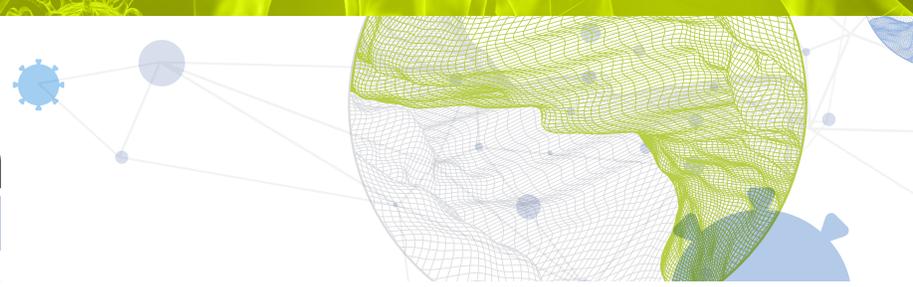




Global Innovation Index 2021



BRAZIL

57th Brazil ranks 57th among the 132 economies featured in the GII 2021.

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.

The following table shows the rankings of Brazil over the past three years, noting that 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 2021 is between ranks 53 and 59.

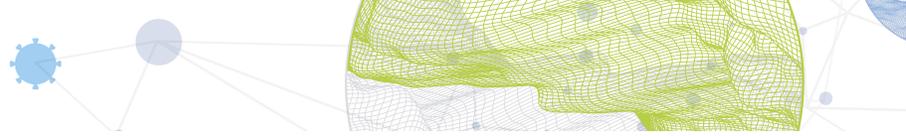
Rankings for Brazil (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	57	56	59
2020	62	59	64
2019	66	60	67

- Brazil performs better in innovation inputs than innovation outputs in 2021.
- This year Brazil ranks 56th in innovation inputs, higher than both 2020 and 2019.
- As for innovation outputs, Brazil ranks 59th. This position is higher than both 2020 and 2019.

11th Brazil ranks 11th among the 34 upper middle-income group economies.

4th Brazil ranks 4th among the 18 economies in Latin America and the Caribbean.

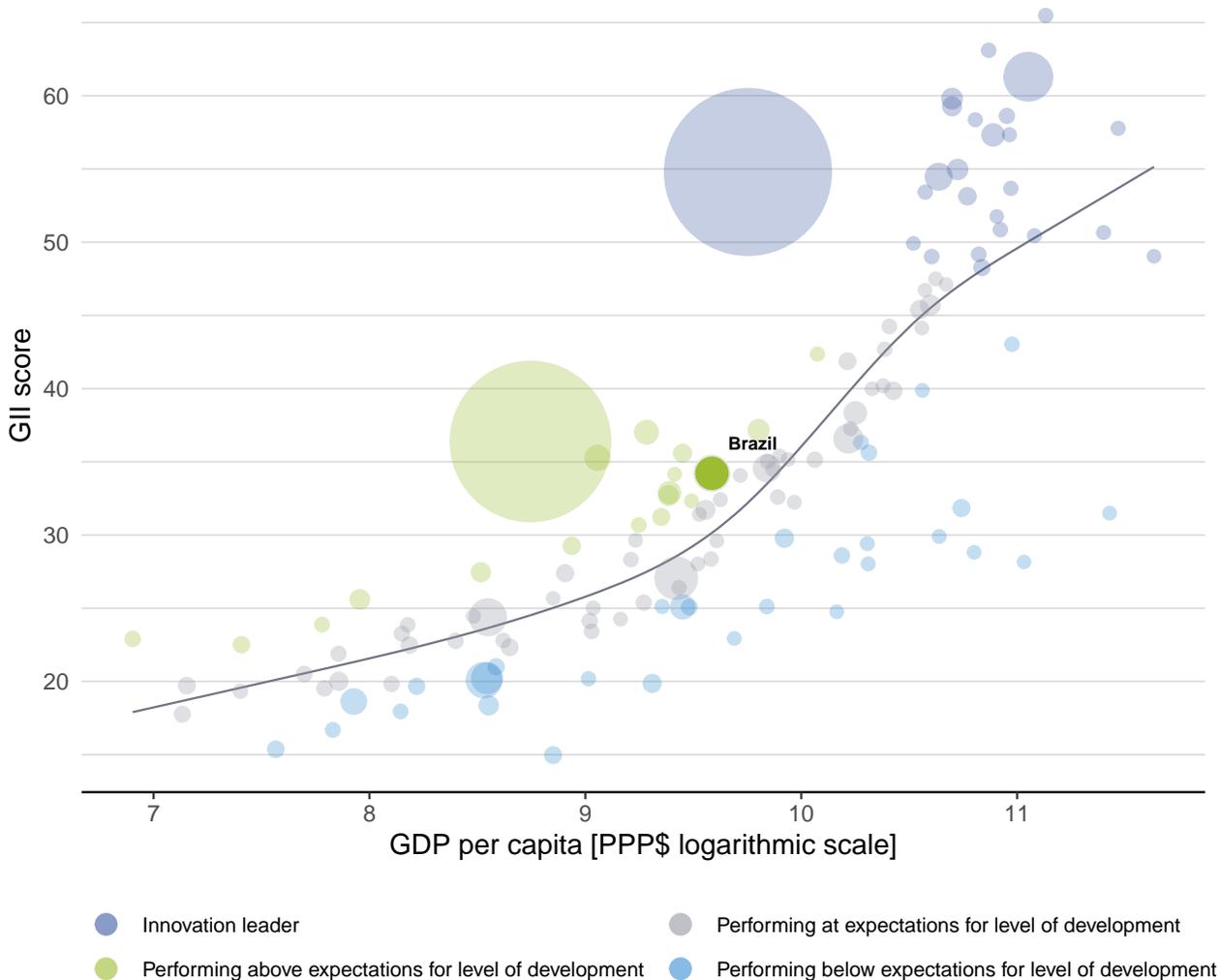


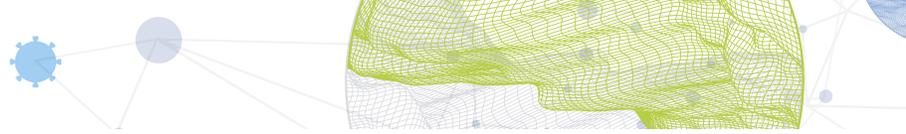
EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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's performance is above expectations for its level of development.

The positive relationship between innovation and development



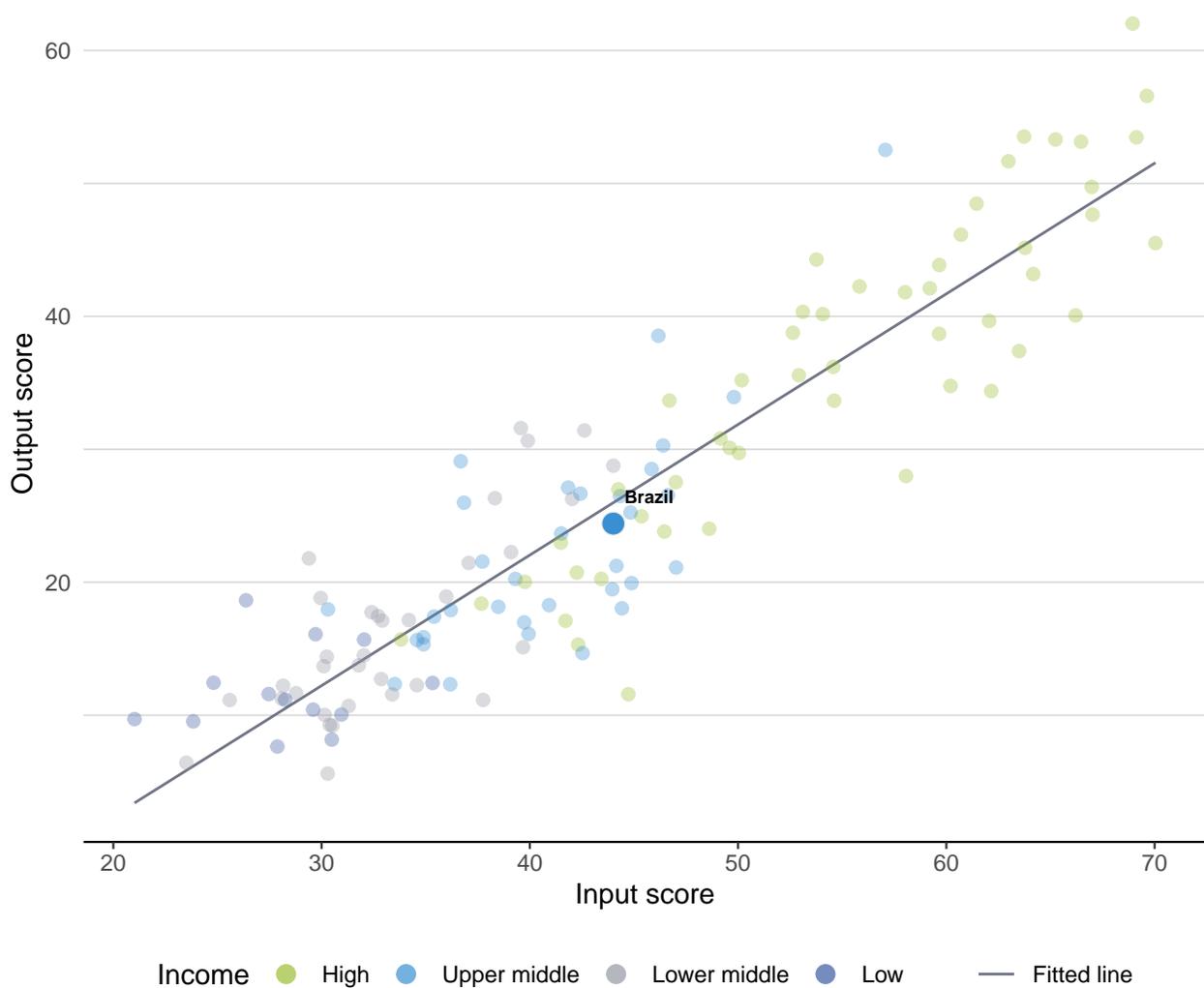


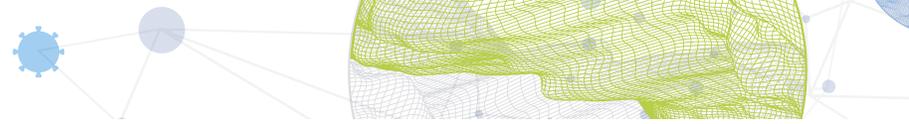
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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 less innovation outputs relative to its level of innovation investments.

Innovation input to output performance





BENCHMARKING AGAINST OTHER UPPER MIDDLE-INCOME GROUP ECONOMIES AND LATIN AMERICA AND THE CARIBBEAN

The seven GII pillar scores for Brazil

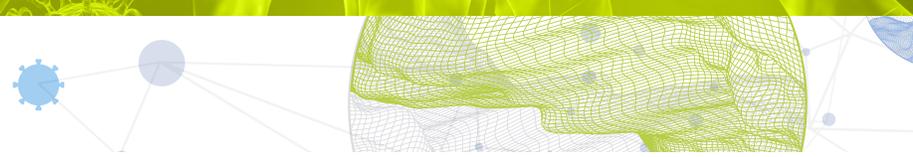


Upper middle-income group economies

Brazil performs above the upper middle-income group average in four pillars, namely: Human capital and research; Infrastructure; Business sophistication; and, Knowledge and technology outputs.

Latin America and the Caribbean

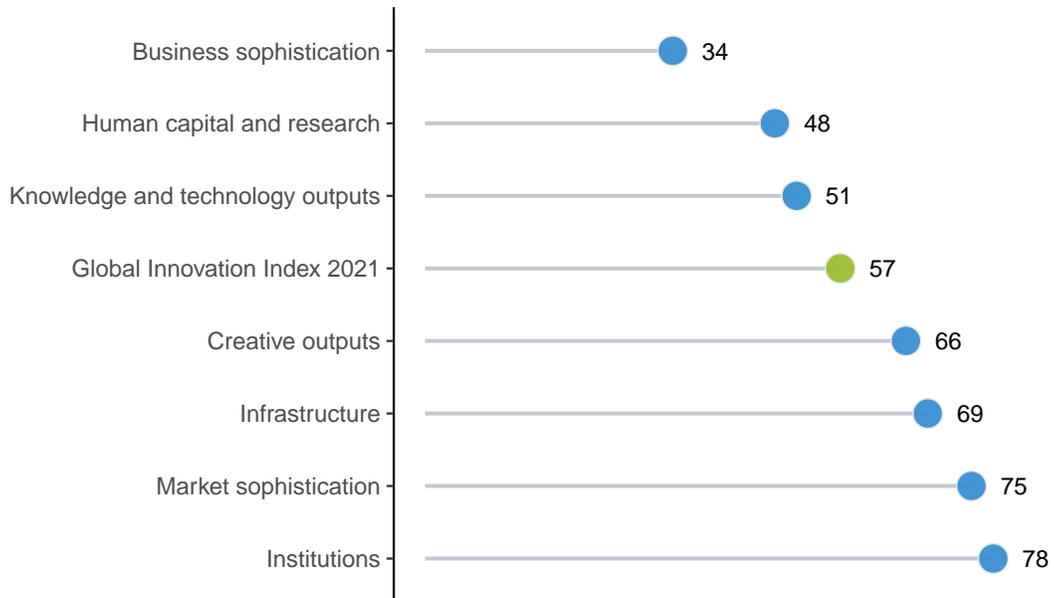
Brazil performs above the regional average in all GII pillars.



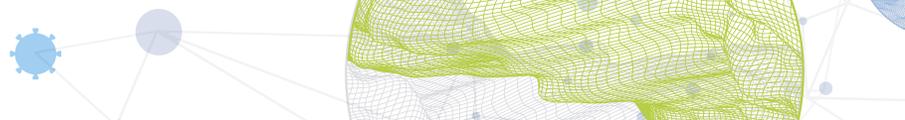
OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Brazil performs best in Business sophistication and its weakest performance is in Institutions.

The seven GII pillar ranks for Brazil



Note: The highest possible ranking in each pillar is one.



INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Brazil in the GII 2021.

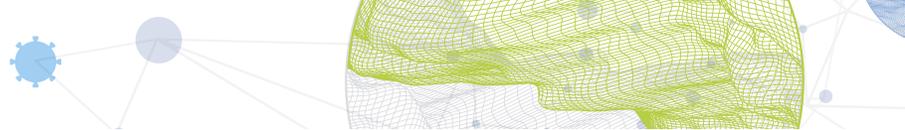
Strengths and weaknesses for Brazil

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.1.1	Expenditure on education, % GDP	11	1.3.1	Ease of starting a business	106
2.3.3	Global corporate R&D investors, top 3, mn US\$	26	2.1.4	PISA scales in reading, maths and science	68
3.1.3	Government's online service	20	2.2.2	Graduates in science and engineering, %	83
3.1.4	E-participation	18	2.2.3	Tertiary inbound mobility, %	104
4.3	Trade, diversification, and market scale	26	3.2	General infrastructure	107
4.3.3	Domestic market scale, bn PPP\$	8	3.2.3	Gross capital formation, % GDP	116
5.3	Knowledge absorption	28	4.1	Credit	103
5.3.1	Intellectual property payments, % total trade	14	4.1.1	Ease of getting credit	94
5.3.2	High-tech imports, % total trade	28	4.2	Investment	99
5.3.3	ICT services imports, % total trade	30	4.3.1	Applied tariff rate, weighted avg., %	102
6.1.5	Citable documents H-index	24	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	89
7.1.1	Trademarks by origin/bn PPP\$ GDP	27	7.2	Creative goods and services	94
			7.2.2	National feature films/mn pop. 15–69	84
			7.2.4	Printing and other media, % manufacturing	86

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$	GII 2020 rank
59	56	Upper middle	LCN	212.6	3,078.9	14,563	62

	Score/ Value	Rank		Score/ Value	Rank
 Institutions	60.6	78	 Business sophistication	36.0	34
1.1 Political environment	53.0	85	5.1 Knowledge workers	46.1	[30]
1.1.1 Political and operational stability*	66.1	74	5.1.1 Knowledge-intensive employment, %	25.2	58
1.1.2 Government effectiveness*	46.5	86	5.1.2 Firms offering formal training, %	n/a	n/a
1.2 Regulatory environment	62.8	74	5.1.3 GERD performed by business, % GDP	n/a	n/a
1.2.1 Regulatory quality*	38.9	82	5.1.4 GERD financed by business, %	43.5	35
1.2.2 Rule of law*	42.0	72	5.1.5 Females employed w/advanced degrees, %	15.3	46
1.2.3 Cost of redundancy dismissal	15.4	60	5.2 Innovation linkages	21.4	61
1.3 Business environment	65.9	80	5.2.1 University-industry R&D collaboration†	39.0	81
1.3.1 Ease of starting a business*	81.3	106	5.2.2 State of cluster development and depth†	49.4	49
1.3.2 Ease of resolving insolvency*	50.4	69	5.2.3 GERD financed by abroad, % GDP	n/a	n/a
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.0	89
			5.2.5 Patent families/bn PPP\$ GDP	0.1	56
 Human capital and research	37.5	48	5.3 Knowledge absorption	40.4	28
2.1 Education	55.4	48	5.3.1 Intellectual property payments, % total trade	2.1	14
2.1.1 Expenditure on education, % GDP	6.3	11	5.3.2 High-tech imports, % total trade	10.5	28
2.1.2 Government funding/pupil, secondary, % GDP/cap	21.8	35	5.3.3 ICT services imports, % total trade	2.2	30
2.1.3 School life expectancy, years	15.7	42	5.3.4 FDI net inflows, % GDP	3.7	34
2.1.4 PISA scales in reading, maths and science	400.0	68	5.3.5 Research talent, % in businesses	26.6	46
2.1.5 Pupil-teacher ratio, secondary	16.6	81			
2.2 Tertiary education	25.1	85	 Knowledge and technology outputs	25.3	51
2.2.1 Tertiary enrolment, % gross	53.3	58	6.1 Knowledge creation	23.0	46
2.2.2 Graduates in science and engineering, %	18.4	83	6.1.1 Patents by origin/bn PPP\$ GDP	1.7	41
2.2.3 Tertiary inbound mobility, %	0.2	104	6.1.2 PCT patents by origin/bn PPP\$ GDP	0.2	47
2.3 Research and development (R&D)	31.9	36	6.1.3 Utility models by origin/bn PPP\$ GDP	0.9	26
2.3.1 Researchers, FTE/mn pop.	887.7	53	6.1.4 Scientific and technical articles/bn PPP\$ GDP	18.8	47
2.3.2 Gross expenditure on R&D, % GDP	1.2	34	6.1.5 Citable documents H-index	37.6	24
2.3.3 Global corporate R&D investors, top 3, mn US\$	52.7	26	6.2 Knowledge impact	35.5	40
2.3.4 QS university ranking, top 3*	40.9	31	6.2.1 Labor productivity growth, %	1.3	35
			6.2.2 New businesses/th pop. 15–64	1.3	76
 Infrastructure	41.2	69	6.2.3 Software spending, % GDP	0.3	29
3.1 Information and communication technologies (ICTs)	74.5	49	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.6	54
3.1.1 ICT access*	58.9	77	6.2.5 High-tech manufacturing, %	36.3	32
3.1.2 ICT use*	61.5	60	6.3 Knowledge diffusion	17.4	62
3.1.3 Government's online service*	87.1	20	6.3.1 Intellectual property receipts, % total trade	0.3	33
3.1.4 E-participation*	90.5	18	6.3.2 Production and export complexity	48.8	49
3.2 General infrastructure	20.5	107	6.3.3 High-tech exports, % total trade	3.7	44
3.2.1 Electricity output, GWh/mn pop.	2,967.7	67	6.3.4 ICT services exports, % total trade	1.0	82
3.2.2 Logistics performance*	43.6	55			
3.2.3 Gross capital formation, % GDP	14.7	116	 Creative outputs	23.5	66
3.3 Ecological sustainability	28.6	64	7.1 Intangible assets	35.3	51
3.3.1 GDP/unit of energy use	11.1	56	7.1.1 Trademarks by origin/bn PPP\$ GDP	67.9	27
3.3.2 Environmental performance*	51.2	53	7.1.2 Global brand value, top 5,000, % GDP	36.1	41
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.9	68	7.1.3 Industrial designs by origin/bn PPP\$ GDP	1.3	59
			7.1.4 ICTs and organizational model creation†	52.6	69
 Market sophistication	44.9	75	7.2 Creative goods and services	6.8	94
4.1 Credit	30.5	103	7.2.1 Cultural and creative services exports, % total trade	0.5	84
4.1.1 Ease of getting credit*	50.0	94	7.2.2 National feature films/mn pop. 15–69	1.1	48
4.1.2 Domestic credit to private sector, % GDP	63.7	53	7.2.3 Entertainment and media market/th pop. 15–69	7.8	40
4.1.3 Microfinance gross loans, % GDP	0.1	58	7.2.4 Printing and other media, % manufacturing	0.5	86
4.2 Investment	23.2	99	7.2.5 Creative goods exports, % total trade	0.3	70
4.2.1 Ease of protecting minority investors*	62.0	60	7.3 Online creativity	16.7	69
4.2.2 Market capitalization, % GDP	53.1	33	7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.6	87
4.2.3 Venture capital investors, deals/bn PPP\$ GDP	0.0	57	7.3.2 Country-code TLDs/th pop. 15–69	8.6	42
4.2.4 Venture capital recipients, deals/bn PPP\$ GDP	0.0	55	7.3.3 Wikipedia edits/mn pop. 15–69	42.8	81
4.3 Trade, diversification, and market scale	80.8	26	7.3.4 Mobile app creation/bn PPP\$ GDP	15.0	37
4.3.1 Applied tariff rate, weighted avg., %	8.0	102			
4.3.2 Domestic industry diversification	94.8	28			
4.3.3 Domestic market scale, bn PPP\$	3,078.9	8			

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 Appendix IV for details, including the year of the data, at <http://globalinnovationindex.org>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



DATA AVAILABILITY

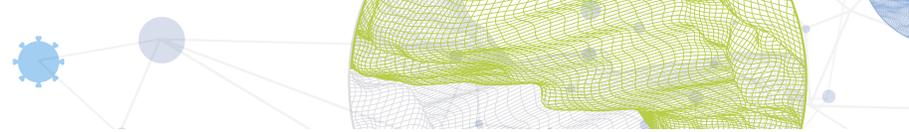
The following tables list data that are either missing or outdated for Brazil.

Missing data for Brazil

Code	Indicator name	Economy year	Model year	Source
5.1.2	Firms offering formal training, %	n/a	2019	World Bank
5.1.3	GERD performed by business, % GDP	n/a	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.2.3	GERD financed by abroad, % GDP	n/a	2018	UNESCO Institute for Statistics

Outdated data for Brazil

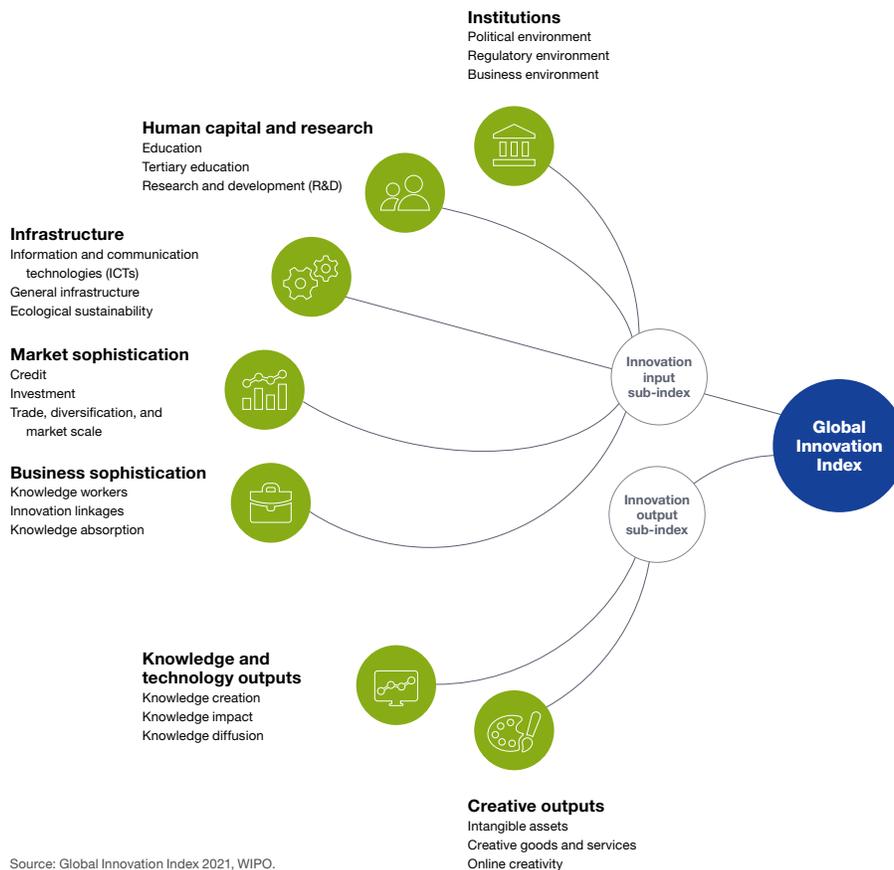
Code	Indicator name	Economy year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2014	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2018	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.3.5	Research talent, % in businesses	2014	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators



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.