



Appendix 1: Calculating the Overall rating out of 10

The *Overall rating out of 10* is intended to answer the question, “In general, how is the school doing, academically?” This year, we have adopted a different method for its calculation and, in order that all the historical data is consistent, we have recalculated the *Overall rating* for all years using this new method. The following is a simplified description of the procedure used to convert the raw indicator data into the *Overall rating out of 10*.

1 The *School vs exam mark difference* for each course and the English 12 and Mathematics 12 *Gender gap* indicators were calculated using the raw data.

2 Course by course, all the results were then standardized by solving the equation

$$Z = (X - \mu) / \sigma$$

where X is the individual school’s mean result, μ is the mean of the all-schools distribution of results, and σ is the standard deviation of the same all-schools distribution.

3 With the exception of the *Gender gap* indicators (these use the results from a single course), the course-by-course standardized data were then aggregated to produce weighted average indicator values. The weighting used was the number of examinations written in each course at the school relative to the total number of examinations written at the school.

4 These weighted average results were then re-standardized.

5 The seven standardized indicator results were then combined to produce a weighted average summary standardized score for the school. The weightings used in these calculations were *Average exam mark*—20%, *Percentage of exams failed*—20%, *School vs exam mark difference*—10%, *English 12 gender gap*—5%, *Math 12 gender gap*—5%, *Exams taken per student*—20%, and *Graduation rate*—20%. For schools for which there were no gender-gap results because only boys or girls were enrolled, the *School vs exam mark difference* was weighted at 20%.

6 This summary standardized score was standardized.

This standardized score was converted into an *Overall rating* between 0 and 10 as follows:

7 The maximum and minimum standardized scores were set at 2.2 and -3.29 respectively. Scores equal to, or greater than, 2.2 receive the highest *Overall rating* of 10. This cut-off was chosen because it allows more than one school in a given year to be awarded 10 out of 10. Scores of equal to, or less than, 3.29 will receive the lowest *Overall rating* of 0. Schools with scores below -3.29 are likely to be outliers—a statistical term used to denote members of a population that appear to have characteristics substantially different from the rest of the population. We chose, therefore, to set the minimum score so as to disregard such extreme differences.

- 8 The resulting standardized scores were converted into *Overall ratings* according to the formula:

$$OR = \mu (\sigma * \text{StanScore}),$$

where OR is the resulting *Overall rating*, μ is the average calculated according to the formula:

$$\mu = (OR_{\min} - 10 (Z_{\min} / Z_{\max})) / (1 - (Z_{\min} / Z_{\max}))$$

where σ is the standard deviation calculated according to the formula:

$$\sigma = (10 - \mu) / Z_{\max}$$

and StanScore is the standardized score calculated in (6) above and adjusted as required for

minimum and maximum values as noted in (7) above. As noted in (7) above, OR_{\min} equals zero, Z_{\min} equals -3.29 ; and Z_{\max} equals 2.2 .

- 9 Finally, the derived *Overall rating* is rounded to one place of the decimal to reflect the significant number of places of the decimal in the original raw data.

Note that the *Overall rating out of 10*, based as it is on standardized scores, is a relative rating. That is, in order for a school to show improvement in its overall rating, it must improve more than the average. If it improves but at a rate less than the average, it will show a decline in its rating.



About the authors

Peter Cowley is the Director of School Performance Studies at The Fraser Institute. Upon graduation from the University of British Columbia (B.Comm. 1974), Mr Cowley accepted a marketing post with Proctor and Gamble in Toronto. He later returned to Vancouver to begin a long career in marketing and general management in the furniture-manufacturing sector. During his assignments in general management, process improvement was a special focus and interest. In 1994, Mr Cowley wrote and published *The Parent's Guide*, a popular handbook for parents of British Columbia's secondary school students. It was replaced by www.parentsguide.com in 1995. In 1998, Mr Cowley was co-author of The Fraser Institute's *A Secondary Schools Report Card for British Columbia*. This was followed in 1999 by *The 1999 Report Card on British Columbia's Secondary Schools, Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*, and *The 1999 Report Card on Alberta's High Schools*. In 2000, he was co-author of new editions of the *Report Cards* for Alberta and British Columbia and of the first edition of the *Bulletin des écoles secondaires du Québec: Édition 2000/Report Card on Quebec's Secondary Schools*. He continues his research on education and related issues for The Fraser Institute.

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