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Major releases

Performance of Canada's youth in mathematics, reading, science and problem solving, 2003

Canadian 15-year-old students are among the best in the world when it comes to mathematics, reading, science and problem solving, according to a major new international study that assesses the skill level of students nearing the end of their compulsory education.

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Canadian Social Trends

Winter 2004

Each quarter, *Canadian Social Trends* integrates data from many sources to examine emerging social trends and issues. The winter 2004 issue contains five articles.

The article "You can't always get what you want: Retirement preferences and experiences," which is now available free online, examines the match between the retirement preferences and experiences of recent retirees who retired between 1992 and 2002.

"Off-reserve Aboriginal Internet users" draws a basic profile of Internet use among Aboriginal ancestry Canadians living off-reserve, and asks whether a second digital divide exists between these users

"Perceptions of Canadians: A sense of belonging, confidence and trust" (adapted from 2003 General Social Survey on Social Engagement, Cycle 17: An Overview of Findings) provides a broad snapshot of the outlooks and activities of Canadians in 2003 in three areas: a sense of belonging to Canada, to their province, and to their community; confidence in public institutions such as the health care system and the federal parliament; and trust in others.

"Well-being of off-reserve Aboriginal children" (adapted from A Portrait of Aboriginal Children Living in Non-reserve Areas: Results from the 2001 Aboriginal Peoples Survey) describes the wellbeing of off-reserve Aboriginal children aged 14 and under, in regards to health and well-being, education and learning and use of Aboriginal languages.

"Provincial variation in reading scores of 15-year-olds" (adapted from *Education, Skills and Learning Research Papers*, no. 12) examines the variation between Canada's provinces in the literacy skills of 15-year-old students; it also looks at family background and school factors as potential explanations for these differences.

This issue of *Canadian Social Trends* also features the latest social indicators as well as information about Statistics Canada's products and services.

The Winter 2004 issue of *Canadian Social Trends*, no. 75 (11-008-XIE, \$9/\$29; 11-008-XPE, \$12/\$39) is now available. See *How to order products*.

For more information, contact Client Services and Dissemination (613-951-5979; *hfsslf@a.statcan.ca*) Housing, Family and Social Statistics Division.





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Performance of Canada's youth in mathematics, reading, science and problem solving 2003

Canadian 15-year-old students are among the best in the world when it comes to mathematics, reading, science and problem solving, according to a major new international study that assesses the skill level of students nearing the end of their compulsory education.

Students from only two countries (Hong Kong–China and Finland) outperformed Canadian 15-year-olds in mathematics among 41 nations that participated in the Organisation for Economic Co-operation and Development's (OECD) 2003 Programme for International Student Assessment (PISA).

Canadian youth also performed well in three other domains measured by PISA.

Only students in Finland performed significantly better than those in Canada in reading. And students in only Finland, Japan, Hong Kong–China and Korea performed significantly better in science and problem solving.

The study's goal was to identify whether students have the necessary skills and knowledge to participate fully in a knowledge-based economy and society. Factors such as advances in communication, information intensive service industries and the wide diffusion of information technologies have precipitated changes in skills required in the Information Age.

All provinces performed at or above the OECD average in mathematics overall. Furthermore students in Alberta, British Columbia and Quebec performed as well in mathematics as those from the top performing countries. The study also found that students in nearly every province performed at or above the OECD average in reading, science and problem solving.

The study showed that while boys outperformed girls in mathematics, the magnitude of the difference in Canada was small.

In addition, family socio-economic status had an impact on mathematics performance. In every province, students with higher socio-economic status tended to have higher performance in mathematics.

And except for Ontario, there was no difference in mathematics performance between students in the English-language school system and those in the French.

Note to readers

Data in this release are from the Programme for International Student Assessment (PISA), a collaborative effort among member countries of the Organisation for Economic Co-operation and Development (OECD).

In Canada, PISA is administered through a partnership of the Council of Ministers of Education, Canada, Human Resources and Skills Development Canada and Statistics Canada.

This program is designed to regularly assess the achievement of 15-year-olds in reading, mathematical and scientific literacy using a common international test. PISA was first implemented in 2000 and is repeated every three years with each cycle providing detailed assessment in one of the three domains and summary assessments in the other two.

Canada and 40 other countries participated in PISA 2003, which focused primarily on mathematics and secondarily on reading and science. In addition, PISA 2003 included a third minor assessment in problem solving. In Canada, more than 28,000 15-year-olds from more than 1,000 schools participated in April and May 2003.

The PISA 2003 survey included a direct assessment of students' skills as well as questionnaires collecting background information from students and school principals. In Canada, supplementary information from students and parents was also collected through the associated Youth in Transition Survey.

Socio-economic status was derived from student responses regarding parental occupation and education, family structure, parental labour market participation and whether a student's family had specific educational and cultural possessions at home.

Mathematics: Students in all provinces at or above OECD average

Provincially, students from Alberta performed above the Canadian average in overall mathematics while students in Ontario, Quebec, Manitoba and British Columbia performed at the Canadian average.

Students in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick and Saskatchewan performed below the Canadian average. However, students in all provinces performed at or above the OECD average in mathematics.

PISA examined student performance in four sub-domains: space and shape; change and relationships; quantity; and uncertainty. Generally, only one or two countries had higher average scores than Canada.

However, in the sub-domain of space and shape, which relates most closely to geometry, students in eight nations outperformed those in Canada, suggesting that the relative weakness of Canadian students lies in this area.

Science, reading and problem solving: Students in all provinces did well

Students in all provinces did well in the three minor domains of reading, science and problem solving. Only those in Prince Edward Island performed below the OECD average in science.

In fact, students from Alberta performed equally well as those from the top performing countries in all three domains, and were above the Canadian average in all three.

Students in Prince Edward Island, New Brunswick, Nova Scotia and Saskatchewan performed below the Canadian average in all three domains. Those in Newfoundland and Labrador performed below the Canadian average in problem solving.

Boys do better than girls in mathematics, but not reading

In Canada, as well as in a majority of nations, boys outperformed girls in mathematics, but the difference was relatively small. On the other hand, there was a relatively large difference favouring girls in reading in all Canadian provinces and the vast majority of countries.

There was no difference between girls and boys in mathematics in three provinces: Prince Edward Island, Quebec and Saskatchewan.

Boys also performed better than girls in science in Canada overall. However, among the provinces, the difference was significant in Manitoba, Nova Scotia and Ontario.

Performance varies across minority language school systems

There was no difference in mathematics performance between students in Canada's English-language and French-language school systems, except for Ontario.

In Ontario, the average performance of students in the French-language school system was below that of their peers in the English system in all four domains.

In New Brunswick and Nova Scotia, students in French-language schools had a lower performance in reading, science and problem-solving. In Manitoba, the students in French-language schools had lower performance in reading and science. In Quebec, however, there was no difference between the two systems in any of the domains.

Student's confidence in learning math is strongly related to achievement

Not everybody is comfortable learning mathematics. PISA collected information on a variety of dimensions of "student engagement" to explore the extent to which students believe they can succeed in mathematics and how they feel about learning it. Among others, this measure examined confidence in their abilities and their emotional feelings about mathematics.

The study found that a student's self-confidence and level of anxiety about mathematics were strongly associated with their performance. Those with high levels of confidence in their ability to learn mathematics performed much higher than those with low levels.

Furthermore, students with a high level of anxiety about math, such as feelings of helplessness or stress when dealing with math, performed much lower than students with less anxiety.

It is difficult to disentangle the associations observed between mathematics engagement and performance. For example, are high motivation and confidence and reduced anxiety the causes of strong performance or by-products of doing well in mathematics?

Nevertheless, these results suggest that high self-confidence in mathematics as well as low mathematics anxiety may be important outcomes on their own.

Socio-economic status: Parents and schools both factors

A student's family background, as well as the composition of their schools, was a factor in performance in mathematics.

Students from families with higher socio-economic status tended to perform better in math. However, the differences were less pronounced in Canada than in the OECD nations combined, suggesting that socio-economic status has a smaller impact in Canada.

Also, 15-year-olds who attended schools with students from higher socio-economic backgrounds performed better in mathematics regardless of the status of their family. This suggests they are not only affected by their parents' circumstances, but by those of their school peers.

Even so, if all students and schools had similar socio-economic status, there would still be differences in student performance.

Definitions, data sources and methods: survey number 5060.

The report *Measuring up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Mathematics, Reading, Science and Problem Solving: 2003, First Findings for Canadian Aged 15,* no. 2 (81-590-XIE2004001, free) is now available online. From the *Our products and services* page, under *Browse our Internet publications,* choose *Free* then *Education.* A printed version (81-590-XPE, \$11) will soon be available. The report is also available on the Programme for International Student Assessment (*www.pisa.gc.ca*) and the Council of Ministers of Education of Canada (*www.cmec.ca*) Web sites.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Client Services (1-800-307-3382; 613-951-7608; fax: 613-951-9040; *educationstats@statcan.ca*), Culture, Tourism and the Centre for Education Statistics.

Other releases

Fixed assets

2004

By the end of 2004, the country will have nearly \$2.6 trillion in structures and equipment in use to produce goods and services in the economy. This represents an increase (in real terms) of 31% over the last 10 years.

About two-thirds of this total consists of building and engineering structures, while about one-third comprises machinery and equipment.

Growth has been particularly strong in machinery and equipment assets, which will amount to an estimated \$879 billion by the end of 2004, a 73% increase during the past decade.

Fixed assets

2004

	Building and	Machinery	Total
	engineering	and	
	structures	equipment	
	\$ billions	constant 1997	
Total	1,672.1	879.3	2,551.4
Business sector Public administration, education and	1,132.9	798.3	1,931.2
assistance	539.2	81.0	620.2

Over the past decade, capital intensity (as measured by the value of fixed assets over employment) has shown a steady increase. The employment data are from the Survey of Employment, Payrolls and Hours.

Among the different sectors, good producing industries generally are much more capital intensive than services producing industries, with capital intensity in mining and utilities dwarfing that of all other sectors. The past decade has seen capital intensity rising fastest in service producing industries. Finance and insurance, and Miscellaneous services now employ more than double the capital per worker than was used in 1994. Surprisingly, capital intensity has declined in manufacturing, despite continued strength in the sector. This is largely the result of investment not keeping pace with strong employment growth. This could have a negative effect on the competitiveness of the sector.

Capital intensity by sector

	1994	2004	% variation
	\$ 000 thou constant 1	sands 1997	
Forestry and logging Mining and oil and gas	65	93	42
extraction	1,519	1,848	22
Utilities	2,597	3,010	16
Construction	58	60	3
Manufacturing	156	148	-5
Trade ¹	30	43	43
Transportation and			
warehousing	296	349	18
Information and cultural			
industries	309	414	34
Finance and insurance	94	205	118
Real estate and rental			
and leasing	845	856	1
Educational services	94	123	30
Health care and social			
assistance	44	55	25
Arts, entertainment and			
recreation	52	68	31
Accommodation and			
food services	32	31	-2
Miscellaneous			
services ²	13	29	133
Other services			
(except public			
administration)	31	44	45
Public administration	486	551	13
Total	173	188	9

1. Includes wholesale and retail trade.

 Includes professional, scientific and technical services, management of companies and enterprises, and administrative and support, waste management and remediation services.

The same message emerges from the depreciation analysis in manufacturing. New investment has not been keeping pace with depreciation as shown by the ratio of new investment to depreciation.

To better prepare themselves for fiercer international competition, manufacturers will have to accelerate investment, especially in new machinery and equipment that embeds the newest technology.

Ratio of investment to depreciation in manufacturing

	Investment	Depreciation	Ratio
	\$ billions const	tant 1997	
1994	15.6	16.2	0.96
1995	17.6	16.5	1.07
1996	18.6	16.8	1.11
1997	20.7	17.1	1.21
1998	21.0	17.6	1.19
999	21.2	18.2	1.16
2000	21.7	18.7	1.16
2001	17.6	19.1	0.92
2002	15.7	19.2	0.82
2003	17.6	19.2	0.92
2004	18.4	19.3	0.95

Note: These series are presented on the basis of the North American Industry Classification System (NAICS Canada 2002). At this time we have both current and constant dollar series available. These series using a chain Fisher Formula will be available later in December.

Available on CANSIM: table 031-0002.

Definitions, data sources and methods: survey number 2820.

To order data, contact Flo Magmanlac (613-951-2765). For more information, or to enquire about the concepts, methods or data quality of this release, contact Richard Landry (613-951-2579), Investment and Capital Stock Division.

Domestic sales of refined petroleum products

October 2004 (preliminary)

Sales of refined petroleum products totaled 8 863 600 cubic metres in October, up 0.5% from October 2003. Sales increased in three of the seven major product groups, led by diesel fuel oil (+5.8% or 125 100 cubic metres). Petro-chemical feedstocks (+10.7%) and aviation turbo fuels (+4.0%) also increased. Motor gasoline fell by 55 200 cubic metres or 1.6%.

Sales of regular non-leaded remained unchanged while premium (-14.0%) and mid grade (-12.5%) fell from October 2003.

Sales of refined petroleum products

	October	October	October
	2000	2004	to
			October 2004
	Thousands of	cubic metres	% change
Total, all products	8 821.1	8 863.6	0.5
Motor gasoline	3 492.7	3 437.5	-1.6
Diesel fuel oil	2 158.9	2 284.0	5.8
Light fuel oil	377.2	331.5	-12.1
Heavy fuel oil	774.7	734.1	-5.2
Aviation turbo fuels Petrochemical	637.6	663.3	4.0
feedstocks ¹ All other refined	423.8	469.1	10.7
products	956.3	943.9	-1.3

Jan. to	Jan. to	JanOctober 2003 to
October 2003 ^r	October 2004 ^p	JanOctober 2004

Thousands of cu	ubic metres	% change
81 937.8	84 984.7	3.7
33 578.2	34 139.7	1.7
19 815.3	20 824.4	5.1
4 162.9	4 035.2	-3.1
7 044.2	6 736.8	-4.4
5 100.2	5 550.0	8.8
3 743.4	4 300.3	14.9
8 493.6	9 398.3	10.7
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Revised figures.

P Preliminary figures.

1. Materials produced by refineries that are used by the petrochemical industry to produce chemicals, synthetic rubber and a variety of plastics.

Year-to-date sales of refined petroleum products at the end of October reached 84 984 700 cubic metres up 3.7% from the same period of 2003. Sales rose in five of the seven major product groups with the largest increase in diesel fuel oil, which was up 1 009 100 cubic metres or 5.1%.

Definitions, data sources and methods: survey number 2150.

Note: Preliminary domestic sales of refined petroleum products data are no longer available on CANSIM

For more information, or to enquire about the concepts, methods or data quality of this release, contact the dissemination officer (1-866-873-8789; 613-951-9497; *energ@statcan.ca*), Manufacturing, Construction and Energy Division.

Production of eggs and poultry

October 2004 (preliminary)

Egg production, was estimated at 45.2 million dozen in October, down 6.3% from October 2003.

Poultry meat production reached 93.6 million kilograms in October, up 0.4 from October 2003.

Available on CANSIM: tables 003-0022, 003-0038 and 003-0039.

Definitions, data sources and methods: survey numbers, including related surveys, 3424, 3425 and 5039.

The October 2004 issue of *Production of Eggs* (23-003-XIB, free) will soon be available online.

For further information, or to enquire about the concepts, methods or data quality of this release, contact Sandy Gielfeldt (613-951-2505; *sandy.gielfeldt@statcan.ca*) or Barbara Bowen (613-951-3716; *barbara.bowen@statcan.ca*) Livestock and Animal Products Section, Agriculture Division.

Sawmills and planing mills September 2004

Data on sawmills and planing mills are now available for September 2004. Monthly data on CANSIM for 2002, 2003 and January to August 2004 were revised.

Available on CANSIM: table 303-0009.

Definitions, data sources and methods: survey numbers, including related surveys, 2134 and 2135.

The September 2004 issue of *Sawmills and Planing Mills*, Vol. 58, no. 9 (35-003-XIB, \$10/\$93) is now available. See *How to order products*.

For general information or to order data, contact the dissemination officer (1-866-873 8789; 613-951-9497; *manufact@statcan.ca*), Manufacturing, Construction and Energy Division.

New products

Infomat: A Weekly Review, December 7, 2004 Catalogue number 11-002-XWE (\$100).

Canadian Social Trends, Winter 2004, no. 75 Catalogue number 11-008-XIE (\$9/\$29).

Canadian Social Trends, Winter 2004, no. 75 Catalogue number 11-008-XPE (\$12/\$39).

Sawmills and Planing Mills, September 2004, Vol. 58, no. 9 Catalogue number 35-003-XIB (\$10/\$93).

Measuring Up: Canadian Results of the OECD PISA Study: 2003, First Findings for Canadians Aged 15, no. 2 Catalogue number 81-590-XIE2004001 (free). All prices are in Canadian dollars and exclude sales tax. Additional shipping charges apply for delivery outside Canada.

Catalogue numbers with an -XWE, -XIB or an -XIE extension are Internet versions; those with -XMB or -XME are microfiche; -XPB or -XPE are paper versions; -XDB or -XDE are electronic versions on diskette and -XCB or -XCE are electronic versions on compact disc.

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