

Global Innovation Index 2023

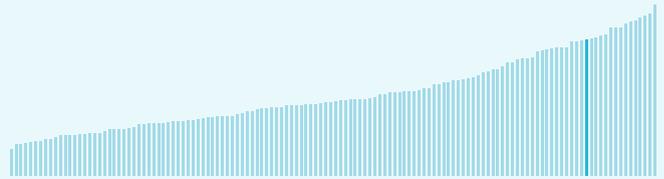


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Canada ranking in the Global Innovation Index 2023

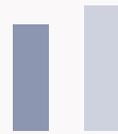
> Canada ranks **15th** among the 132 economies featured in the GII 2023.



> Canada ranks **14th** among the 50 high-income group economies.



> Canada ranks **2nd** among the 2 economies in Northern America.



> Canada GII Ranking (2020-2023)

The table shows the rankings of Canada over the past four years. Data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Canada in the GII 2023 is between ranks 14 and 18.

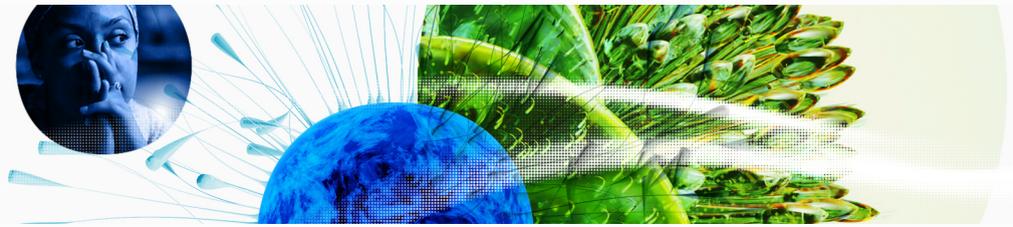
	GII Position	Innovation Inputs	Innovation Outputs
2020	17th	9th	22nd
2021	16th	8th	23rd
2022	15th	9th	23rd
2023	15th	9th	20th

Canada performs worse in innovation outputs than innovation inputs in 2023.

This year Canada ranks **9th** in innovation inputs. This position is the same as last year.

Canada ranks **20th** in innovation outputs. This position is higher than last year.

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→ Expected vs. observed innovation performance

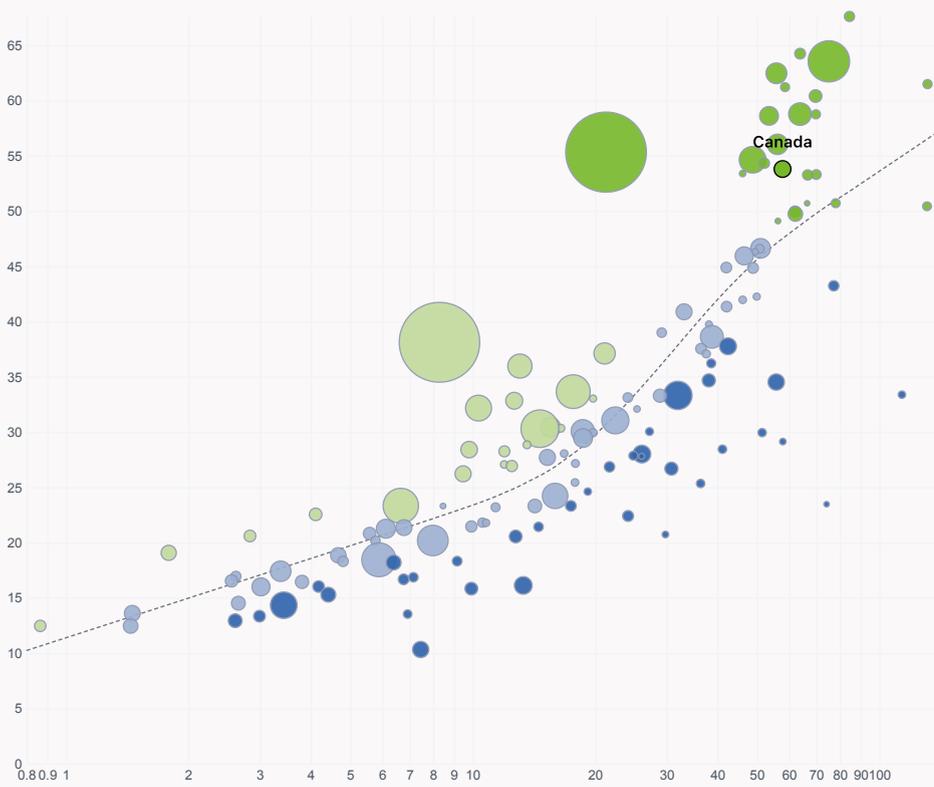
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



> Canada is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development

↑ GII Score



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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→ Overview of Canada's rankings in the seven areas of the GII in 2023

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Canada are those that rank above the GII (shown in blue) and the weakest are those that rank below.



> Highest rankings



Canada ranks highest in Market sophistication (4th), Human capital and research (10th) and Institutions (14th).

> Lowest rankings



Canada ranks lowest in Infrastructure (30th), Creative outputs (22nd) and Knowledge and technology outputs (19th).



The full WIPO Intellectual Property Statistics profile for Canada can be found on [this link](#).

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→ Benchmark of Canada against other country groupings for each of the seven areas of the GII Index

The charts show the relative position of Canada (blue bar) against other country groupings (grey bars), for each of the seven areas of the GII Index.

> High-Income economies

Canada performs above the high-income group average in all the pillars.

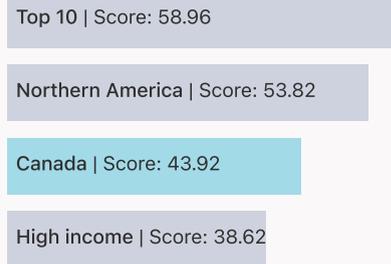


> Northern America

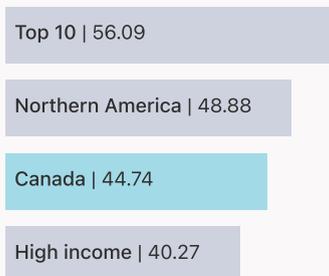
Canada performs below the regional average in Knowledge and technology outputs, Creative outputs, Business sophistication, Market sophistication, Infrastructure.



Knowledge and technology outputs



Creative outputs



Business sophistication



Market sophistication



Human capital and research



Infrastructure



Institutions





→ Innovation strengths and weaknesses in Canada

The table below gives an overview of the indicator strengths and weaknesses of Canada in the GII 2023.



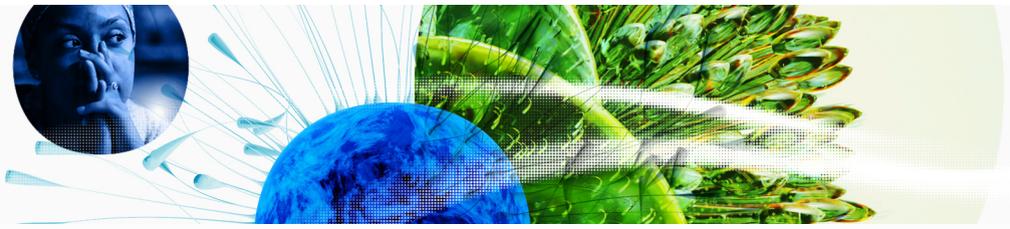
> Canada's main innovation strengths are **Joint venture/strategic alliance deals/bn PPP\$ GDP (rank 1)**, **VC recipients, deals/bn PPP\$ GDP (rank 1)** and **Generic top-level domains (TLDs)/th pop. 15-69 (rank 3)**.

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
1	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	107	3.3.1	GDP/unit of energy use
1	4.2.3	VC recipients, deals/bn PPP\$ GDP	94	6.2.1	Labor productivity growth, %
3	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	91	7.1.4	Industrial designs by origin/bn PPP\$ GDP
4	6.1.5	Citable documents H-index	91	3.3.3	ISO 14001 environment/bn PPP\$ GDP
5	6.2.3	Software spending, % GDP	77	6.3.5	ISO 9001 quality/bn PPP\$ GDP
6	3.2.1	Electricity output, GWh/mn pop.	73	3.1.1	ICT access
7	2.3.4	QS university ranking, top 3	71	7.1.2	Trademarks by origin/bn PPP\$ GDP
7	5.2.1	University-industry R&D collaboration	70	3.2.3	Gross capital formation, % GDP
8	2.2.3	Tertiary inbound mobility, %	63	5.3.3	ICT services imports, % total trade
10	1.1.2	Government effectiveness	58	5.3.4	FDI net inflows, % GDP

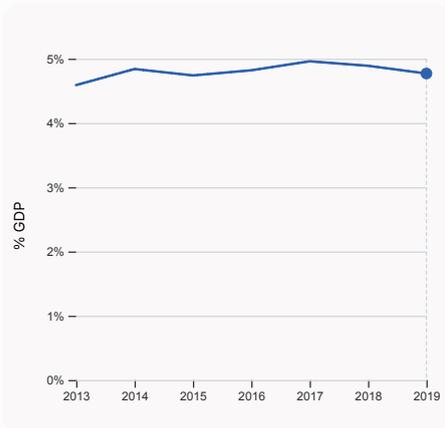
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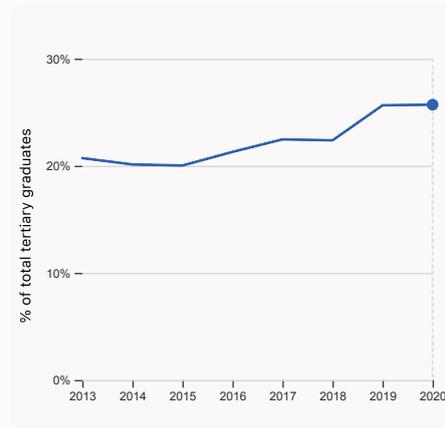
→ Canada's innovation system

As far as practicable, the plots below present unscaled indicator data.

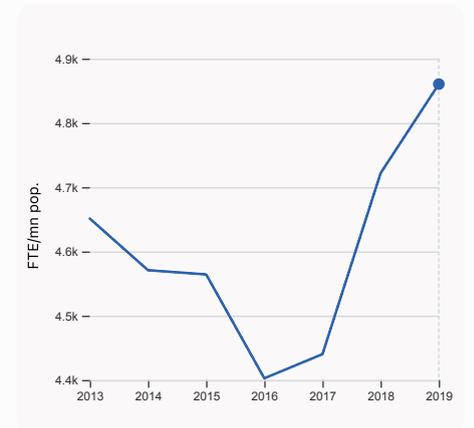
> Innovation inputs in Canada



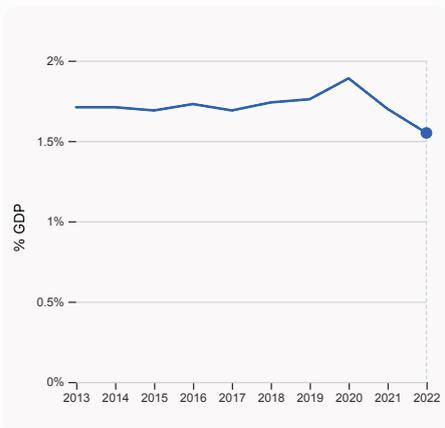
2.1.1 Expenditure on education, % GDP was equal to 4.77% GDP in 2019, down by 0.12 percentage points from the year prior – and equivalent to an indicator rank of 44.



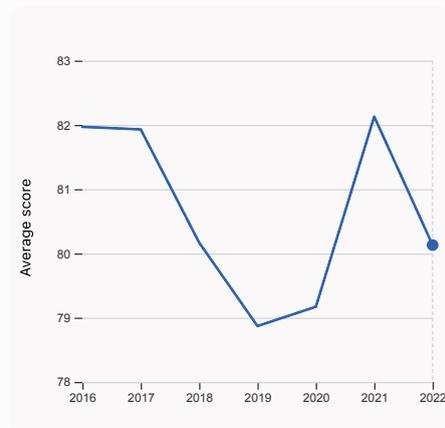
2.2.2 Graduates in science and engineering, % was equal to 25.71% of total tertiary graduates in 2020, up by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 42.



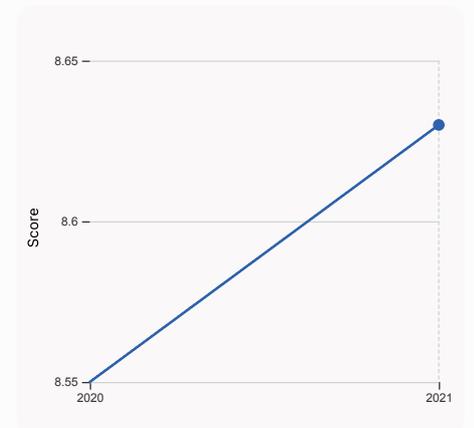
2.3.1 Researchers, FTE/mn pop. was equal to 4,860.48 FTE/mn pop. in 2019, up by 2.93% from the year prior – and equivalent to an indicator rank of 19.



2.3.2 Gross expenditure on R&D, % GDP was equal to 1.55% GDP in 2022, down by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 25.

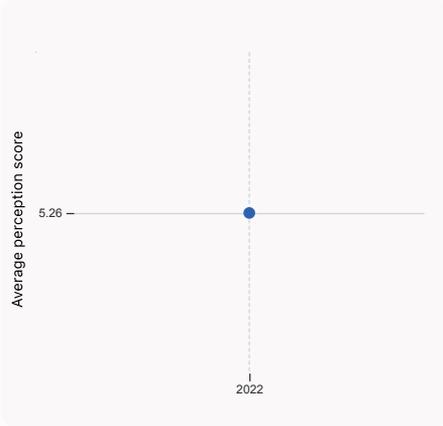


2.3.4 QS university ranking, top 3 was equal to an average score of 80.13 for the top 3 universities in 2022, down by 2.44% from the year prior – and equivalent to an indicator rank of 7.

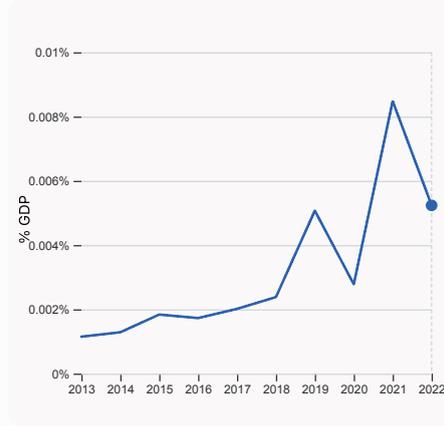


3.1.1 ICT access was equal to a score of 8.63 in 2021, up by 0.94% from the year prior – and equivalent to an indicator rank of 73.

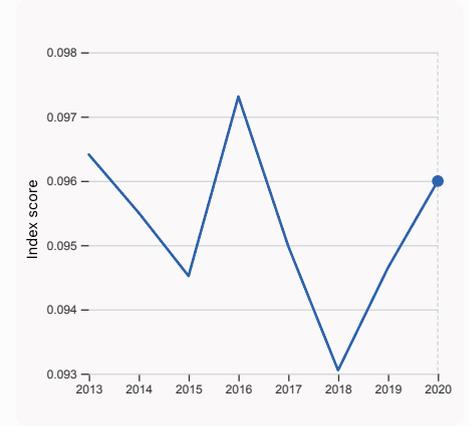
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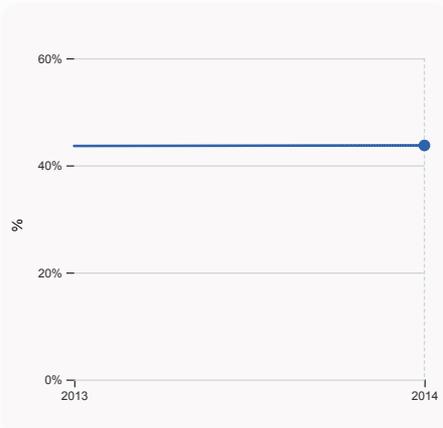
4.1.1 Finance for startups and scaleups was equal to an average perception score of 5.26 in 2022, equivalent to an indicator rank of 26.



4.2.4 VC received, value, % GDP was equal to 0.00524% GDP in 2022, down by 0.0032 percentage points from the year prior – and equivalent to an indicator rank of 10.



4.3.2 Domestic industry diversification was equal to an index score of 0.096 in 2020, up by 1.43% from the year prior – and equivalent to an indicator rank of 11.

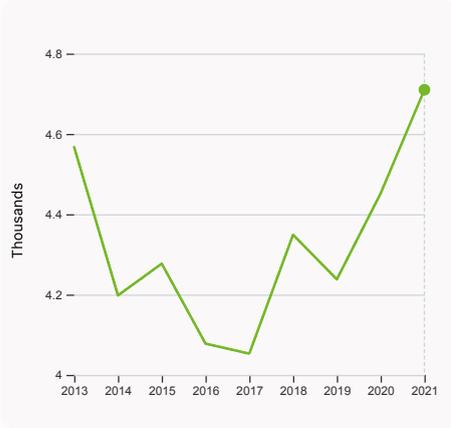


5.1.1 Knowledge-intensive employment, % was equal to 43.72% in 2014, up by 0.1 percentage points from the year prior – and equivalent to an indicator rank of 25.

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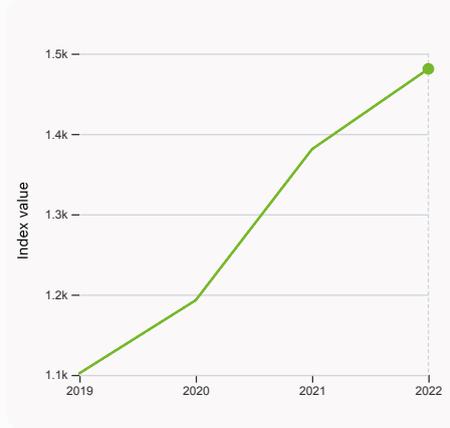


> Innovation outputs in Canada



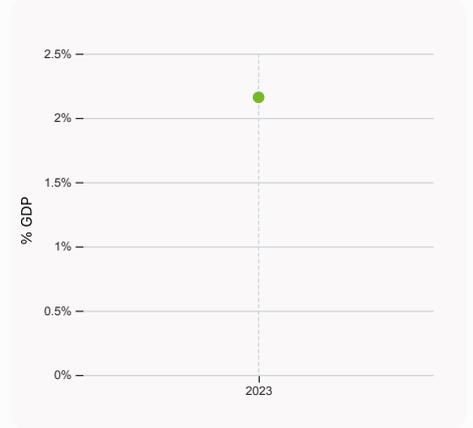
6.1.1 Patents by origin

was equal to 4.71 Thousands in 2021, up by 5.8% from the year prior – and equivalent to an indicator rank of 32.



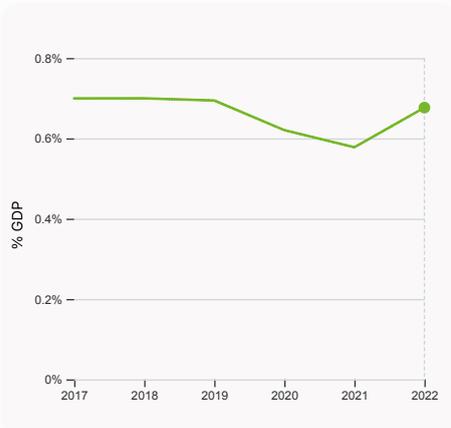
6.1.5 Citable documents H-index

was equal to an index value of 1,481 in 2022, up by 7.24% from the year prior – and equivalent to an indicator rank of 4.



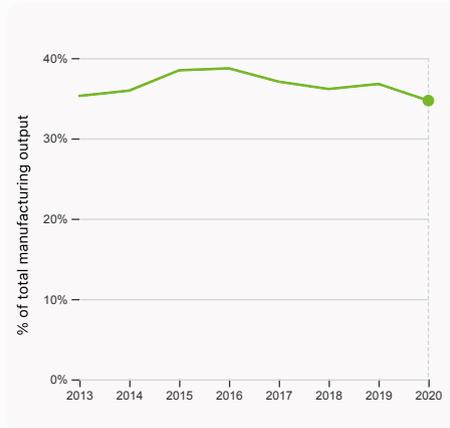
6.2.2 Unicorn valuation, % GDP

was equal to 2.16 % GDP in 2023 – and equivalent to an indicator rank of 17.



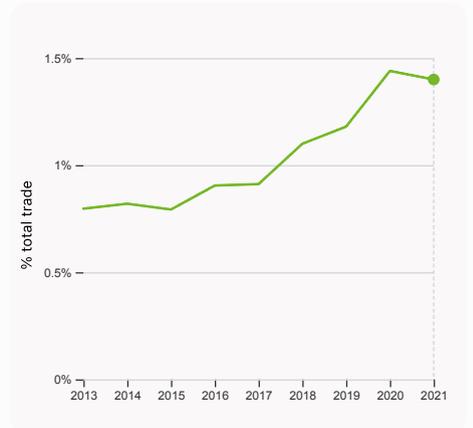
6.2.3 Software spending, % GDP

was equal to 0.677% GDP in 2022, up by 0.099 percentage points from the year prior – and equivalent to an indicator rank of 5.



6.2.4 High-tech manufacturing, %

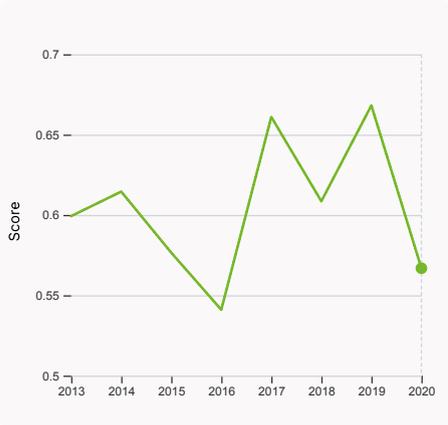
was equal to 34.71% of total manufacturing output in 2020, down by 2.07 percentage points from the year prior – and equivalent to an indicator rank of 34.



6.3.1 Intellectual property receipts, % total trade

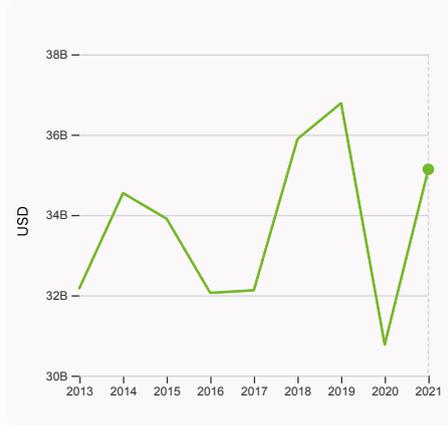
was equal to 1.4% total trade in 2021, down by 0.04 percentage points from the year prior – and equivalent to an indicator rank of 18.

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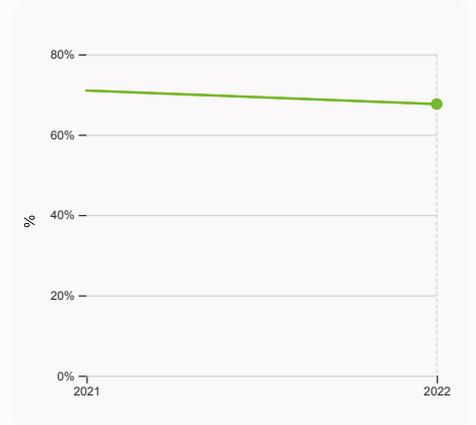
6.3.2 Production and export complexity

was equal to a score of 0.567 in 2020, down by 15.16% from the year prior – and equivalent to an indicator rank of 43.



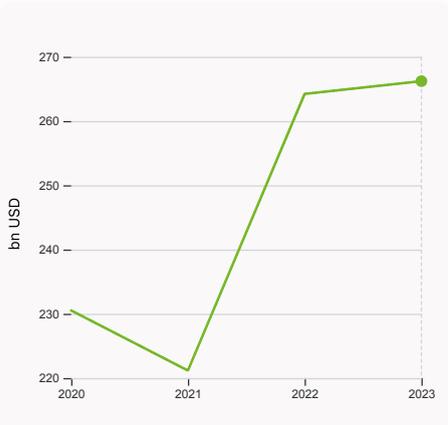
6.3.3 High-tech exports

was equal to 35,136,175,750 USD in 2021, up by 14.17% from the year prior – and equivalent to an indicator rank of 33.



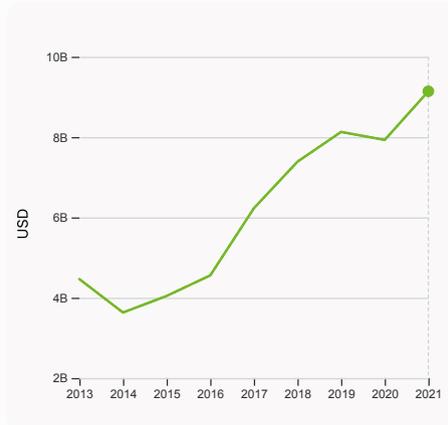
7.1.1 Intangible asset intensity, top 15, %

was equal to 67.61% in 2022, down by 3.37 percentage points from the year prior – and equivalent to an indicator rank of 23.



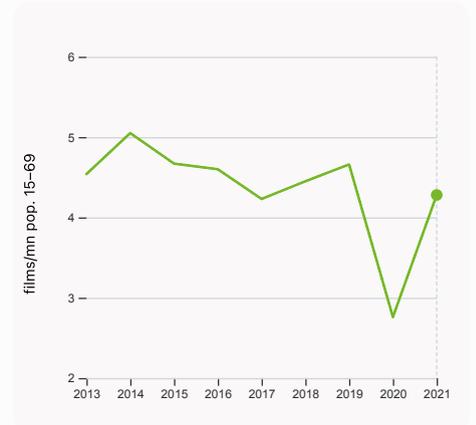
7.1.3 Global brand value, top 5,000

was equal to 266.208 bn USD in 2023, up by 0.75% from the year prior – and equivalent to an indicator rank of 15.



7.2.1 Cultural and creative services exports

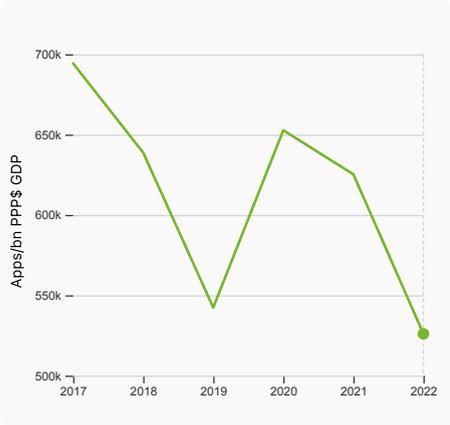
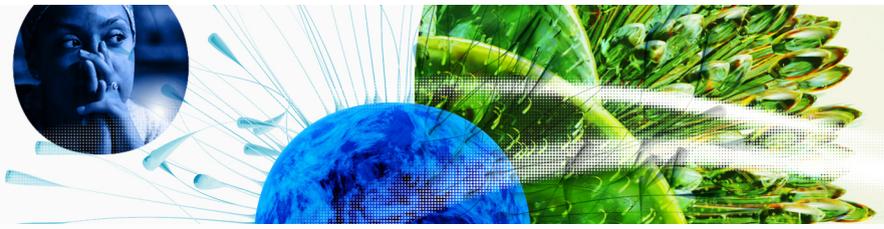
was equal to 9,141,057,000 USD in 2021, up by 15.27% from the year prior – and equivalent to an indicator rank of 20.



7.2.2 National feature films/mn pop. 15-69

was equal to 4.28 films/mn pop. 15-69 in 2021, up by 55.072% from the year prior – and equivalent to an indicator rank of 30.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 526,031.1 Apps/bn PPP\$ GDP in 2022, down by 15.88% from the year prior – and equivalent to an indicator rank of 41.

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→ Canada's innovation top performers

> 2.3.3 Global corporate R&D investors from Canada

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
261	SHOPIFY	Software & Computer Services	736	57	18
289	CONSTELLATION SOFTWARE	Software & Computer Services	651	28	14
329	MAGNA	Automobiles & Parts	560	-24	2
436	BAUSCH HEALTH COMPANIES	Pharmaceuticals & Biotechnology	411	3	6

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard>).

Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

> 2.3.4 QS university ranking of Canada's top universities

Rank	University	Score
31	MCGILL UNIVERSITY	81.90
34	UNIVERSITY OF TORONTO	81.50
47	UNIVERSITY OF BRITISH COLUMBIA	77.00

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

> 6.2.2 Top Unicorn Companies in Canada

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	DAPPER LABS	Internet software & services	Vancouver	8
2	1PASSWORD	Cybersecurity	Toronto	7
3	HOPPER	Travel	Montreal	5

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>

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> 7.1.1 Top 15 intangible-asset intensive companies in Canada

Rank	Firm	Intensity, %
1	BROOKFIELD CORP	88.73
2	ROYAL BANK OF CANADA	41.60
3	ENBRIDGE INC	46.20

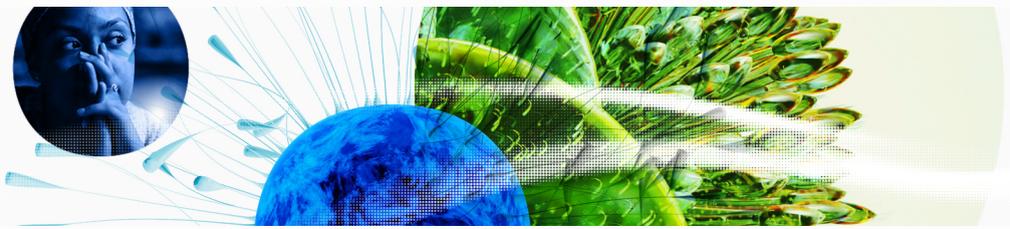
Source: Brand Finance (<https://brandirectory.com/reports/gifit-2022>).
Note: Brand Finance only provides within economy ranks.

> 7.1.3 Top 5,000 companies in Canada with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	TD	Banking	20,404.1
2	RBC	Banking	14,741.6
3	SCOTIABANK	Banking	11,949.3

Source: Brand Finance (<https://brandirectory.com>).
Note: Rank corresponds to within economy ranks.

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GII 2023 rank

15

Canada

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
20	9	High	NAC	38.5	2,240.4	57,827.4
Score / Value Rank				Score / Value Rank		
Institutions 78.0 14				Business sophistication 56.0 18		
1.1 Institutional environment 78.4 13				5.1 Knowledge workers 50.7 28		
1.1.1 Operational stability for businesses* 75.7 15				5.1.1 Knowledge-intensive employment, % 43.7 25		
1.1.2 Government effectiveness* 81.0 10				5.1.2 Firms offering formal training, % n/a n/a		
1.2 Regulatory environment 90.9 9				5.1.3 GERD performed by business, % GDP 0.9 28		
1.2.1 Regulatory quality* 84.1 12				5.1.4 GERD financed by business, % 44.1 37		
1.2.2 Rule of law* 87.4 13				5.1.5 Females employed w/advanced degrees, % 20.0 35		
1.2.3 Cost of redundancy dismissal 10.0 29				5.2 Innovation linkages 65.7 6		
1.3 Business environment 64.8 28				5.2.1 University-industry R&D collaboration+ 85.8 7		
1.3.1 Policies for doing business* 68.8 28				5.2.2 State of cluster development+ 77.5 15		
1.3.2 Entrepreneurship policies and culture* 60.8 23				5.2.3 GERD financed by abroad, % GDP 0.2 28		
Human capital and research 58.1 10				5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.3 1		
2.1 Education 68.7 10				5.2.5 Patent families/bn PPP\$ GDP 2.0 19		
2.1.1 Expenditure on education, % GDP 4.8 44				5.3 Knowledge absorption 51.6 16		
2.1.2 Government funding/pupil, secondary, % GDP/cap n/a n/a				5.3.1 Intellectual property payments, % total trade 2.6 10		
2.1.3 School life expectancy, years 16.6 22				5.3.2 High-tech imports, % total trade 10.3 32		
2.1.4 PISA scales in reading, maths and science 516.7 7				5.3.3 ICT services imports, % total trade 1.4 63		
2.1.5 Pupil-teacher ratio, secondary 9.6 25				5.3.4 FDI net inflows, % GDP 2.6 58		
2.2 Tertiary education 49.4 10				5.3.5 Research talent, % in businesses 60.5 14		
2.2.1 Tertiary enrolment, % gross 79.5 26				Knowledge and technology outputs 43.9 19		
2.2.2 Graduates in science and engineering, % 25.7 42				6.1 Knowledge creation 49.0 16		
2.2.3 Tertiary inbound mobility, % 18.2 8				6.1.1 Patents by origin/bn PPP\$ GDP 2.3 32		
2.3 Research and development (R&D) 56.0 18				6.1.2 PCT patents by origin/bn PPP\$ GDP 1.2 24		
2.3.1 Researchers, FTE/mn pop. 4,860.5 19				6.1.3 Utility models by origin/bn PPP\$ GDP n/a n/a		
2.3.2 Gross expenditure on R&D, % GDP 1.6 25				6.1.4 Scientific and technical articles/bn PPP\$ GDP n/a n/a		
2.3.3 Global corporate R&D investors, top 3, mn US\$ 64.9 20				6.1.5 Citable documents H-index 80.0 4		
2.3.4 QS university ranking, top 3* 81.2 7				6.2 Knowledge impact 47.8 21		
Infrastructure 56.0 30				6.2.1 Labor productivity growth, % 0.2 94		
3.1 Information and communication technologies (ICTs) 82.3 31				6.2.2 Unicorn valuation, % GDP 2.2 17		
3.1.1 ICT access* 79.5 73				6.2.3 Software spending, % GDP 0.7 5		
3.1.2 ICT use* 83.6 48				6.2.4 High-tech manufacturing, % 34.7 34		
3.1.3 Government's online service* 83.5 27				6.3 Knowledge diffusion 34.9 41		
3.1.4 E-participation* 82.6 14				6.3.1 Intellectual property receipts, % total trade 1.3 18		
3.2 General infrastructure 63.6 5				6.3.2 Production and export complexity 64.4 43		
3.2.1 Electricity output, GWh/mn pop. 16,810.1 6				6.3.3 High-tech exports, % total trade 5.8 33		
3.2.2 Logistics performance* 86.4 7				6.3.4 ICT services exports, % total trade 2.1 55		
3.2.3 Gross capital formation, % GDP 23.3 70				6.3.5 ISO 9001 quality/bn PPP\$ GDP 2.7 77		
3.3 Ecological sustainability 22.2 73				Creative outputs 44.7 22		
3.3.1 GDP/unit of energy use 5.9 107				7.1 Intangible assets 39.6 43		
3.3.2 Environmental performance* 52.7 42				7.1.1 Intangible asset intensity, top 15, % 67.6 23		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 0.4 91				7.1.2 Trademarks by origin/bn PPP\$ GDP 32.8 71		
Market sophistication 68.1 4				7.1.3 Global brand value, top 5,000 11.4 15		
4.1 Credit 64.8 [10]				7.1.4 Industrial designs by origin/bn PPP\$ GDP 0.4 91		
4.1.1 Finance for startups and scaleups+ 64.8 26				7.2 Creative goods and services 32.3 23		
4.1.2 Domestic credit to private sector, % GDP n/a n/a				7.2.1 Cultural and creative services exports, % total trade 1.5 20		
4.1.3 Loans from microfinance institutions, % GDP n/a n/a				7.2.2 National feature films/mn pop. 15-69 4.3 30		
4.2 Investment 60.7 9				7.2.3 Entertainment and media market/th pop. 15-69 62.2 9		
4.2.1 Market capitalization, % GDP 137.0 8				7.2.4 Creative goods exports, % total trade 0.8 53		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.5 12				7.3 Online creativity 67.4 10		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.4 1				7.3.1 Generic top-level domains (TLDs)/th pop. 15-69 99.0 3		
4.2.4 VC received, value, % GDP 0.0 10				7.3.2 Country-code TLDs/th pop. 15-69 35.8 19		
4.3 Trade, diversification, and market scale 78.8 13				7.3.3 GitHub commits/mn pop. 15-69 61.7 12		
4.3.1 Applied tariff rate, weighted avg., % 1.5 47				7.3.4 Mobile app creation/bn PPP\$ GDP 73.0 41		
4.3.2 Domestic industry diversification 97.8 11						
4.3.3 Domestic market scale, bn PPP\$ 2,240.4 15						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; + a survey question, ● indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at <https://www.wipo.int/gii-ranking>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



→ Data availability

The following tables list indicators that are either missing or outdated for Canada.



> Canada has missing data for five indicators and outdated data for four indicators.

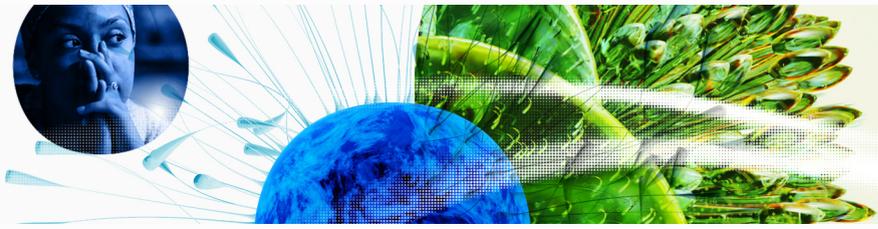
> Missing data for Canada

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2019	UNESCO Institute for Statistics
4.1.2	Domestic credit to private sector, % GDP	n/a	2020	International Monetary Fund; World Bank and OECD GDP estimates.
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund

> Outdated data for Canada

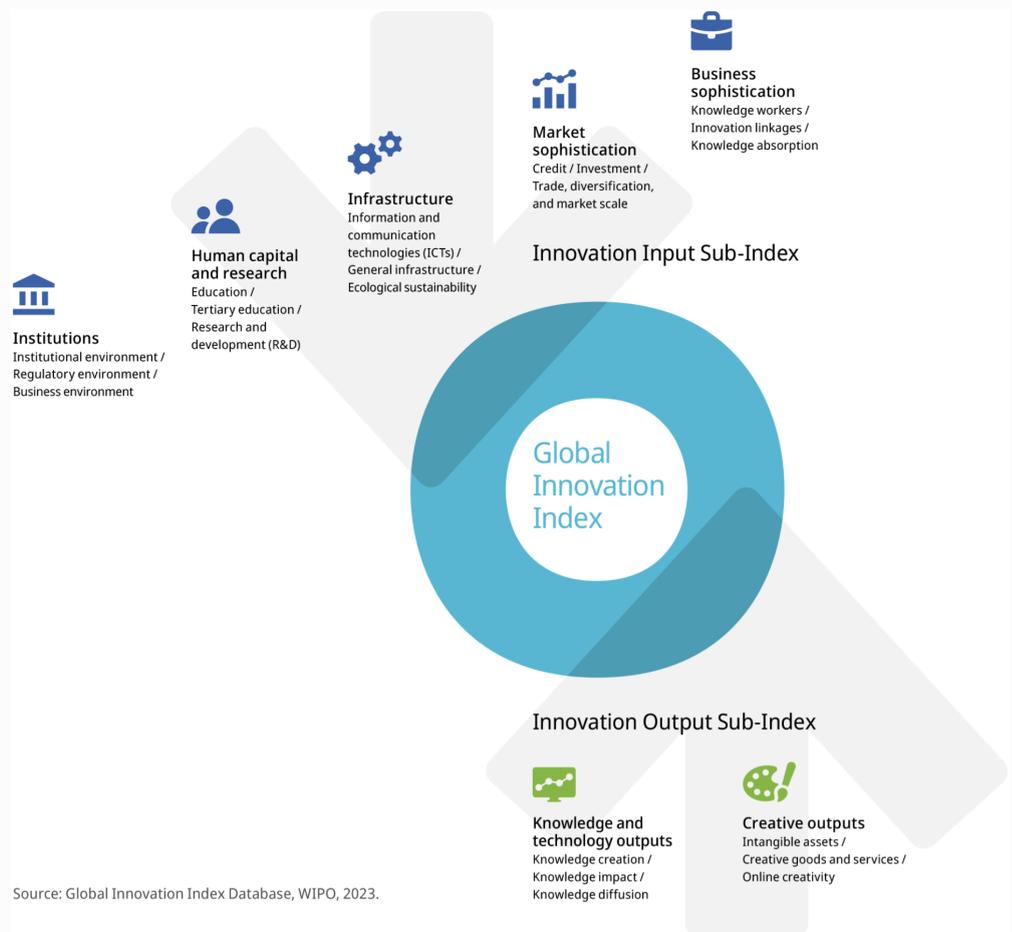
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2019	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.1	Knowledge-intensive employment, %	2014	2022	International Labour Organization
5.3.5	Research talent, % in businesses	2019	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Global Innovation Index 2023



→ About the Global Innovation Index

- The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.
- Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.