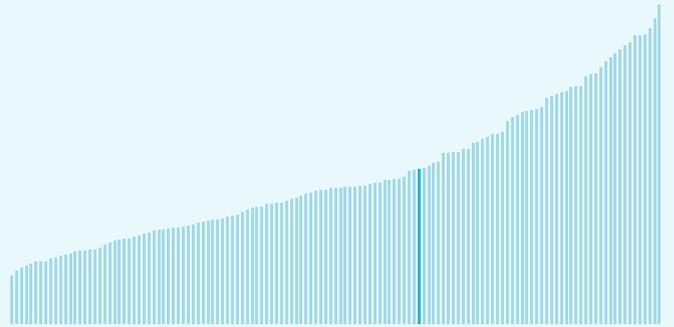


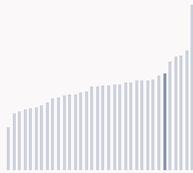
Brazil ranking in the Global Innovation Index 2024

Brazil ranks **50th** among the 133 economies featured in the GII 2024.

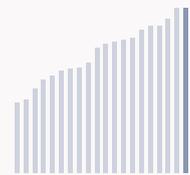
The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.



Brazil ranks **6th** among the 34 upper-middle-income group economies.



Brazil ranks **1st** among the 20 economies in Latin America and the Caribbean.



> Brazil GII Ranking (2020-2024)

The table shows the rankings of Brazil 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 Brazil in the GII 2024 is between ranks 47 and 52.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	62nd	59th	64th
2021	57th	56th	59th
2022	54th	58th	53rd
2023	49th	59th	49th
2024	50th	58th	49th

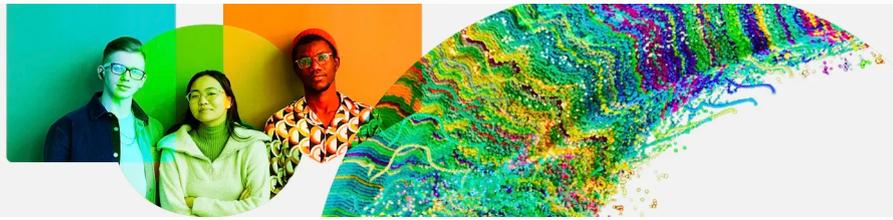
Brazil performs better in innovation outputs than innovation inputs in 2024.

This year Brazil ranks 58th in innovation inputs. This position is higher than last year.

Brazil ranks 49th in innovation outputs. This position is the same as last year.

Brazil has 1 cluster in the top 100 S&T clusters of the Global Innovation Index.

Global Innovation Index 2024



> Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in Brazil, how rapidly is technology being embraced and what are the resulting societal impacts.



For Brazil, 7 indicators have improved in the short-term and 6 indicators have worsened.

Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -10.4% 2022 - 2023	▼ -8.5% 2019 - 2020	▼ -1.3% 2022 - 2023	▼ -64.7% 2022 - 2023	▼ -5.5% 2022 - 2023
▲ 2.2% 2013 - 2023	▲ 0.2% 2010 - 2020	▲ 16% 2013 - 2023	▲ 11.7% 2013 - 2023	▼ -2.4% 2013 - 2023

Technology adoption

Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 0.1% 2021 - 2022	▲ 8.4% 2021 - 2022	▲ 5.1% 2021 - 2022	▲ 7% 2021 - 2022	▲ 135.9% 2022 - 2023
▲ 1.9% 2012 - 2022	▲ 8.2% 2012 - 2022		▲ 9.4% 2012 - 2022	▲ 125.5% 2014 - 2023
49.6 per 100 inhabitants in 2022	21 per 100 inhabitants in 2022	33.5 per 100 inhabitants in 2022		0.2 per 100 inhabitants in 2023

Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 1.8% 2022 - 2023	▲ 0.9% 2021 - 2022	▲ 1.6°C 2023
▼ -0.2% 2013 - 2023	0% 2012 - 2022	n/a
41,101 USD in 2023	73.4 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.



Expected vs. observed innovation performance

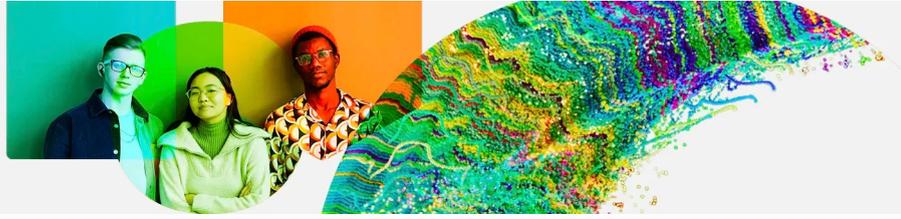
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



Relative to GDP, Brazil is performing above expectations for its level of development.

> Innovation overperformers relative to their economic development





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.

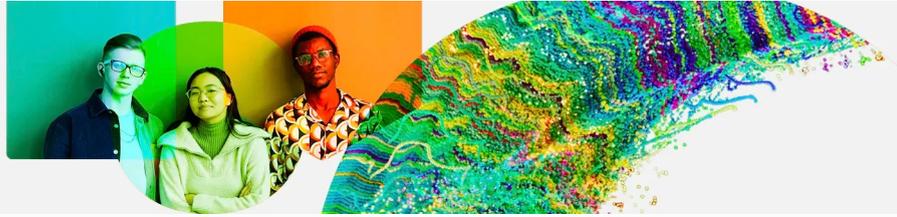


Brazil produces more innovation outputs relative to its level of innovation investments.

> Relationship between innovation inputs and outputs

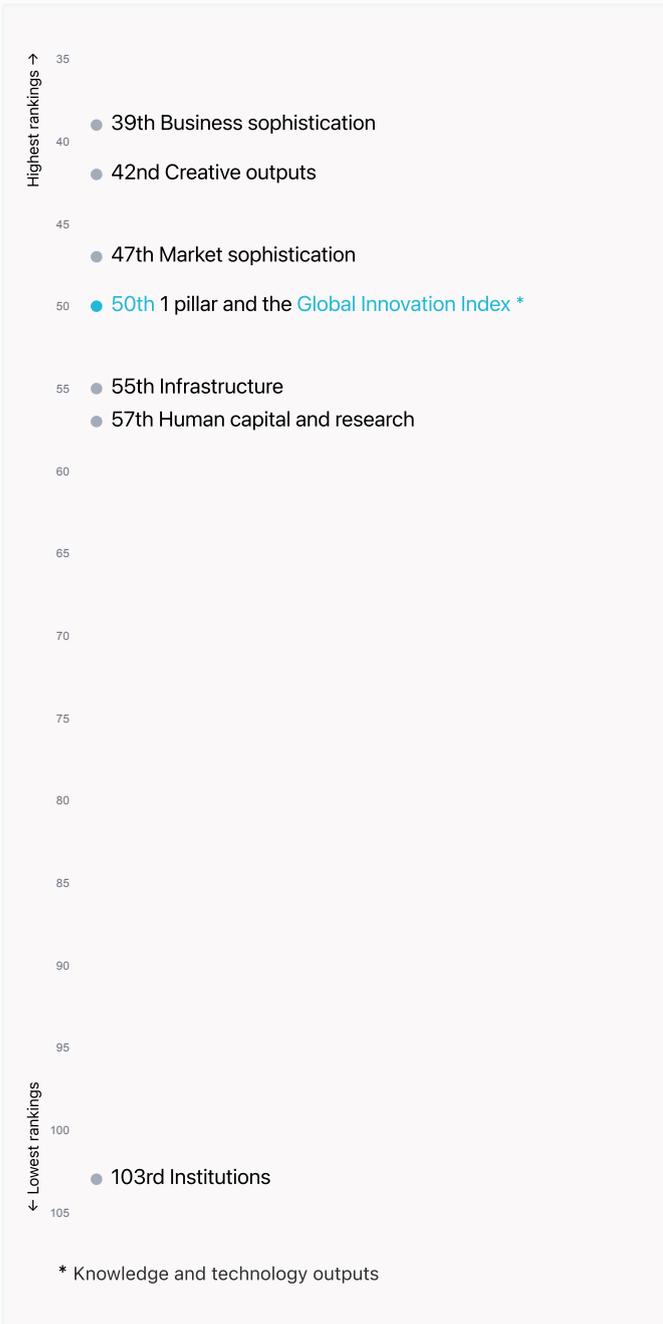


Global Innovation Index 2024



Overview of Brazil's rankings in the seven areas of the GII in 2024

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



Highest rankings



Brazil ranks highest in Business sophistication (39th), Creative outputs (42nd), Market sophistication (47th) and Knowledge and technology outputs (50th).

Lowest rankings



Brazil ranks lowest in Institutions (103rd), Human capital and research (57th) and Infrastructure (55th).

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



Benchmark of Brazil against other economy groupings for each of the seven areas of the GII Index

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



Upper-Middle-Income economies

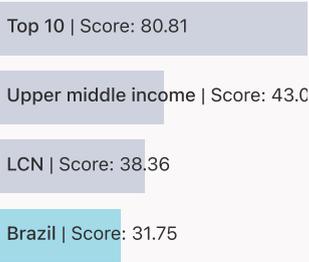
Brazil performs above the upper-middle-income group average in Human capital and research, Infrastructure, Market sophistication, Business sophistication, Knowledge and technology outputs, Creative outputs.



Latin America And The Caribbean

Brazil performs above the regional average in Human capital and research, Infrastructure, Market sophistication, Business sophistication, Knowledge and technology outputs, Creative outputs.

Institutions



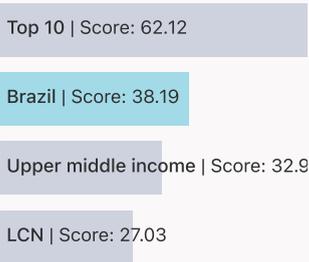
Human capital and research



Infrastructure



Market sophistication



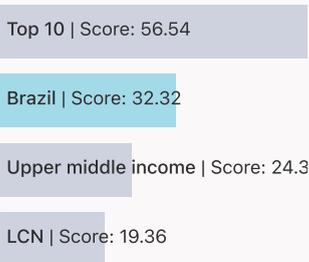
Business sophistication



Knowledge and technology outputs



Creative outputs





Innovation strengths and weaknesses in Brazil

The table below gives an overview of the indicator strengths and weaknesses of Brazil in the GII 2024.



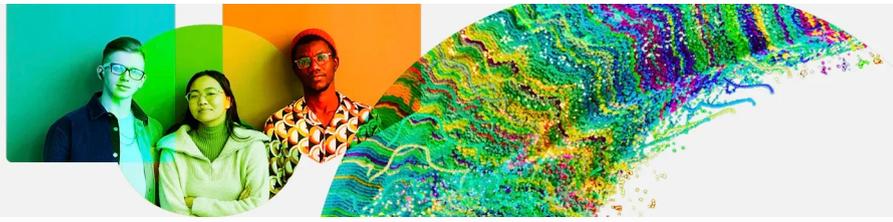
Brazil's main innovation strengths are **Domestic market scale, bn PPP\$ (rank 8)**, **Trademarks by origin/bn PPP\$ GDP (rank 9)** and **E-participation* (rank 11)**.

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
8	4.3.3	Domestic market scale, bn PPP\$	115	1.3.1	Policy stability for doing business [†]
9	7.1.2	Trademarks by origin/bn PPP\$ GDP	108	3.2.3	Gross capital formation, % GDP
11	3.1.4	E-participation*	107	2.2.3	Tertiary inbound mobility, %
14	3.1.3	Government's online service*	103	1.1.2	Government effectiveness*
15	5.3.1	Intellectual property payments, % total trade	100	4.3.1	Applied tariff rate, weighted avg., %
17	3.3.2	Low-carbon energy use, %	97	2.2.2	Graduates in science and engineering, %
19	2.1.1	Expenditure on education, % GDP	77	1.3.2	Entrepreneurship policies and culture [†]
19	5.3.2	High-tech imports, % total trade	65	7.2.2	National feature films/mn pop. 15–69
22	6.2.2	Unicorn valuation, % GDP	64	2.1.4	PISA scales in reading, maths and science
23	5.3.3	ICT services imports, % total trade	60	4.1.3	Loans from microfinance institutions, % GDP

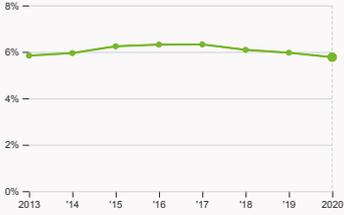
Global Innovation Index 2024



Brazil's innovation system

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

> Innovation inputs in Brazil



2.1.1 Expenditure on education

was equal to 5.77 % GDP in 2020, down by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 19.



2.2.2 Graduates in science and engineering

was equal to 15.9 % of total graduates in 2021, down by 1.6 percentage points from the year prior – and equivalent to an indicator rank of 97.



2.3.1 Researchers

was equal to 888.46 FTE per million population in 2014, up by 5.87% from the year prior – and equivalent to an indicator rank of 54.



2.3.2 Gross expenditure on R&D

was equal to 1.15 % GDP in 2020, down by 0.07 percentage points from the year prior – and equivalent to an indicator rank of 35.



2.3.4 QS university ranking

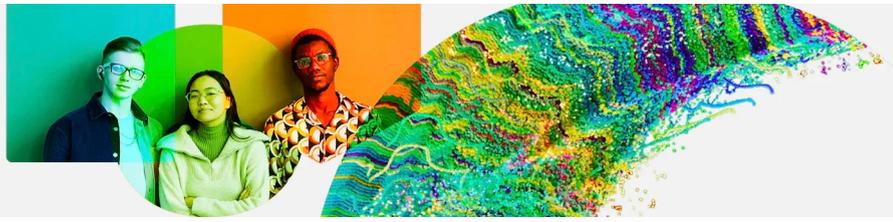
was equal to an average score of 45.13 for the top three universities in 2023, up by 3.58% from the year prior – and equivalent to an indicator rank of 26.



4.2.4 VC received, value

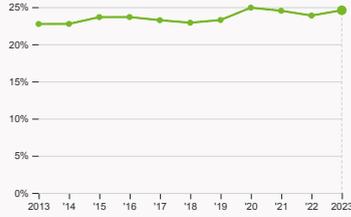
was equal to 1.16 million USD in 2023, down by 64.85% from the year prior – and equivalent to an indicator rank of 27.

Global Innovation Index 2024



4.3.2 Domestic industry diversification

was equal to an index score of 0.1 in 2021, down by 6.48% from the year prior – and equivalent to an indicator rank of 27.



5.1.1 Knowledge-intensive employment

was equal to 24.58 % in 2023, up by 0.71 percentage points from the year prior – and equivalent to an indicator rank of 60.

Global Innovation Index 2024

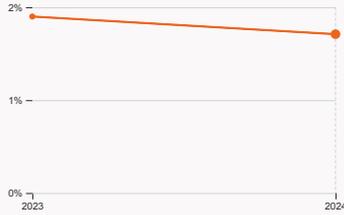


> Innovation outputs in Brazil



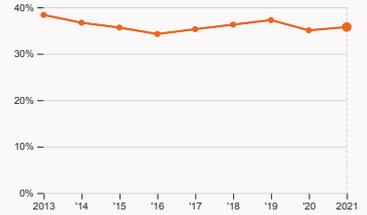
6.1.1 Patents by origin

was equal to 4.4 thousand patents in 2022, down by 5.78% from the year prior – and equivalent to an indicator rank of 53.



6.2.2 Unicorn valuation

was equal to 1.71 % GDP in 2024, down by 0.19 percentage points from the year prior – and equivalent to an indicator rank of 22.



6.2.4 High-tech manufacturing

was equal to 35.74 % of total manufacturing output in 2021, up by 0.71 percentage points from the year prior – and equivalent to an indicator rank of 33.



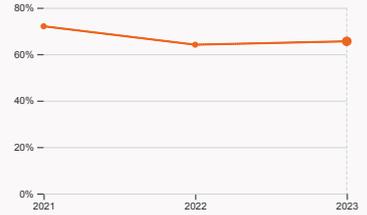
6.3.2 Production and export complexity

was equal to a score of -0.16 in 2021, down by 77.78% from the year prior – and equivalent to an indicator rank of 69.



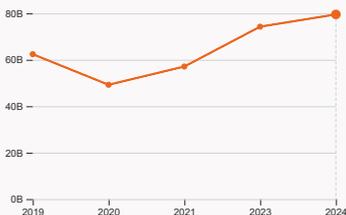
6.3.3 High-tech exports

was equal to 7.9 billion USD in 2022, up by 20.43% from the year prior – and equivalent to an indicator rank of 58.



7.1.1 Intangible asset intensity

was equal to 65.56 % for the top 15 companies in 2023, up by 1.45 percentage points from the year prior – and equivalent to an indicator rank of 26.



7.1.3 Global brand value

was equal to 79.54 billion USD for the brands in the top 5,000 in 2024, up by 7.11% from the year prior – and equivalent to an indicator rank of 39.



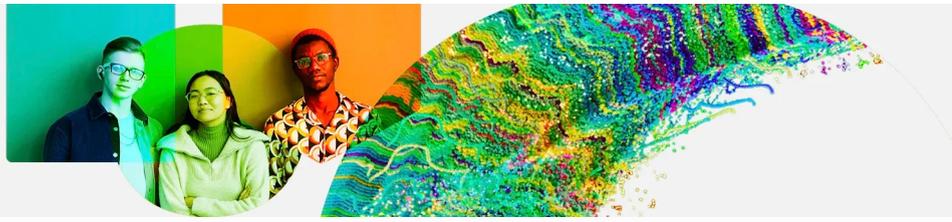
7.2.2 National feature films

was equal to 173 films in 2022, up by 34.11% from the year prior – and equivalent to an indicator rank of 65.



7.3.3 Mobile app creation

was equal to 2.1 billion global downloads of mobile apps in 2023, up by 1.45% from the year prior – and equivalent to an indicator rank of 39.



Brazil's innovation top performers

2.3.3 Global corporate R&D investors from Brazil

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
850	EMBRAER	Aerospace & Defence	208	29	25
1239	TOTVS	Software & Computer Services	135	23	18
1384	WEG	Industrial Engineering	116	18	2
1455	PETROBRAS	Oil & Gas Producers	107	-23	0.09

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 Brazil's top universities

Rank	University	Score
85	UNIVERSIDADE DE SAO PAULO	62.80
220	UNIVERSIDADE ESTADUAL DE CAMPINAS (UNICAMP)	42.70
371	UNIVERSIDADE FEDERAL DO RIO DE JANEIRO	29.90

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 Brazil

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	QUINTOANDAR	Financial Services	Campinas	5
2	C6 BANK	Financial Services	Sao Paulo	5
3	CREDITAS	Financial Services	Sao Paulo	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 Brazil

Rank	Firm	Intensity, %
1	VALE S.A.	45.95
2	NU HOLDINGS LTD.	83.20
3	PETROLEO BRASILEIRO S.A. - PETROBRAS	21.26

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 Brazil with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	ITAU	Banking	8,333.8
2	BANCO DO BRASIL	Banking	5,454
3	BRADESCO	Banking	5,013.8

Source: Brand Finance (<https://brandirectory.com>).

Note: Rank corresponds to within economy ranks.

Global Innovation Index 2024



Brazil

GII 2024 rank

50

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
49	58	Upper middle	LCN	211.1	4,101	20,078.9
			Score / Value Rank			
Institutions			31.8 103 ○	Business sophistication 36.2 39 ◆		
1.1 Institutional environment			42.3 92	5.1 Knowledge workers 45.7 [40]		
1.1.1 Operational stability for businesses*			56 83	5.1.1 Knowledge-intensive employment, % 24.6 60		
1.1.2 Government effectiveness*			28.6 103 ○ ◇	5.1.2 Firms offering formal training, % n/a n/a		
1.2 Regulatory environment			36.3 81	5.1.3 GERD performed by business, % GDP n/a n/a		
1.2.1 Regulatory quality*			36 85	5.1.4 GERD financed by business, % 43.2 41		
1.2.2 Rule of law*			36.5 79	5.1.5 Females employed w/advanced degrees, % 14.8 52		
1.3 Business environment			16.7 125 ○ ◇	5.2 Innovation linkages 22.6 69		
1.3.1 Policy stability for doing business*			23.5 115 ○ ◇	5.2.1 Public Research-Industry co-publications, % 1.7 56		
1.3.2 Entrepreneurship policies and culture*			9.9 77 ○ ◇	5.2.2 University-industry R&D collaboration+ 41 75		
Human capital and research			33.9 57	5.2.3 State of cluster development+ 46.8 65		
2.1 Education			50.6 69	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.01 74		
2.1.1 Expenditure on education, % GDP 5.8 19 ◆◆				5.2.5 Patent families/bn PPP\$ GDP 0.1 49		
2.1.2 Government funding/pupil, secondary, % GDP/cap 20.9 44				5.3 Knowledge absorption 40.1 29 ◆		
2.1.3 School life expectancy, years 15.6 42				5.3.1 Intellectual property payments, % total trade 1.8 15 ◆◆		
2.1.4 PISA scales in reading, maths and science 397.3 64 ○				5.3.2 High-tech imports, % total trade 13.4 19 ◆◆		
2.1.5 Pupil-teacher ratio, secondary 16.3 86				5.3.3 ICT services imports, % total trade 2.4 23 ◆◆		
2.2 Tertiary education			20.4 93	5.3.4 FDI net inflows, % GDP 3.4 45		
2.2.1 Tertiary enrolment, % gross 60.4 55				5.3.5 Research talent, % in businesses 26.1 51		
2.2.2 Graduates in science and engineering, % 15.9 97 ○				Knowledge and technology outputs 24.5 50		
2.2.3 Tertiary inbound mobility, % 0.2 107 ○ ◇				6.1 Knowledge creation 20.2 56		
2.3 Research and development (R&D)			30.6 36 ◆	6.1.1 Patents by origin/bn PPP\$ GDP 1.1 53		
2.3.1 Researchers, FTE/mn pop. 888.5 54				6.1.2 PCT patents by origin/bn PPP\$ GDP 0.1 58		
2.3.2 Gross expenditure on R&D, % GDP 1.1 35 ◆				6.1.3 Utility models by origin/bn PPP\$ GDP 0.6 27		
2.3.3 Global corporate R&D investors, top 3, mn USD 48.9 33 ◆				6.1.4 Scientific and technical articles/bn PPP\$ GDP 11.4 63		
2.3.4 QS university ranking, top 3* 45.7 26 ◆				6.1.5 Citable documents H-index 39.4 24 ◆		
Infrastructure			45.5 55	6.2 Knowledge impact 37.6 30 ◆		
3.1 Information and communication technologies (ICTs)			84.5 29 ◆	6.2.1 Labor productivity growth, % 0.2 86		
3.1.1 ICT access* 85.8 78				6.2.2 Unicorn valuation, % GDP 1.7 22 ◆◆		
3.1.2 ICT use* 74.3 75				6.2.3 Software spending, % GDP 0.3 42		
3.1.3 Government's online service* 88.5 14 ◆◆				6.2.4 High-tech manufacturing, % 35.7 33		
3.1.4 E-participation* 89.5 11 ◆◆				6.3 Knowledge diffusion 15.5 75		
3.2 General infrastructure			25.2 86	6.3.1 Intellectual property receipts, % total trade 0.2 44		
3.2.1 Electricity output, GWh/mn pop. 3,145 61				6.3.2 Production and export complexity 38.9 69		
3.2.2 Logistics performance* 50 50				6.3.3 High-tech exports, % total trade 2.1 58		
3.2.3 Gross capital formation, % GDP 18.4 108 ○				6.3.4 ICT services exports, % total trade 1.2 76		
3.3 Ecological sustainability			26.6 46	6.3.5 ISO 9001 quality/bn PPP\$ GDP 4.9 59		
3.3.1 GDP/unit of energy use 10.6 66				Creative outputs 32.3 42		
3.3.2 Low-carbon energy use, % 43.2 17 ◆◆				7.1 Intangible assets 45.8 26		
3.3.3 ISO 14001 environment/bn PPP\$ GDP 0.9 75				7.1.1 Intangible asset intensity, top 15, % 65.6 26		
Market sophistication			38.2 47	7.1.2 Trademarks by origin/bn PPP\$ GDP 92.7 9 ◆◆		
4.1 Credit			20.8 81	7.1.3 Global brand value, top 5,000, % GDP 3.5 39		
4.1.1 Finance for startups and scaleups+ 37.6 57				7.1.4 Industrial designs by origin/bn PPP\$ GDP 1.4 48		
4.1.2 Domestic credit to private sector, % GDP 71.8 43				7.2 Creative goods and services 7.4 85		
4.1.3 Loans from microfinance institutions, % GDP 0.008 60 ○				7.2.1 Cultural and creative services exports, % total trade 0.5 52		
4.2 Investment			16.8 45	7.2.2 National feature films/mn pop. 15-69 1.1 65 ○		
4.2.1 Market capitalization, % GDP 52.6 36				7.2.3 Entertainment and media market/th pop. 15-69 6.2 44		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP 0.07 53				7.2.4 Creative goods exports, % total trade 0.2 85		
4.2.3 VC recipients, deals/bn PPP\$ GDP 0.06 50				7.3 Online creativity 30.2 52		
4.2.4 VC received, value, % GDP 0.002 27				7.3.1 Top-level domains (TLDs)/th pop. 15-69 5.3 53		
4.3 Trade, diversification and market scale			77 15 ◆◆	7.3.2 GitHub commits/mn pop. 15-69 13.5 50		
4.3.1 Applied tariff rate, weighted avg., % 5.4 100 ○ ◇				7.3.3 Mobile app creation/bn PPP\$ GDP 71.9 39		
4.3.2 Domestic industry diversification 92.1 27						
4.3.3 Domestic market scale, bn PPP\$ 4,101 8 ◆◆						

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; + a survey question, ● that the economy's data is outdated. Square brackets [] indicate the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.



Data availability

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



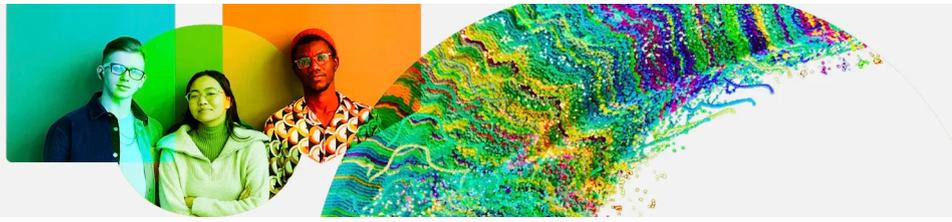
Brazil has missing data for two indicators and outdated data for seven indicators.

Missing data for Brazil

Code	Indicator name	Economy Year	Model Year	Source
5.1.2	Firms offering formal training, %	n/a	2023	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	n/a	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT

Outdated data for Brazil

Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2020	2022	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2021	2022	UNESCO Institute for Statistics
2.1.5	Pupil–teacher ratio, secondary	2021	2022	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2014	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2020	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2020	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.3.5	Research talent, % in businesses	2014	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT



Top science and technology clusters in Brazil



Brazil has 1 cluster in the top 100 S&T clusters of the Global Innovation Index, the same number as in 2023.

The table and map below give an overview of the top science and technology clusters in Brazil.

Rank	Cluster name	Top patent field	Top academic subject
73	São Paulo	Medical technology	Engineering

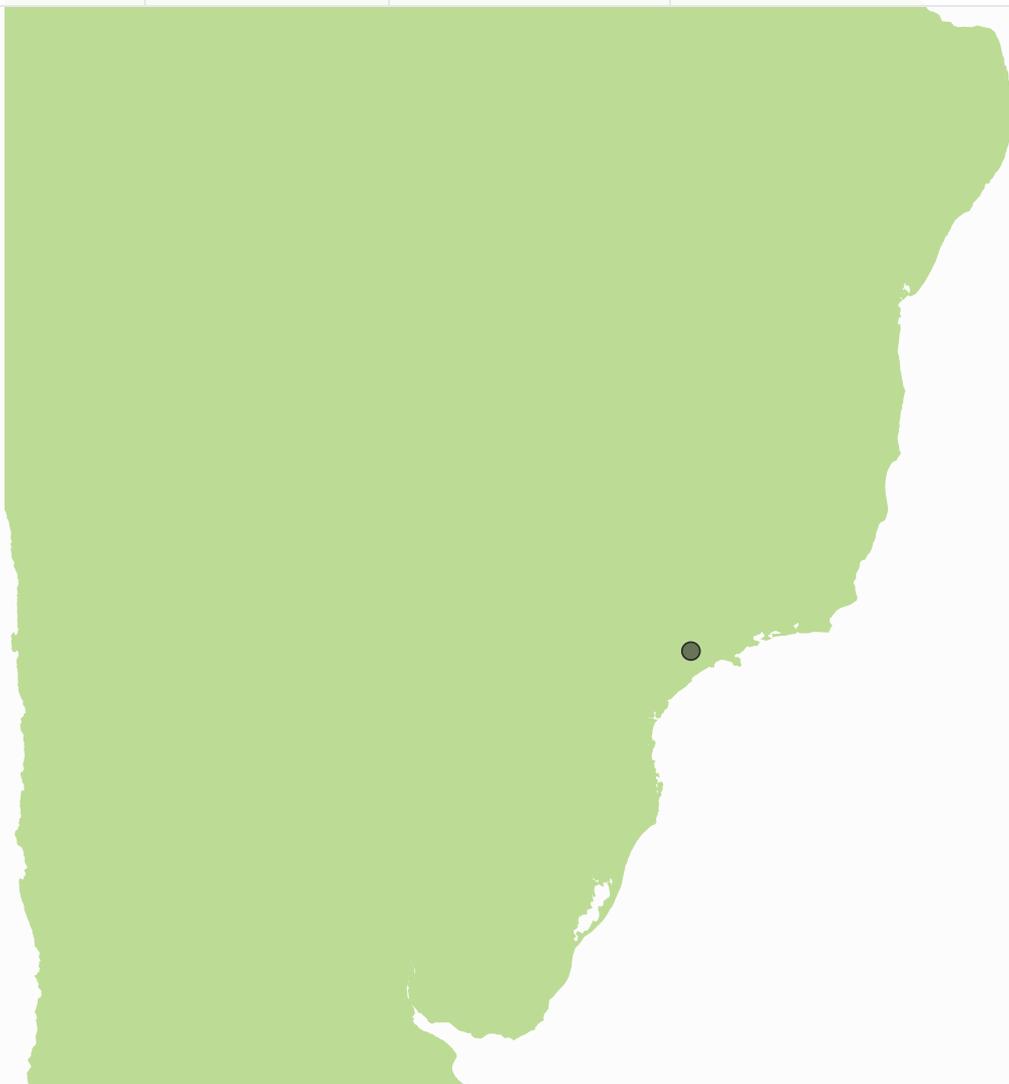


Global Innovation Index 2024

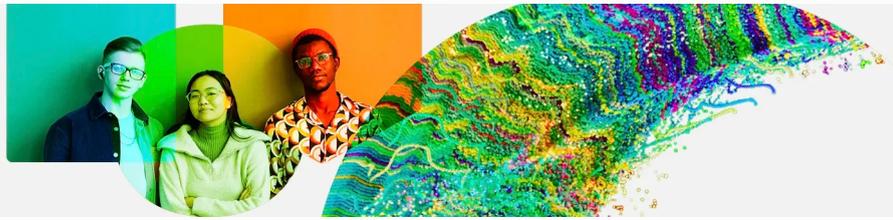


The table and map below give an overview of the top science and technology clusters by intensity in Brazil.

Rank	Cluster name	Top patent field	Top academic subject
97	São Paulo	Medical technology	Engineering

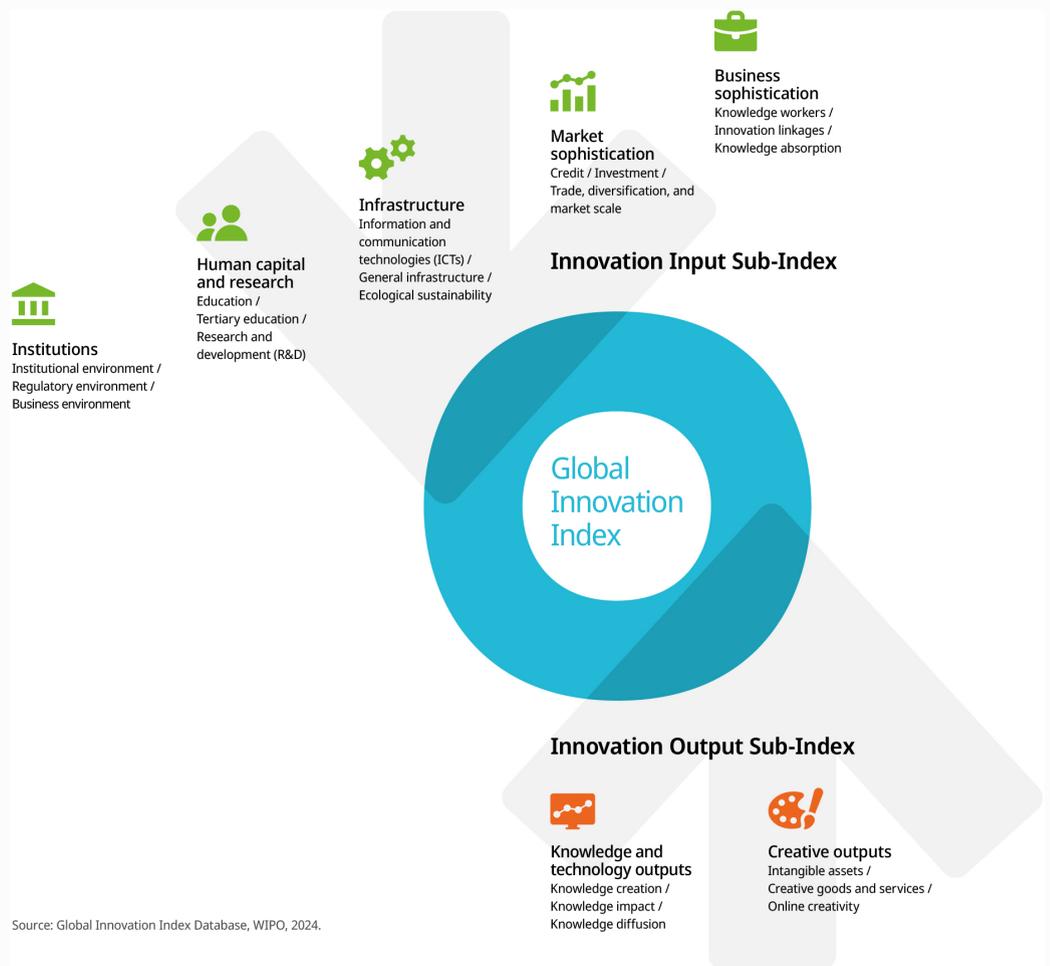


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About the Global Innovation Index

- 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.



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.