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Science and Technology Data - 2011

Higher Education

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Science and Technology Data is published yearly by Industry Canada's Science and Innovation Sector. This publication presents a snapshot of the state of science and technology in Canada in an accessible and convenient format.

This year, the format has been changed to five two-page documents. "National" provides a summary of Canada's R&D. "Government," "Industry" and "Higher Education" each cover a specific component in the national S&T system. "Canada & the World" describes links between Canada's S&T activities and those in other countries around the world.

Due to the varied approaches to national collection and multilateral compilation of data, the figures used for international comparisons will often be for earlier periods than those used for domestic trends. All figures are based on the most recent, reliable data.

In 2011, the R&D performed by the higher-education sector reached \$11.4 billion and accounted for 38 percent of the R&D performed in Canada. In 2010, Canada ranked seventh among OECD countries (first in the G7) for its HERD-to-GDP ratio.

Of Canada's working-age population, 26 percent has attained university education, which is higher than the 22-percent average witnessed across the OECD. Reflecting a trend towards higher education attainment, university attainment in Canada is higher (31 percent) among the younger generation (25–34 years old).

Scientific publications are one measure of higher-education institutions'

research output. Over the 2002 to 2011 period, the volume of scientific publications in Canada increased 4.1 percent per year (compound annual growth rate). While the publication of scientific articles increased in most provinces, Ontario and Quebec accounted for the largest shares of Canada's scientific articles.

When normalized by population, Canada's output of scientific publications ranked first among G7 countries in 2011. The quality of Canada's publications (as measured by ARC) is high compared to the world average and ranks fourth among G7 countries.

Acronyms and Abbreviations

GDP	Gross domestic product
GERD	Gross domestic expenditure on research and development
HERD	Higher education expenditure on research and development
OECD	Organisation for Economic Co-operation and Development

Definitions

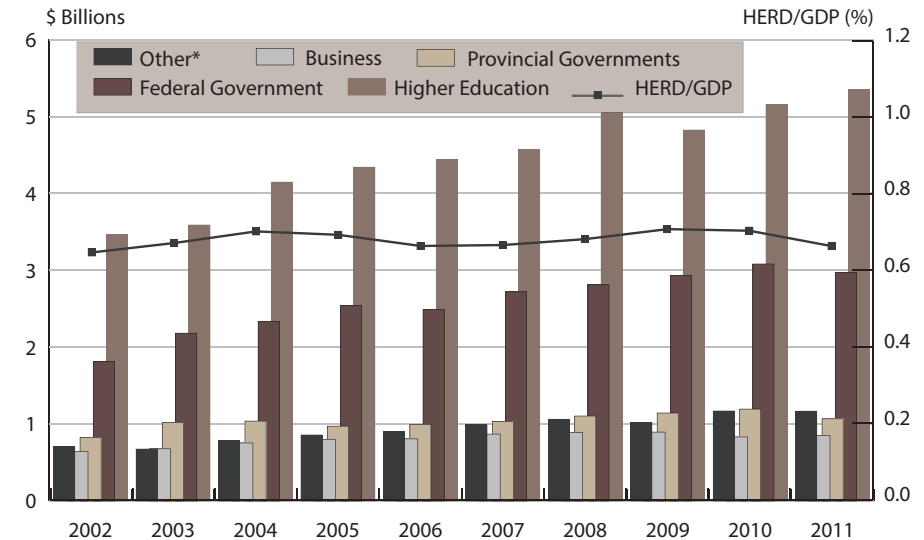
ARC "Average of relative citations" is an indicator based on the number of citations received by individual papers for a 3-year period following their publication. By definition, for all fields and subfields, the world's ARC equals 1.00. Therefore, an ARC value greater than 1 means that a paper received more citations than the world average.

R&D "Research and development" is creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of humankind, culture and society, and the use of this stock of knowledge to devise new applications.

RSAs "Related scientific activities" complement and extend R&D by contributing to the generation, dissemination and application of scientific and technological knowledge.

S&T "Science and technology" includes both R&D and RSAs.

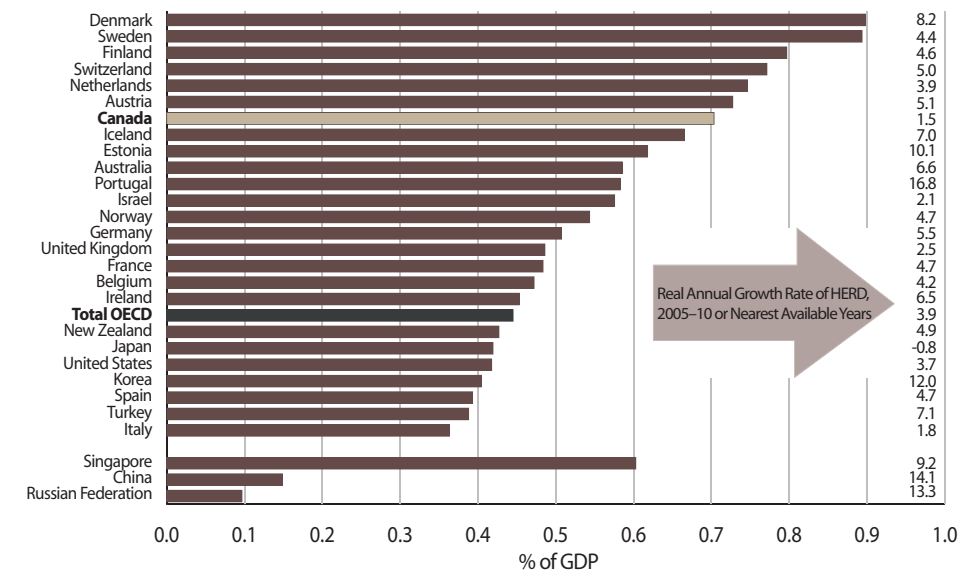
Canada's HERD by Major Source of Funds, 2002 to 2011



*Other includes foreign and private not-for-profit organizations.

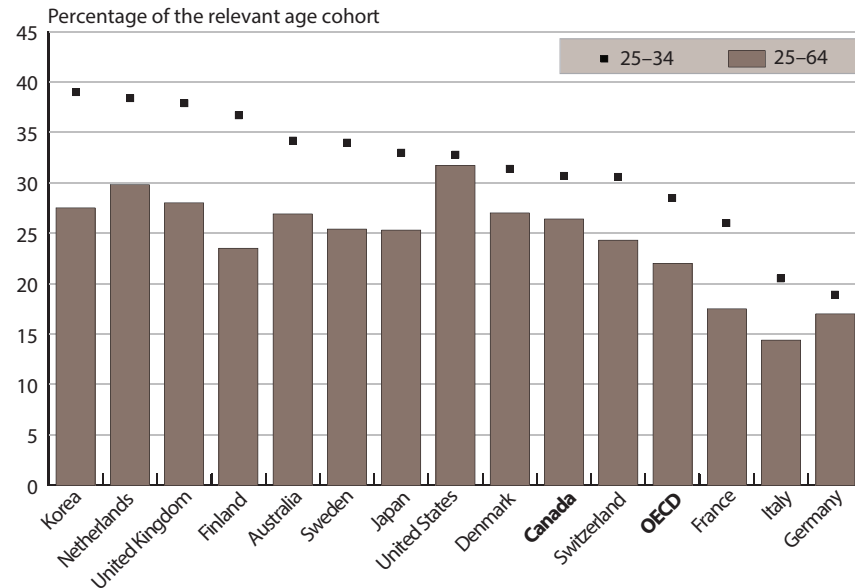
Source: Statistics Canada, *Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces*, Catalogue no. 88-221-X, December 2012.

HERD as a Percentage of GDP, Top OECD and Selected Non-OECD Countries, 2010



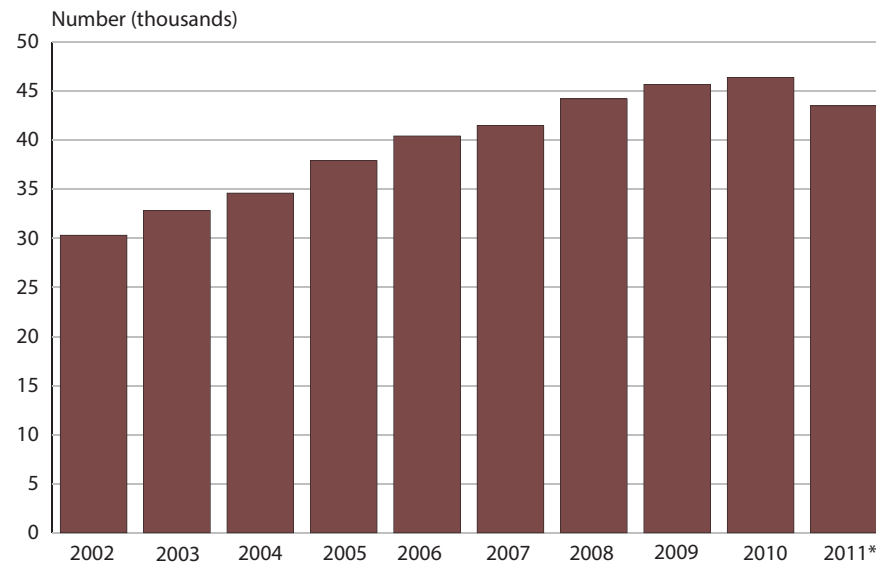
Source: OECD, *Main Science and Technology Indicators: 2012/2*, January 2013.

Population that has Attained University Education by Selected Age Group, Selected OECD Countries, 2010



Source: OECD, *Education at a Glance*, 2012, 2012.

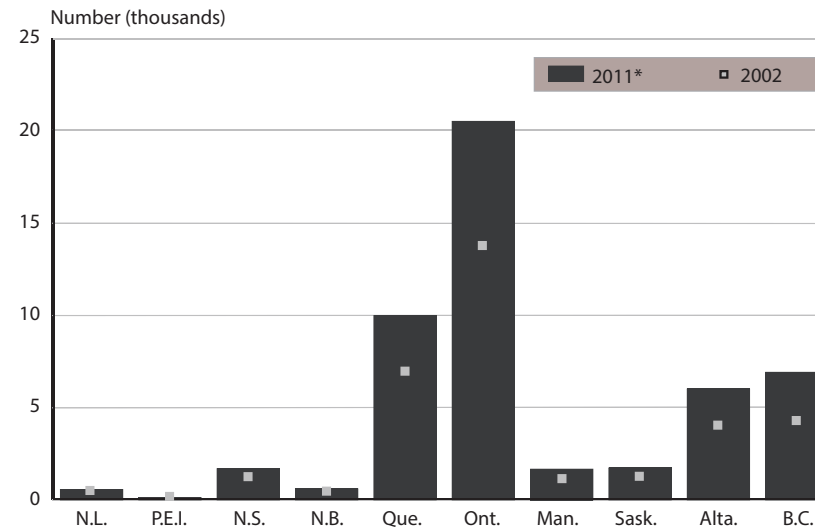
Volume of Scientific Publications, Canada, 2002 to 2011



*Data for 2011 are incomplete because some journals published in 2011 (bibliographic year) will only be documented in 2012.

Source: Observatoire des sciences et des technologies (Thomson Reuters—Web of Science).

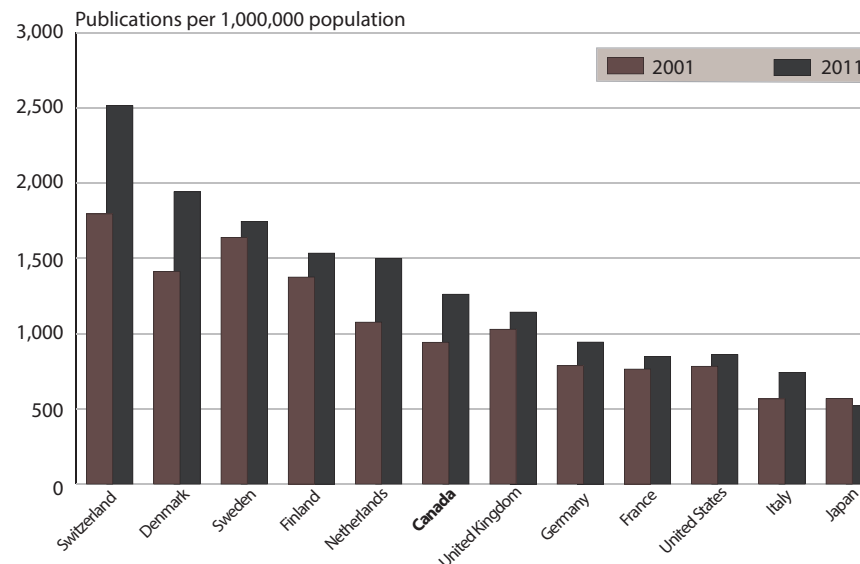
Scientific Publications by Province, 2002 and 2011



*Data for 2011 are incomplete because some journals published in 2011 (bibliographic year) will only be documented in 2012.

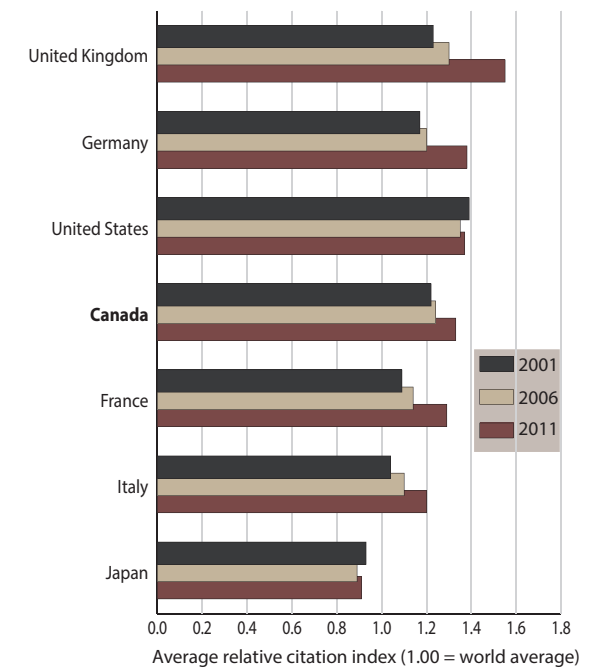
Source: Observatoire des sciences et des technologies (Thomson Reuters—Web of Science).

Scientific Publications per Million Population, Selected OECD Countries, 2001 and 2011



Sources: Calculations based on data from the Observatoire des sciences et des technologies (Thomson Reuters—Web of Science). OECD, *Main Science and Technology Indicators: 2012/2*, January 2013.

Average Relative Citation, G7 Countries, 2001, 2006 and 2011



Source: Observatoire des sciences et des technologies (Thomson Reuters—Web of Science).