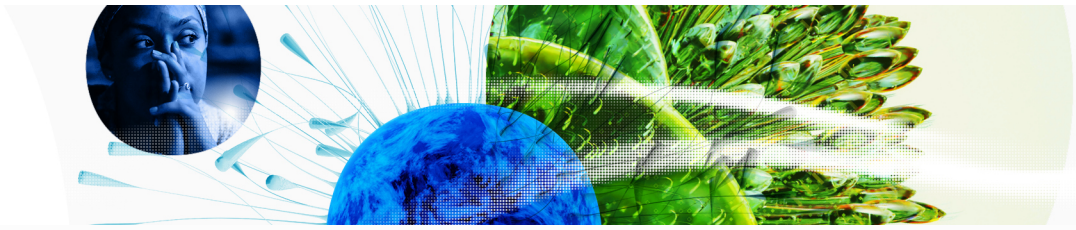
Global Innovation Index 2023



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.

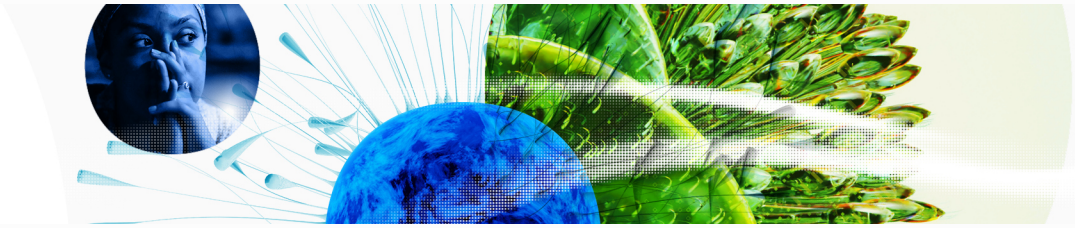
	GII Position	Innovation Inputs	Innovation Outputs
2020	17th	9th	22nd
2021	16th	8th	23rd
2022	15th	9th	23rd
2023	15th	9th	20th

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.

Global Innovation Index 2023

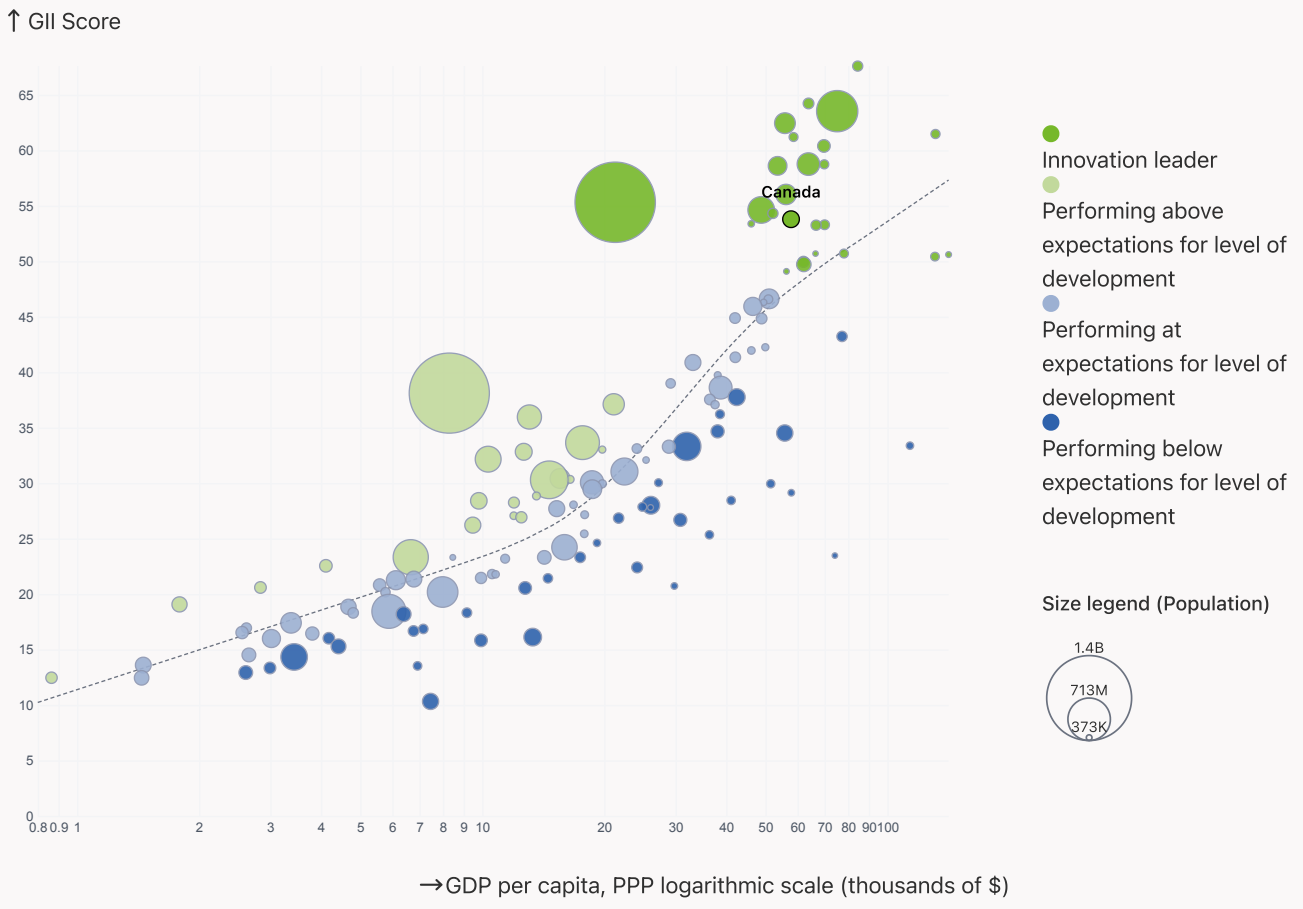


→ Expected vs. observed innovation performance

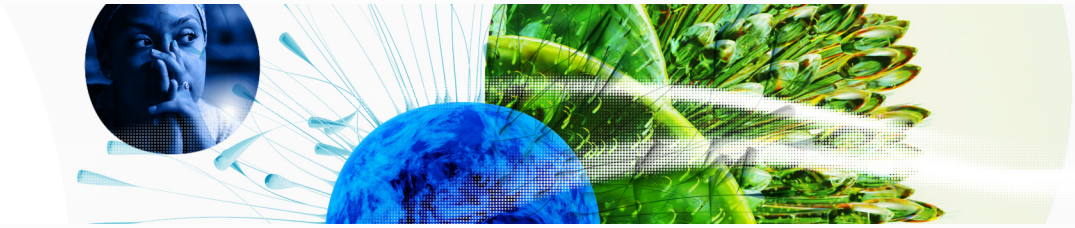
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



Global Innovation Index 2023

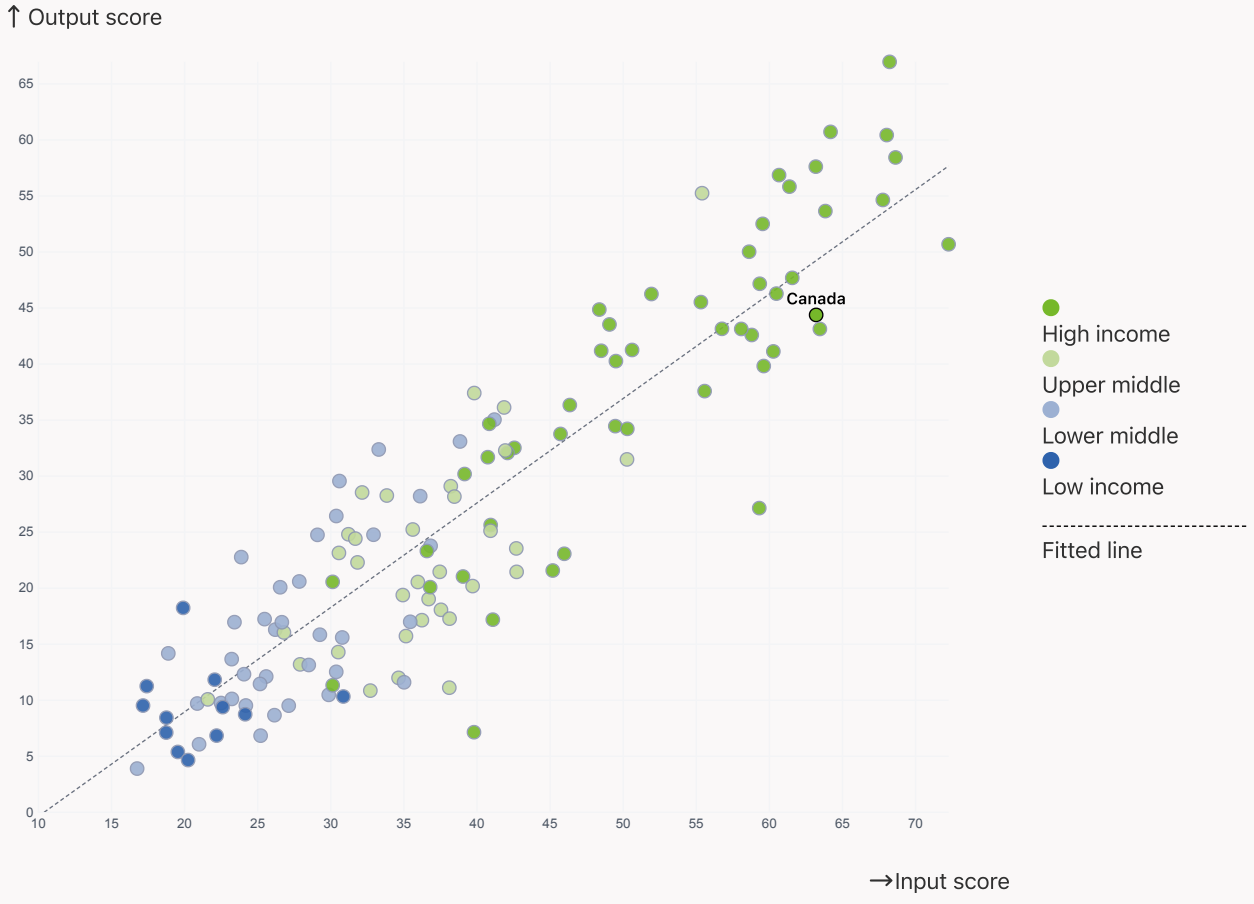


→ Effectively translating innovation investments into innovation outputs

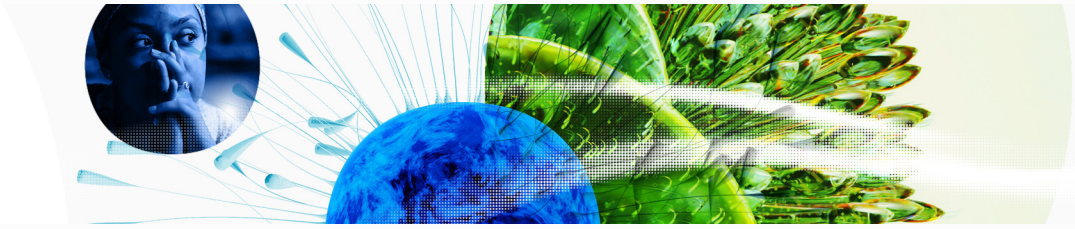
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

> Canada produces less innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

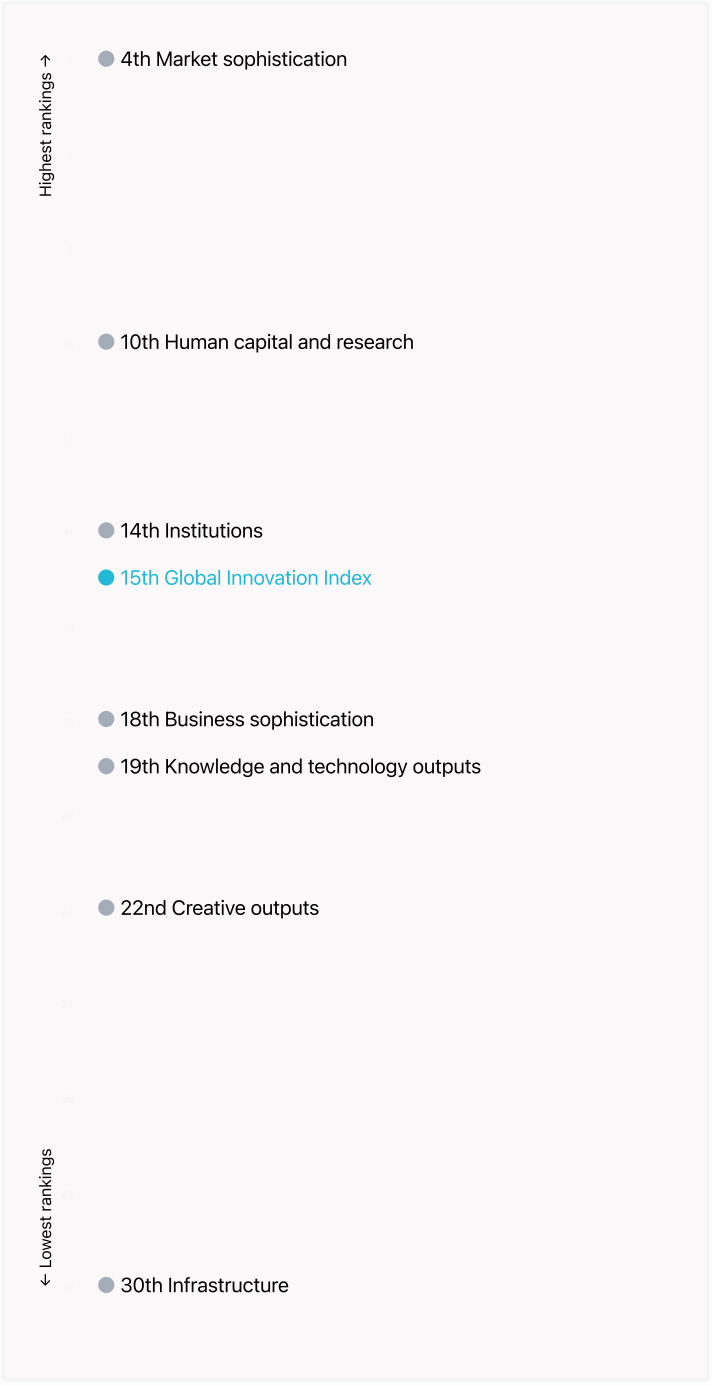


Global Innovation Index 2023



→ 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

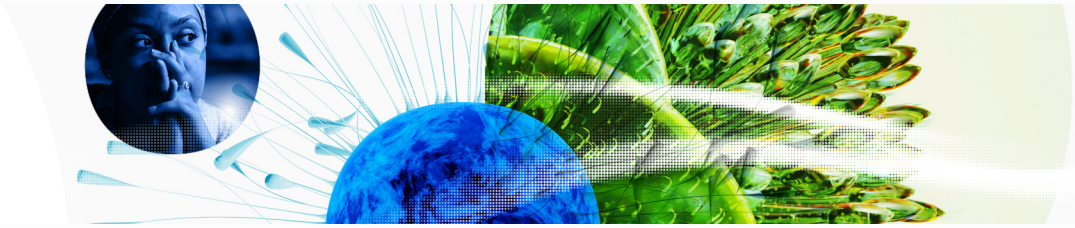
Canada ranks highest in Market sophistication (4th), Human capital and research (10th) and Institutions (14th).

> 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.

Global Innovation Index 2023



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

The charts shows 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

- Top 10 | Score: 58.96
- Northern America | Score: 53.82
- Canada | Score: 43.92
- High income | Score: 38.62

Creative outputs

- Top 10 | 56.09
- Northern America | 48.88
- Canada | 44.74
- High income | 40.27

Business sophistication

- Top 10 | 64.39
- Northern America | 62.97
- Canada | 56.02
- High income | 46.38

Market sophistication

- Northern America | 75.48
- Canada | 68.09
- Top 10 | 61.93
- High income | 46.42

Human capital and research

- Top 10 | 60.28
- Canada | 58.06
- Northern America | 57.30
- High income | 46.30

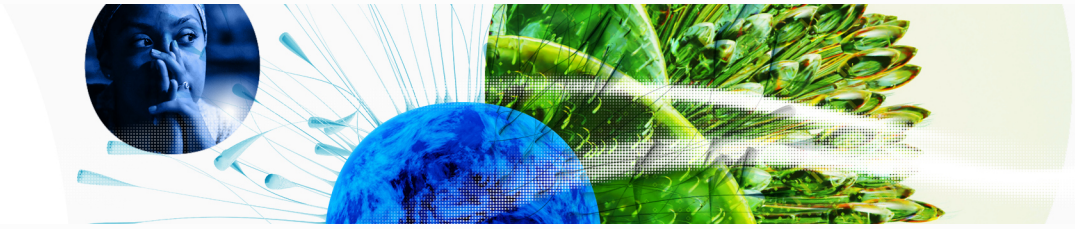
Infrastructure

- Top 10 | 62.83
- Northern America | 56.37
- Canada | 56.03
- High income | 55.85

Institutions

- Top 10 | 79.85
- Canada | 78.02
- Northern America | 77.69
- High income | 68.16

Global Innovation Index 2023



→ 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).

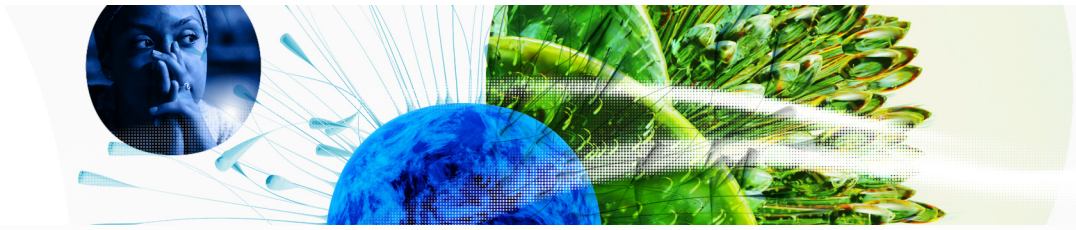
Strengths

Rank	Code	Indicator name
1	5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP
1	4.2.3	VC recipients, deals/bn PPP$ GDP
3	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69
4	6.1.5	Citable documents H-index
5	6.2.3	Software spending, % GDP
6	3.2.1	Electricity output, GWh/mn pop.
7	2.3.4	QS university ranking, top 3
7	5.2.1	University-industry R&D collaboration
8	2.2.3	Tertiary inbound mobility, %
10	1.1.2	Government effectiveness

Weaknesses

Rank	Code	Indicator name
107	3.3.1	GDP/unit of energy use
94	6.2.1	Labor productivity growth, %
91	7.1.4	Industrial designs by origin/bn PPP$ GDP
91	3.3.3	ISO 14001 environment/bn PPP$ GDP
77	6.3.5	ISO 9001 quality/bn PPP$ GDP
73	3.1.1	ICT access
71	7.1.2	Trademarks by origin/bn PPP$ GDP
70	3.2.3	Gross capital formation, % GDP
63	5.3.3	ICT services imports, % total trade
58	5.3.4	FDI net inflows, % GDP

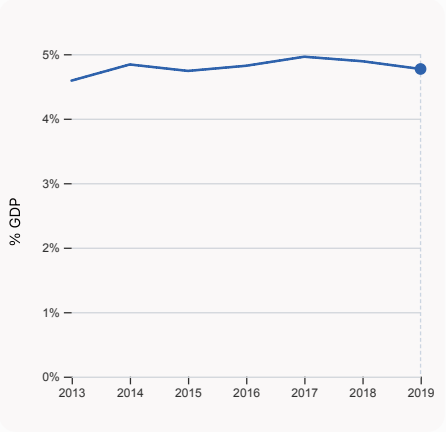
Global Innovation Index 2023



→ Canada's innovation system

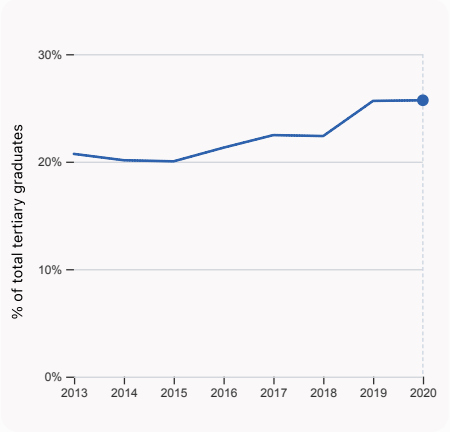
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Canada



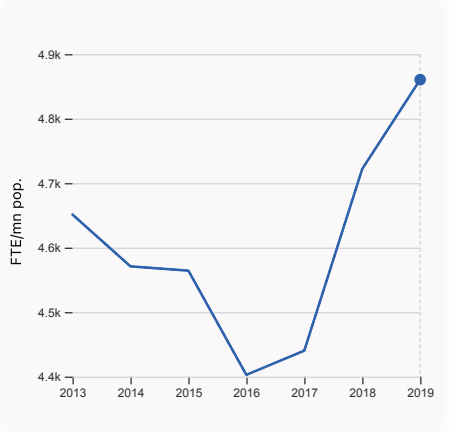
2.1.1 Expenditure on education, % GDP

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.



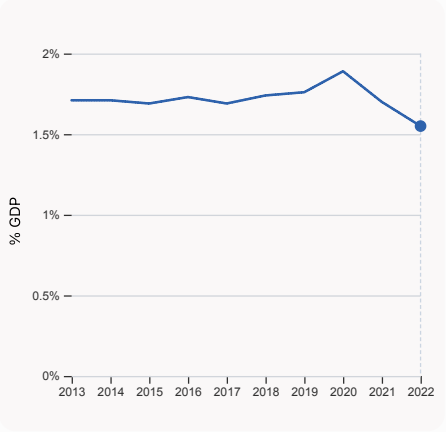
2.2.2 Graduates in science and engineering, %

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.



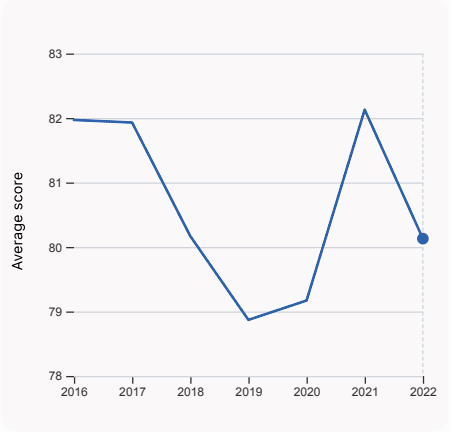
2.3.1 Researchers, FTE/mn pop.

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.



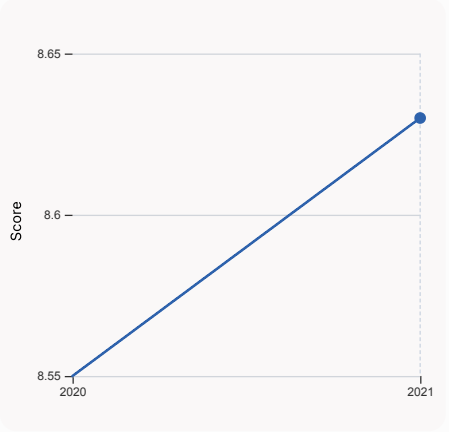
2.3.2 Gross expenditure on R&D, % GDP

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

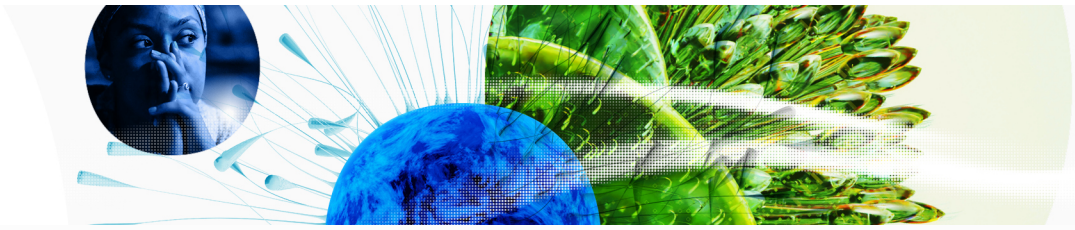
was equal to an average score of 80.13 for the top 3 universities in 2022, down by 2.44% from the year prior – and equivalent to an indicator rank of 7.

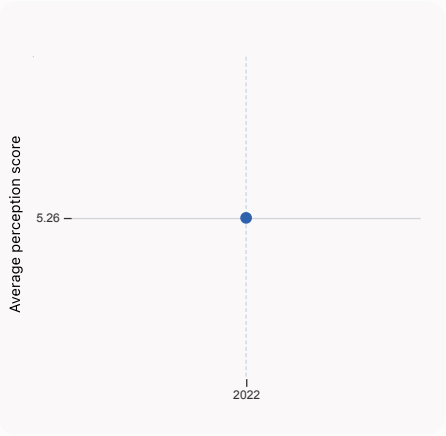


3.1.1 ICT access

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.

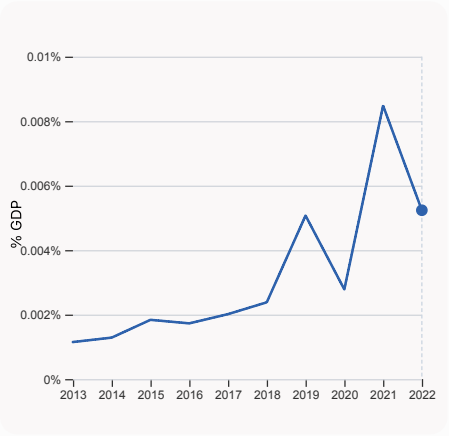
Global Innovation Index 2023





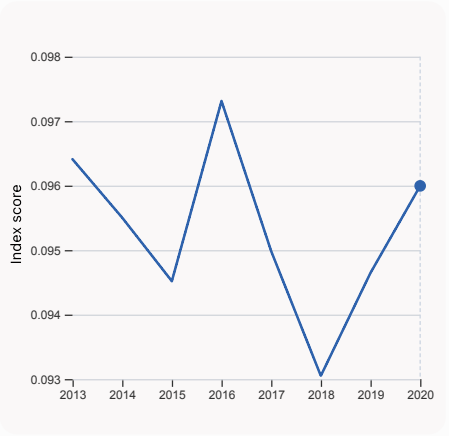
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 5.26 in 2022, equivalent to an indicator rank of 26.



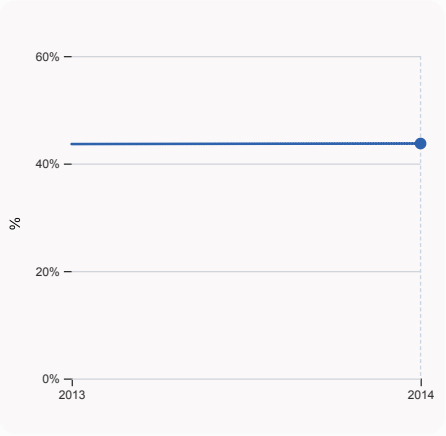
4.2.4 VC received, value, % GDP

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

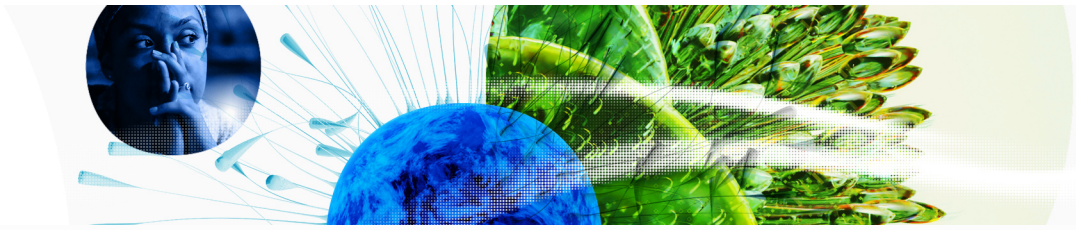
was equal to an index score of 0.096 in 2020, up by 1.43% from the year prior – and equivalent to an indicator rank of 11.



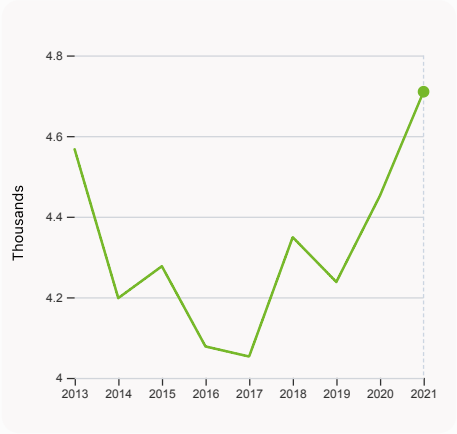
5.1.1 Knowledge-intensive employment, %

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.

Global Innovation Index 2023

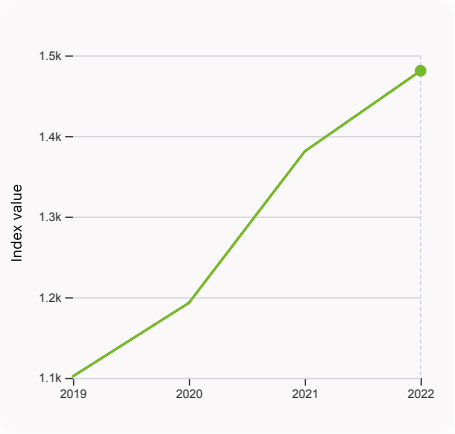


> Innovation outputs in Canada



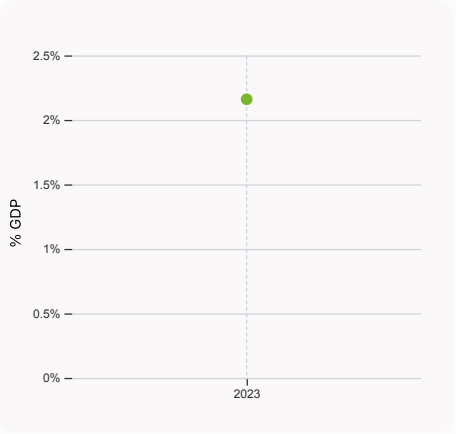
6.1.1 Patents by origin

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



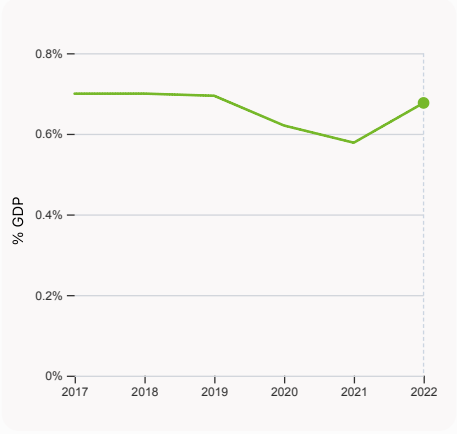
6.1.5 Citable documents H-index

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.



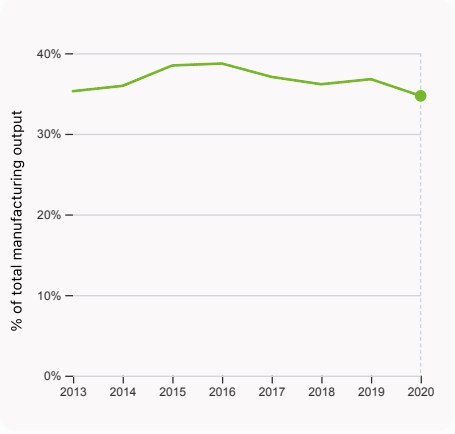
6.2.2 Unicorn valuation, % GDP

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



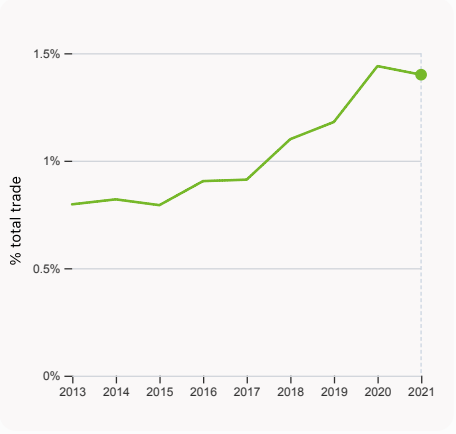
6.2.3 Software spending, % GDP

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, %

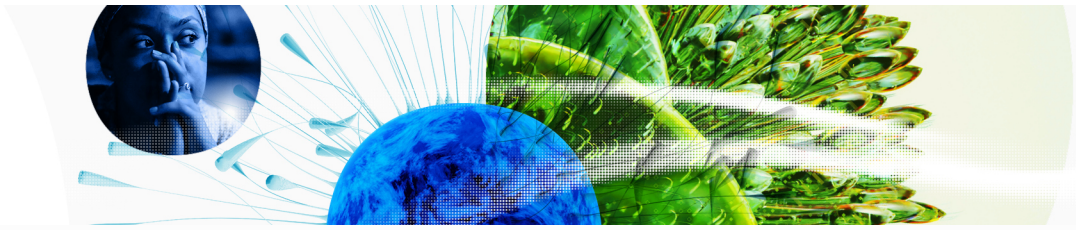
was equal to 34.71% of total manufacturing output in 2020, down by 2.07 percentage points from the year prior – and equivalent to an indicator rank of 34.

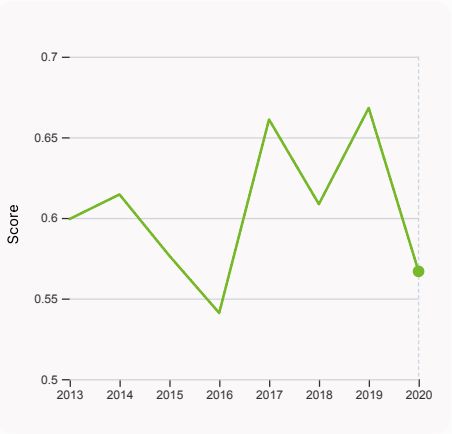


6.3.1 Intellectual property receipts, % total trade

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.

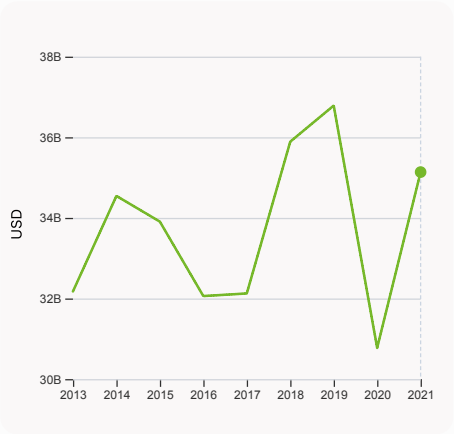
Global Innovation Index 2023





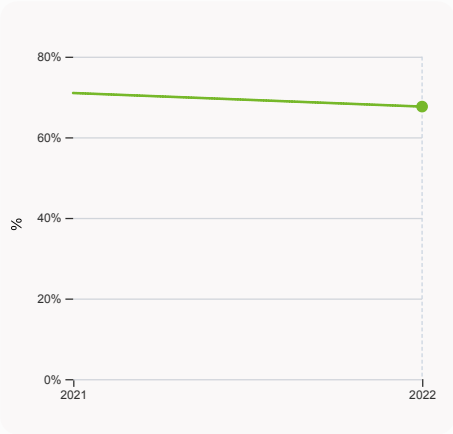
6.3.2 Production and export complexity

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.



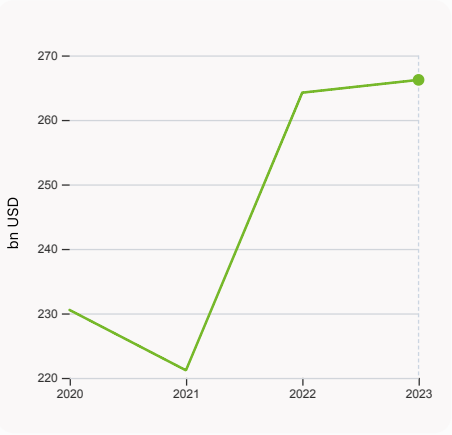
6.3.3 High-tech exports

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.



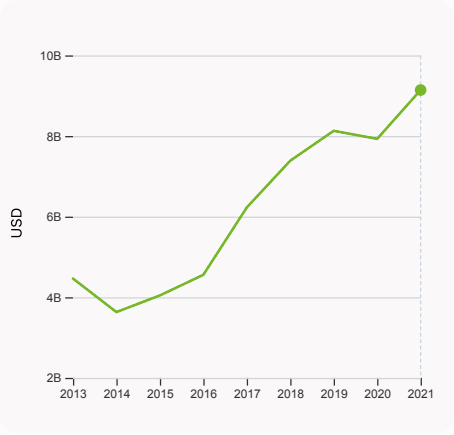
7.1.1 Intangible asset intensity, top 15, %

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.



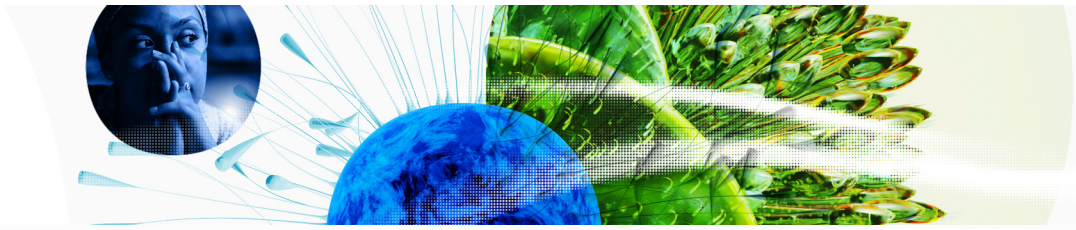
7.2.1 Cultural and creative services exports

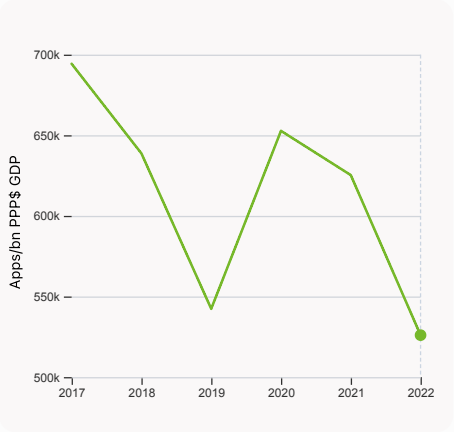
was equal to 9,141,057,000 USD in 2021, up by 15.27% from the year prior – and equivalent to an indicator rank of 20.

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.

Global Innovation Index 2023

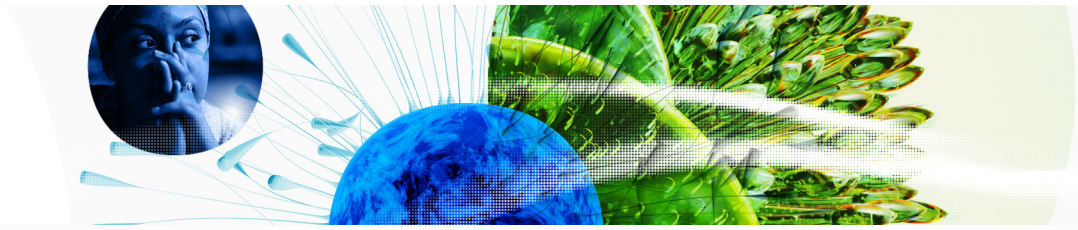




7.3.4 Mobile app creation/bn PPP$ GDP

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.

Global Innovation Index 2023



→ 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

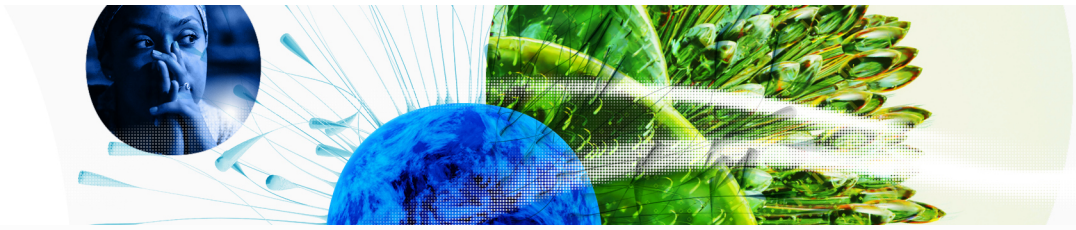
Rank	University	Score
31	MCGILL UNIVERSITY	81.90
34	UNIVERSITY OF TORONTO	81.50
47	UNIVERSITY OF BRITISH COLUMBIA	77.00

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



> 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/gift-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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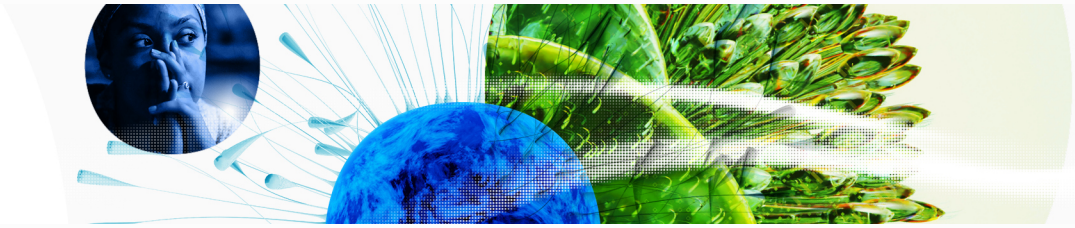

Canada

GII 2023 rank **15**

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	
Institutions	**78.0**	**14**	
1.1 Institutional environment	**78.4**	**13**	
1.1.1 Operational stability for businesses*	75.7	15	
1.1.2 Government effectiveness*	81.0	10	●
1.2 Regulatory environment	**90.9**	**9**	
1.2.1 Regulatory quality*	84.1	12	
1.2.2 Rule of law*	87.4	13	
1.2.3 Cost of redundancy dismissal	10.0	29	
1.3 Business environment	**64.8**	**28**	
1.3.1 Policies for doing business†	68.8	28	
1.3.2 Entrepreneurship policies and culture†	60.8	23	
Human capital and research	**58.1**	**10**	
2.1 Education	**68.7**	**10**	
2.1.1 Expenditure on education, % GDP	4.8	44	
2.1.2 Government funding/pupil, secondary, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	16.6	22	
2.1.4 PISA scales in reading, maths and science	516.7	7	
2.1.5 Pupil-teacher ratio, secondary	9.6	25	
2.2 Tertiary education	**49.4**	**10**	
2.2.1 Tertiary enrolment, % gross	79.5	26	
2.2.2 Graduates in science and engineering, %	25.7	42	
2.2.3 Tertiary inbound mobility, %	18.2	8	●
2.3 Research and development (R&D)	**56.0**	**18**	
2.3.1 Researchers, FTE/mn pop.	4,860.5	19	
2.3.2 Gross expenditure on R&D, % GDP	1.6	25	
2.3.3 Global corporate R&D investors, top 3, mn US$	64.9	20	
2.3.4 QS university ranking, top 3*	81.2	7	●
Infrastructure	**56.0**	**30**	◇
3.1 Information and communication technologies (ICTs)	**82.3**	**31**	
3.1.1 ICT access*	79.5	73	○ ◇
3.1.2 ICT use*	83.6	48	◇
3.1.3 Government's online service*	83.5	27	
3.1.4 E-participation*	82.6	14	
3.2 General infrastructure	**63.6**	**5**	
3.2.1 Electricity output, GWh/mn pop.	16,810.1	6	●
3.2.2 Logistics performance*	86.4	7	
3.2.3 Gross capital formation, % GDP	23.3	70	○
3.3 Ecological sustainability	**22.2**	**73**	◇
3.3.1 GDP/unit of energy use	5.9	107	○ ◇
3.3.2 Environmental performance*	52.7	42	
3.3.3 ISO 14001 environment/bn PPP$ GDP	0.4	91	○ ◇
Market sophistication	**68.1**	**4**	
4.1 Credit	**64.8**	**10**	
4.1.1 Finance for startups and scaleups†	64.8	26	
4.1.2 Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	
4.2 Investment	**60.7**	**9**	
4.2.1 Market capitalization, % GDP	137.0	8	
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.5	12	
4.2.3 VC recipients, deals/bn PPP$ GDP	0.4	1	●
4.2.4 VC received, value, % GDP	0.0	10	
4.3 Trade, diversification, and market scale	**78.8**	**13**	
4.3.1 Applied tariff rate, weighted avg., %	1.5	47	
4.3.2 Domestic industry diversification	97.8	11	
4.3.3 Domestic market scale, bn PPP$	2,240.4	15	

	Score / Value	Rank	
Business sophistication	**56.0**	**18**	
5.1 Knowledge workers	**50.7**	**28**	◇
5.1.1 Knowledge-intensive employment, %	43.7	25	
5.1.2 Firms offering formal training, %	n/a	n/a	
5.1.3 GERD performed by business, % GDP	0.9	28	
5.1.4 GERD financed by business, %	44.1	37	◇
5.1.5 Females employed w/advanced degrees, %	20.0	35	
5.2 Innovation linkages	**65.7**	**6**	
5.2.1 University-industry R&D collaboration†	85.8	7	●
5.2.2 State of cluster development†	77.5	15	
5.2.3 GERD financed by abroad, % GDP	0.2	28	
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.3	1	●
5.2.5 Patent families/bn PPP$ GDP	2.0	19	
5.3 Knowledge absorption	**51.6**	**16**	
5.3.1 Intellectual property payments, % total trade	2.6	10	
5.3.2 High-tech imports, % total trade	10.3	32	
5.3.3 ICT services imports, % total trade	1.4	63	○ ◇
5.3.4 FDI net inflows, % GDP	2.6	58	○
5.3.5 Research talent, % in businesses	60.5	14	
Knowledge and technology outputs	**43.9**	**19**	
6.1 Knowledge creation	**49.0**	**16**	
6.1.1 Patents by origin/bn PPP$ GDP	2.3	32	
6.1.2 PCT patents by origin/bn PPP$ GDP	1.2	24	◇
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a	
6.1.5 Citable documents H-index	80.0	4	●
6.2 Knowledge impact	**47.8**	**21**	
6.2.1 Labor productivity growth, %	0.2	94	○
6.2.2 Unicorn valuation, % GDP	2.2	17	
6.2.3 Software spending, % GDP	0.7	5	●
6.2.4 High-tech manufacturing, %	34.7	34	
6.3 Knowledge diffusion	**34.9**	**41**	
6.3.1 Intellectual property receipts, % total trade	1.3	18	
6.3.2 Production and export complexity	64.4	43	◇
6.3.3 High-tech exports, % total trade	5.8	33	
6.3.4 ICT services exports, % total trade	2.1	55	
6.3.5 ISO 9001 quality/bn PPP$ GDP	2.7	77	○ ◇
Creative outputs	**44.7**	**22**	
7.1 Intangible assets	**39.6**	**43**	◇
7.1.1 Intangible asset intensity, top 15, %	67.6	23	
7.1.2 Trademarks by origin/bn PPP$ GDP	32.8	71	○
7.1.3 Global brand value, top 5,000	11.4	15	
7.1.4 Industrial designs by origin/bn PPP$ GDP	0.4	91	○ ◇
7.2 Creative goods and services	**32.3**	**23**	
7.2.1 Cultural and creative services exports, % total trade	1.5	20	
7.2.2 National feature films/mn pop. 15-69	4.3	30	
7.2.3 Entertainment and media market/th pop. 15-69	62.2	9	
7.2.4 Creative goods exports, % total trade	0.8	53	
7.3 Online creativity	**67.4**	**10**	
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	99.0	3	●
7.3.2 Country-code TLDs/th pop. 15-69	35.8	19	
7.3.3 GitHub commits/mn pop. 15-69	61.7	12	
7.3.4 Mobile app creation/bn PPP$ GDP	73.0	41	

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.

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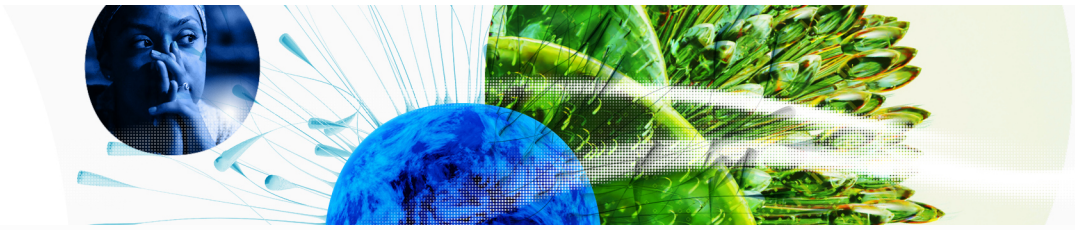

→ Data availability

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

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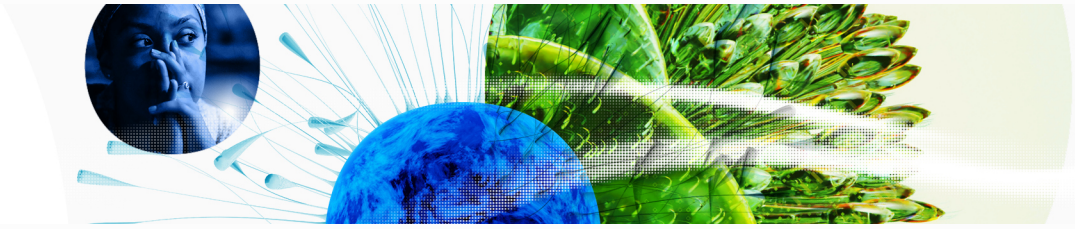

About the Global Innovation Index

- 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.

Source: Global Innovation Index Database, WIPO, 2023.

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.