



# 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, so that all the historical data is consistent, we have re-calculated 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 30 and Mathematics 30 *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,  $\mu$  is the mean of the all-schools distribution of results, and  $\sigma$  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%.

Note that for the school year 1995/1996, Alberta Learning was unable to provide the required diploma completion data. For this reason, different weightings were used to calculate the *Overall rating out of 10* for this school year. The weightings used were: *Average exam mark*—25%, *Percentage of exams failed*—25%, *School vs exam mark difference*—12.5%, *English 12 gender gap*—6.25%, *Math 12 gender gap*—6.25%, and, *Exams taken per student*—25%. 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 25%.

- 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:

$$OR = \mu (\sigma * StanScore),$$

where *OR* is the resulting *Overall rating*,  $\mu$  is the average calculated according to the formula:

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

where  $\sigma$  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.



# Appendix 2 Measuring socio-economic context

## The association of various socio-economic characteristics with the 1998/1999 Overall rating out of 10

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### Regression Statistics

|                   |      |
|-------------------|------|
| Multiple R        | 0.34 |
| R Square          | 0.12 |
| Adjusted R Square | 0.11 |
| Standard Error    | 1.6  |
| Observations      | 276  |

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### Coefficients of the independent variables

|   | Coefficients | t Stat | P value |
|---|--------------|--------|---------|
| <b>Intercept</b>  | -0.68        | -0.26  | n/s     |
| Average number of years of education of the most educated parent                  | 0.48         | 4.42   | **      |
| Percent of target families in which there is only one parent residing in the home | -0.03        | -2.59  | **      |
| Average Age of the principal parent in the target families.                       | 0.01         | 0.16   | n/s     |

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### Notes

- 1 All independent variables are derived from 1996 Census data aggregated to the Enumeration Area (EA) level. Data was weighted according to student enrollment by EA. Alberta Learning provided enrollment data.
  - 2 Principal parent means the female parent in two parent families and the lone parent in single parent families.
- \*\* = significant at 99% level; \* = significant at 95% level, n/s = not significant at 95% level
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## 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](http://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, by 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*; in 2001, by the fourth edition of the *Report Card on British Columbia's Secondary Schools* and the *Report Card on Ontario's Secondary Schools*.

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## Acknowledgments

The Fraser Institute wishes to acknowledge the generous support for this project from the Max Bell Foundation. Thanks also to the employees of Alberta Learning for their help in the acquisition and verification of the data upon which this Report Card is based. Once again this year, we also wish to thank all of those who took the time to share with us their comments and criticisms. Without the contributions of these interested individuals, improvement would come much slower. We hope that the *Report Card on Alberta's High Schools: 2001 Edition* will elicit more ideas.