Investigating Grade Inflation and Non-Equivalence

Kelly E. Godfrey
Research & Development
The College Board
Overview of Data

• Includes all students who graduated from public high schools in one large, diverse state between 1996 and 2006

• Final cumulative GPAs and course grades were reported by schools and districts

• Grades and GPAs were matched to SAT and AP exam scores
Average Cumulative GPA of High School Diploma Recipients

*Please note: These are preliminary results; analysis still in progress.
SAT Scores

- A composite SAT score (Math + Verbal/RC) was not used because the two sections measure different constructs.

- SAT-Writing was not used because it was not introduced until March of 2005.

- A higher percentage of high school graduates took the SAT in 2006 than 2001 and 1996.

*Please note: These are preliminary results; analysis still in progress.*
SAT-Verbal Scores

Mean Scores
1996: 497.1
2001: 496.0
2006: 495.2

*Please note: These are preliminary results; analysis still in progress.*
Mean Scores
1996: 497.1
2001: 498.4
2006: 497.8

*Please note: These are preliminary results; analysis still in progress.
Please note: These are preliminary results; analysis still in progress.
GPAs Across SAT-M Scores

*Please note: These are preliminary results; analysis still in progress.*
## Multiple Regression

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>2001</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance Explained</td>
<td>9.9%</td>
<td>10.3%</td>
<td>9.7%</td>
</tr>
<tr>
<td><strong>Coefficients:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.636</td>
<td>2.864</td>
<td>2.884</td>
</tr>
<tr>
<td>Gender</td>
<td>0.225</td>
<td>0.192</td>
<td>0.221</td>
</tr>
<tr>
<td>Asian</td>
<td>0.235</td>
<td>0.159</td>
<td>0.175</td>
</tr>
<tr>
<td>Black</td>
<td>-0.392</td>
<td>-0.353</td>
<td>-0.361</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.243</td>
<td>-0.237</td>
<td>-0.204</td>
</tr>
<tr>
<td>Other Ethnic</td>
<td>-0.052*</td>
<td>-0.052</td>
<td>-0.080</td>
</tr>
</tbody>
</table>

- Constant increases from 2.636 to 2.884
- Different ethnicities have different coefficients

*Please note: These are preliminary results; analysis still in progress.*
Grade Inflation

• Evidence supports notion of grade inflation

• Different ethnic/race groups continue to perform differentially

• Students with lower SAT scores are seeing greater increases in GPA
Grade Non-Equivalence

• Differences in grading standards between teachers and departments

• Multiple regression
  • AP exam scores
    • Scale of 1 to 5
  • AP course grades
    • A+ (4.0) through F (0.0)

are predicted by…
Grade Non-Equivalence

• 5 AP subjects were chosen
  • Biology
  • Calculus AB
  • English Literature
  • English Language
  • US History
• 5 largest high schools for each subject
### AP Biology Course Grades by Exam Score

Please note: These are preliminary results; analysis still in progress.

#### Chart: AP Exam Score vs Mean Course Grade

<table>
<thead>
<tr>
<th>School</th>
<th>Pearson r</th>
<th>Mean Score</th>
<th>Mean Grade</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.60</td>
<td>3.31</td>
<td>3.49</td>
<td>105</td>
</tr>
<tr>
<td>F</td>
<td>0.77</td>
<td>3.23</td>
<td>2.75</td>
<td>167</td>
</tr>
<tr>
<td>H</td>
<td>0.29</td>
<td>1.52</td>
<td>3.69</td>
<td>94</td>
</tr>
<tr>
<td>K</td>
<td>0.64</td>
<td>2.76</td>
<td>3.00</td>
<td>139</td>
</tr>
<tr>
<td>O</td>
<td>0.52</td>
<td>1.81</td>
<td>2.92</td>
<td>158</td>
</tr>
</tbody>
</table>

*AP Exam Score: 1-2, 3, 4-5

*Mean Course Grade: 0.00, 0.50, 1.00, 1.50, 2.00, 2.50, 3.00, 3.50, 4.00

*Pearson r: Correlation coefficient

*Mean Score: Average score range

*Mean Grade: Average grade range

*N: Number of students
AP Calculus AB Course Grades by Exam Scores

*Please note: These are preliminary results; analysis still in progress.*

<table>
<thead>
<tr>
<th>School</th>
<th>Pearson r</th>
<th>Mean Score</th>
<th>Mean Grade</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>0.63</td>
<td>2.80</td>
<td>2.98</td>
<td>100</td>
</tr>
<tr>
<td>F</td>
<td>0.57</td>
<td>2.68</td>
<td>2.64</td>
<td>206</td>
</tr>
<tr>
<td>G</td>
<td>0.51</td>
<td>2.65</td>
<td>3.49</td>
<td>92</td>
</tr>
<tr>
<td>J</td>
<td>0.63</td>
<td>3.21</td>
<td>2.71</td>
<td>92</td>
</tr>
<tr>
<td>K</td>
<td>0.45</td>
<td>2.72</td>
<td>3.20</td>
<td>92</td>
</tr>
</tbody>
</table>
### AP English Literature Course Grades by Exam Scores

<table>
<thead>
<tr>
<th>School</th>
<th>Pearson r</th>
<th>Mean Score</th>
<th>Mean Grade</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.41</td>
<td>2.85</td>
<td>2.77</td>
<td>205</td>
</tr>
<tr>
<td>F</td>
<td>0.56</td>
<td>3.07</td>
<td>3.13</td>
<td>303</td>
</tr>
<tr>
<td>K</td>
<td>0.23</td>
<td>2.95</td>
<td>3.26</td>
<td>213</td>
</tr>
<tr>
<td>N</td>
<td>0.39</td>
<td>2.50</td>
<td>3.41</td>
<td>195</td>
</tr>
<tr>
<td>O</td>
<td>0.55</td>
<td>2.49</td>
<td>3.04</td>
<td>297</td>
</tr>
</tbody>
</table>

*Please note: These are preliminary results; analysis still in progress.*
AP English Language Course Grades by Exam Scores

* Please note: These are preliminary results; analysis still in progress.
## AP US History Exam Scores

*Please note: These are preliminary results; analysis still in progress.*

<table>
<thead>
<tr>
<th>School</th>
<th>Pearson r</th>
<th>Mean Score</th>
<th>Mean Grade</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.77</td>
<td>3.29</td>
<td>3.39</td>
<td>171</td>
</tr>
<tr>
<td>D</td>
<td>0.70</td>
<td>2.57</td>
<td>2.99</td>
<td>235</td>
</tr>
<tr>
<td>E</td>
<td>0.65</td>
<td>2.36</td>
<td>2.09</td>
<td>270</td>
</tr>
<tr>
<td>F</td>
<td>0.73</td>
<td>3.18</td>
<td>2.54</td>
<td>290</td>
</tr>
<tr>
<td>L</td>
<td>0.68</td>
<td>2.83</td>
<td>3.19</td>
<td>181</td>
</tr>
</tbody>
</table>

**Graph:**
- Y-axis: Mean Course Grade
- X-axis: AP Exam Score
- Lines for different schools (A, D, E, F, L) with corresponding mean scores and grades for each AP exam score range (1-2, 3, 4-5).
The Data Tell Us...

• Cumulative High School GPAs have increased over the years, along with an increased numbers of graduates.

• Grades are subjective and differ between schools.

• Using uniform measures such as AP exam scores show different proficiency levels of students than do AP course grades.
Points for Discussion

• Grades and proficiency scores don’t have a uniform relationship
  • Grades encompass more than academic achievement of the individual student?
  • Teachers are grading the wrong skills?

• Grades are increasing (on average) over time
  • Proficiency?
  • Effort?
  • Competition?
Questions and Comments

• Researchers are encouraged to freely express their professional judgment. Therefore, points of view or opinions stated in College Board presentations do not necessarily represent official College Board position or policy.

• Questions should be directed to kgodfrey@collegeboard.org

• Access this presentation online at http://professionals.collegeboard.com/data-reports-research/cb/presentations