondary) collaborative with the College Board on analyses and research:
   - Agree on mutually beneficial analysis and research
   - Exchange data
   - College Board expends resources to undertake projects
   - Discuss results and agree on dissemination

2. University researchers reach out to College Board with requests for data.
   - Review Guidelines for the Release of College Board Data
   - Submit one-page form to College Board and review process undertaken

3. University professors and graduate students participate in College Board Fellowship Program:
   - Receive call for proposals to address research questions of interest to the College Board
   - Submit proposal and, if approved, receive grant with faculty honorarium
   - Submit report and present after 12 or 15 month effort at an annual event with other fellows

4. College Board internship program
   - Graduate students spend an academic year or summer at the College Board R&A offices working on both projects and ad hoc work mentored by a staff member
   - Receive stipends and usually contracted with the student’s university as prescribed by assistantships at the university

5. College Board grants program
   - Specific analysis and research projects that benefit the College Board and offer students exposure to large data sets and specific research efforts.
   - Stipends contracted through the university and prorated to represent scope of work and university protocols
Contact Information

- Thanos Patelis, Vice President, Research and Analysis, Research and Development Department, The College Board
  - tpatelis@collegeboard.org
  - 212-649-8435