

Measuring up:

The performance of Canada's youth in reading, mathematics and science

OECD PISA Study—First Results for Canadians aged 15



Human Resources
Development Canada
Statistics
Canada

Développement des ressources
humaines Canada
Statistique
Canada



Council of Ministers of Education, Canada
Conseil des ministres de l'Éducation (Canada)

Canada

Measuring up: The performance of Canada's youth in reading, mathematics and science

OECD PISA Study—First Results for Canadians aged 15

Highlights

Canadian students performed well in the global context

Canadian students performed well compared with students in 31 other countries, ranking second in reading, sixth in mathematics and fifth in science. Canada is among a select few countries that scored near the top in all three domains. Only Finland performed significantly better than Canada in reading, only Korea and Japan performed significantly better in mathematics and only Korea, Japan and

Finland performed significantly better in science.

The performance of students in the majority of provinces in reading, science and mathematics placed these provinces among the top ranked countries.¹ The performance of students in Alberta was significantly above the Canadian average in all three domains, as was the performance of Quebec students in mathematics

and science. In Ontario, Manitoba, Saskatchewan and British Columbia, the performance of students was about the same

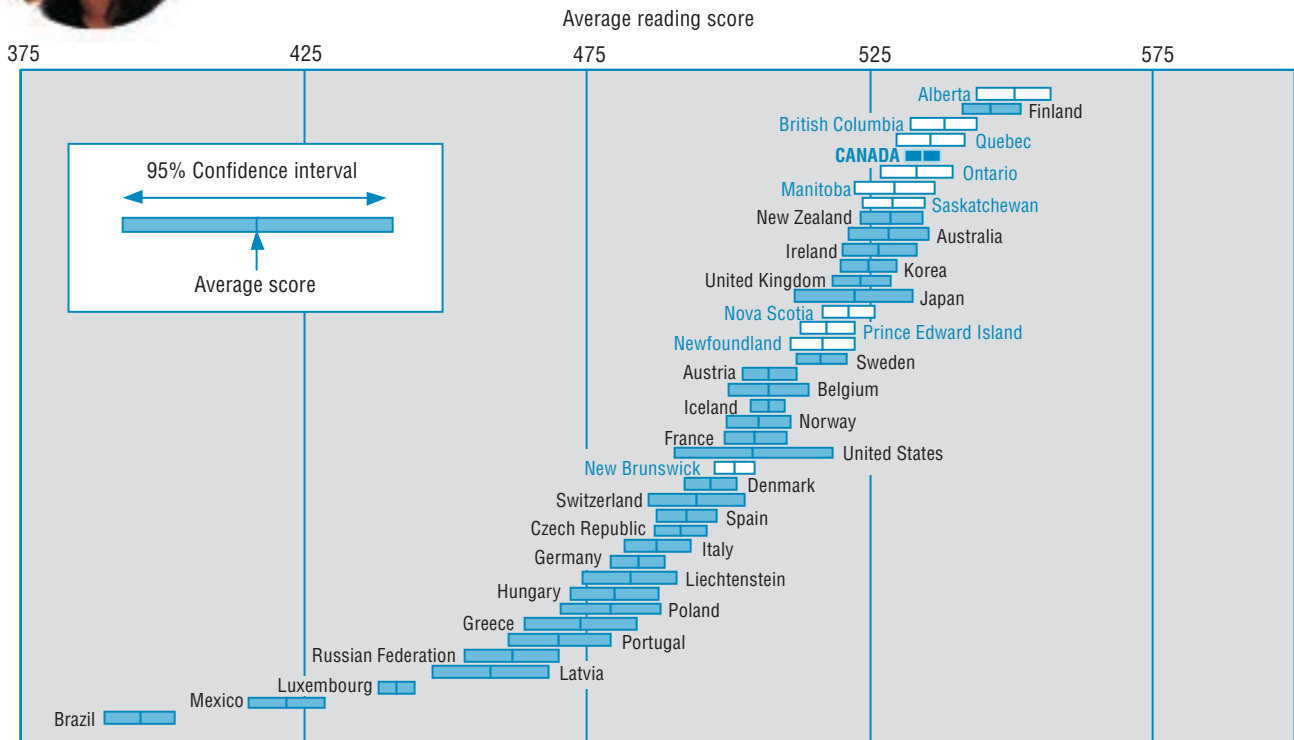


as the Canadian average in all three domains while the performance of students in Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick was significantly below the Canadian average. The performance of students in the four Atlantic provinces was, however, at or above the middle of the international range.

All of the remaining analyses will focus on reading achievement, the major domain assessed, and will include a more limited set of countries.²



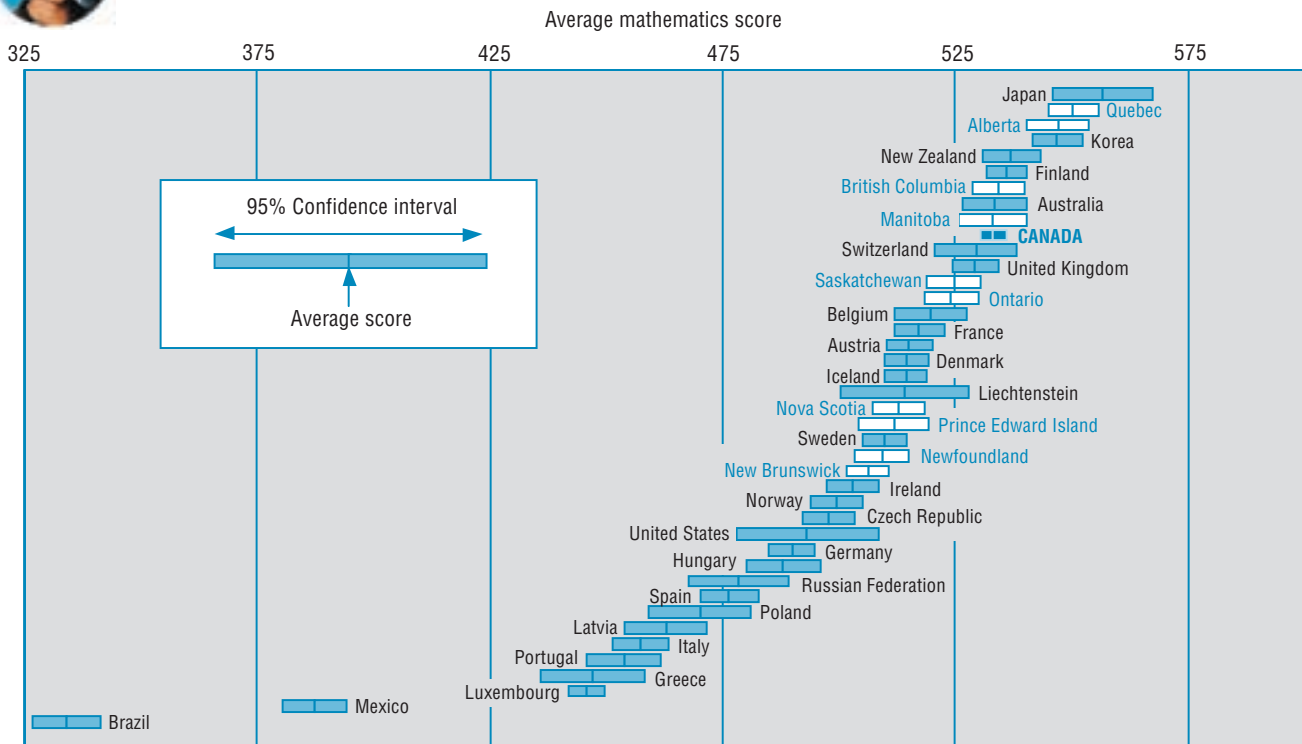
Canada ranks near the top of the world in reading literacy



Note: The confidence interval represents the range within which the score for the population is likely to fall 95% of the time or 19 times out of 20. Differences in average scores between two jurisdictions are not statistically significant when the confidence interval for each average score overlaps. For example, countries performing about the same as Canada have a confidence interval for the average score that overlaps with Canada's confidence interval.



Canada ranks high in mathematics



Note: The confidence interval represents the range within which the score for the population is likely to fall 95% of the time or 19 times out of 20. Differences in average scores between two jurisdictions are not statistically significant when the confidence interval for each average score overlaps. For example, countries performing about the same as Canada have a confidence interval for the average score that overlaps with Canada's confidence interval.)

Further Canadian results are available in the report, *Measuring up: the performance of Canada's youth in reading, mathematics and science – OECD PISA Study – First results for Canadians aged 15*. This publication, is available electronically without charge, through the internet at:

www.pisa.gc.ca
www.statcan.ca
www.cmec.ca
www.hrhc-drhc.gc.ca/arb

The printed version of this report, listed as Catalogue no. 81-590-XPE at a price of \$10.00 per issue, can be ordered by

- Phone (Canada and the United States) 1 800 267-6677
- Fax (Canada and the United States) 1 877 287-4369
- E-mail order@statcan.ca
- Mail Statistics Canada Dissemination Division Circulation Management 120 Parkdale Avenue Ottawa, Ontario K1A 0T6
- And in person at the Statistics Canada Reference Centre nearest you.

Thirty-two countries participated in PISA 2000.³ In Canada, approximately 30,000 15-year-old students from more than 1,000 schools took part. A large Canadian sample was drawn so that information could be provided at both national and provincial levels.

The PISA 2000 survey included a direct assessment of students' skills through reading, mathematics and science tests as well as questionnaires collecting background information from students and school principals. In Canada, a contextual questionnaire from the Youth in Transition Survey was administered simultaneously to students and an interview was also administered to their parents.⁴

What is PISA?

The Programme for International Student Assessment (PISA) is a collaborative effort among member countries of the Organisation for Economic Co-operation and Development (OECD) to regularly assess the achievement of 15-year-olds in three domains—reading literacy, mathematical literacy and scientific literacy—through a common international test.

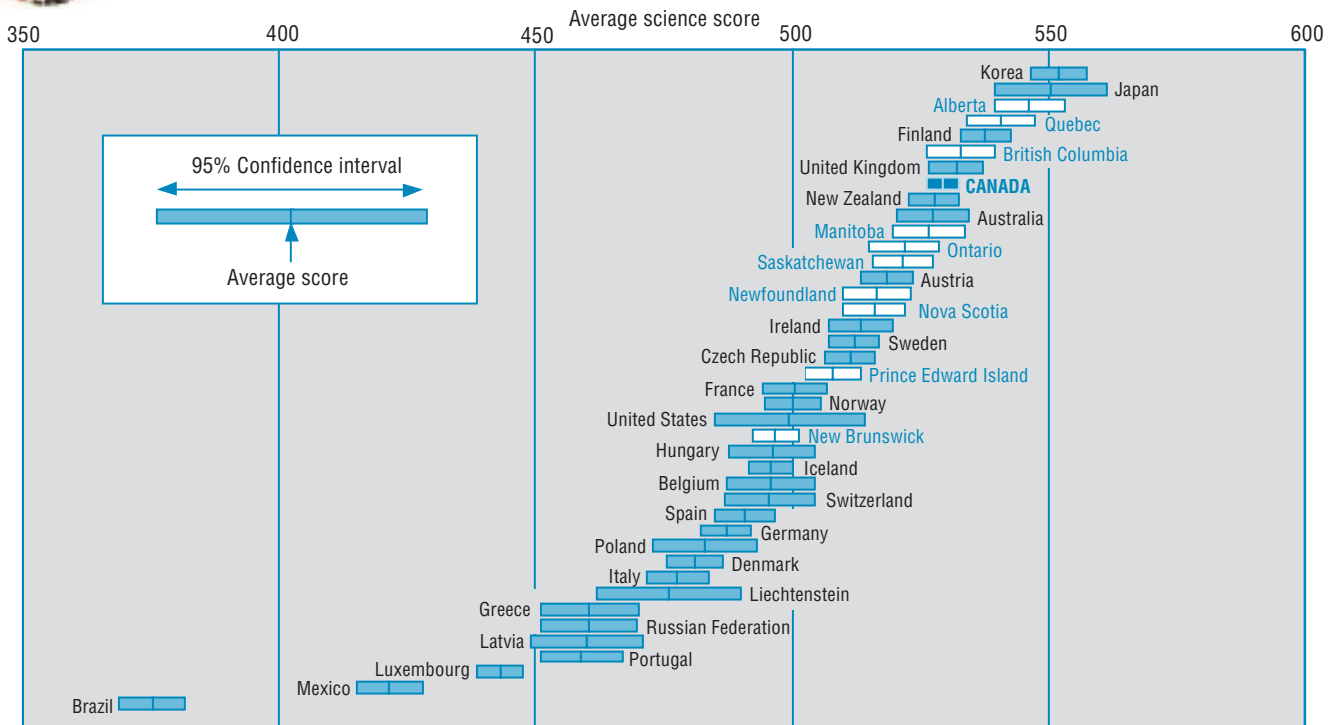
Three PISA cycles have been planned, each one focussing on a different literacy domain. In 2000, the major focus was reading literacy, with mathematical and scientific literacy as minor domains. As a result, there were fewer mathematics and science items included in the assessment and these items were administered to a sub-sample of participants. Mathematical and scientific literacy will be focussed on in 2003 and 2006, respectively.

Girls outperformed boys in reading

In PISA, girls performed significantly better than boys on the reading test in all countries and in all Canadian provinces. The lower average result for boys is a source of concern, since poor



Canada ranks high in science



Note: The confidence interval represents the range within which the score for the population is likely to fall 95% of the time or 19 times out of 20. Differences in average scores between two jurisdictions are not statistically significant when the confidence interval for each average score overlaps. For example, countries performing about the same as Canada have a confidence interval for the average score that overlaps with Canada's confidence interval.

reading performance can have a profound effect on performance in other subjects.

Socio-economic background had a smaller impact on reading achievement in Canada than in other countries

In all participating countries, students from high socio-economic backgrounds performed better than students from low socio-economic backgrounds. Canada, however, along with Japan and Finland, exhibited far less variation in scores between students in these two groups than did most other countries. This suggests that achievement scores are more equivalent among students with different socio-economic backgrounds in Canada than they are in many other countries.

Within Canada, students from Saskatchewan exhibited less variation in reading achievement by family socio-economic background than did

students in other provinces. Performance of students with a mid-to-high socio-economic background in this province, however, fell below that of several other provinces. Alberta, on the other hand, had generally the highest achievement scores across all levels of family socio-economic background, yet had greater variation in scores across socio-economic groups. Among the provinces, Newfoundland had the greatest variation in reading performance across socio-economic groups.

Family socio-economic background was derived from student responses regarding parental occupation using the International Socio-Economic Index of Occupational Status. For more information consult Chapter 3 and Annex B of the main report.

A route to improving the reading ability of youth in all of the provinces lies in improving reading skills among economically or socially disadvantaged youth. Monitoring the performance of

students within these economic groups in future PISA cycles will be an important means of evaluating Canada's success in meeting this challenge.

Outside Quebec, students in minority language school systems had lower results in reading

In Quebec, students enrolled in the anglophone school system performed as well in reading as those enrolled in the francophone school system. Among the four other provinces where students from each school system were studied separately, results differ. In Nova Scotia, New Brunswick, Ontario and Manitoba, students enrolled in the francophone school system performed, on average, at a significantly lower level in reading than students enrolled in the anglophone system. Further analysis will clarify the extent to which important background variables, such as the main language spoken at home, contribute to these differences.

Individual, family and school characteristics influence reading achievement

Students' enjoyment of reading and their career expectations were two characteristics that were consistently positively related to reading proficiency across countries and Canadian provinces.

Among family characteristics, the socio-economic background of the family and the number of books in the home were factors influencing reading achievement. Other positive influences related to academic achievement were attendance at concerts, museums, and


other cultural events, and the presence of parents who discussed political or social issues, books or television shows with their children.

Students of schools where the majority of the student population came from lower socio-economic backgrounds did not perform as well as students of schools where students came from higher socio-economic backgrounds. School climate was also related to reading performance in many provinces. Students attending schools with fewer disciplinary problems or fewer disruptions in the classroom tended to have higher scores.

Promise for the future

What is striking about the Canadian results is that despite having many different jurisdictions that deliver education, the outcomes of the PISA assessment are quite similar for the majority of provinces. As well, the Pan-Canadian report shows that no single factor, by itself, can explain differences in reading achievement. School, student and family characteristics work alone and in combination to influence the success of students. Nevertheless, the performance of Canadian youth in the PISA assessment appears promising for their future and for the future of Canada.


Average reading scores by gender and province and selected country

	Girls		Boys	
	Average	Confidence interval (+ -)*	Average	Confidence interval (+ -)*
 CANADA	551	3.4	519	3.5
France	519	5.4	490	7.0
United States	518	12.3	490	16.7
United Kingdom	537	6.9	512	6.0
Germany	502	7.7	468	6.3
Japan	537	10.7	507	13.4
Italy	507	7.1	469	10.2
Russian Federation	481	8.1	443	9.0
Australia	546	9.4	513	8.0
Belgium	525	9.8	492	8.4
Finland	571	5.5	520	6.0
Mexico	432	7.6	411	8.3
Sweden	536	4.9	499	5.1
Switzerland	510	9.0	480	9.7
Newfoundland	538	6.1	496	7.4
Prince Edward Island	535	7.0	500	6.0
Nova Scotia	538	6.1	505	6.7
New Brunswick	525	4.1	478	5.5
Quebec	553	6.5	521	6.8
Ontario	548	6.9	518	7.8
Manitoba	548	8.4	513	7.4
Saskatchewan	548	6.6	512	6.4
Alberta	571	7.1	533	7.9
British Columbia	555	6.6	523	7.9

Note: For each province and selected country, where differences in average scores are statistically significant, scores are bolded. As in the main report, only selected countries are presented.

* The confidence interval represents the range within which the score for the population is likely to fall 95% of the time or 19 times out of 20. The upper bound is the average score plus the interval value and the lower bound is the average score minus the interval value.

Average reading scores by language of the school system and province

	Anglo phone		Franco phone	
	Average	Confidence interval (+ -)*	Average	Confidence interval (+ -)*
 Nova Scotia	522	4.7	474	10.4
New Brunswick	512	4.6	478	5.1
Quebec	543	9.1	535	6.6
Ontario	535	6.7	474	14.7
Manitoba	530	7.1	486	10.9

Note: For each province, where differences in average scores are statistically significant, scores are bolded.

* The confidence interval represents the range within which the score for the population is likely to fall 95% of the time or 19 times out of 20. The upper bound is the average score plus the interval value and the lower bound is the average score minus the interval value.

Notes

- 1 No data were collected in the three territories or on Indian Reserves.
- 2 Thirteen countries were selected for comparison with Canada and the provinces. In addition to the G8 countries (France, Germany, Italy, Japan, United Kingdom, United States and the Russia Federation), Australia, Belgium, Finland, Mexico, Sweden and Switzerland were selected because of their similarities to Canada, their record of high achievement or their relevance to Canada. An analysis of the performance of all countries is presented in the international OECD report, *Knowledge and Skills for Life – First results from the OECD Programme for International Student Assessment*.
- 3 While the Netherlands participated in PISA, their data is excluded from the analysis due to a low response rate.
- 4 See the main report for more information on the Youth in Transition Survey.