Brazil ranks 66th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Brazil’s ranking in the GII 2019 is between 61 and 66.

<table>
<thead>
<tr>
<th>Year</th>
<th>GII</th>
<th>Innovation Inputs</th>
<th>Innovation Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>66</td>
<td>60</td>
<td>67</td>
</tr>
<tr>
<td>2018</td>
<td>64</td>
<td>58</td>
<td>70</td>
</tr>
<tr>
<td>2017</td>
<td>69</td>
<td>60</td>
<td>80</td>
</tr>
</tbody>
</table>

- Brazil performs better in Innovation Inputs than Outputs.
- This year Brazil ranks 60th in Innovation Inputs, worse than last year and the same compared to 2017.
- As for Innovation Outputs, Brazil ranks 67th. This position is better than last year and compared to 2017.

Brazil ranks 16th among the 34 upper middle-income economies.

Brazil ranks 5th among the 19 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 considered Innovation under-performers relative to GDP.

Relative to GDP, Brazil performs at its expected level of development.

GII scores and GDP per capita in PPP US$ (bubbles sized by population)
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

Brazil produces less innovation outputs relative to its level of innovation investments.
Brazil's scores in the seven GII pillars

**Upper middle-income economies**

Brazil has high scores in 4 out of the 7 GII pillars: Human capital & research, Infrastructure, Business sophistication, and Knowledge & technology outputs which are above the average of the upper middle-income group.

**Latin America and the Caribbean Region**

Compared to other economies in the Latin America and the Caribbean region, Brazil performs above average in 5 out of the 7 GII pillars: Institutions, Human capital & research, Infrastructure, Business sophistication, and Knowledge & technology outputs.

Top ranks are found in areas such as Research and development (R&D), Information & communication technologies (ICTs), Trade, competition, & market scale, Knowledge workers, Knowledge absorption, and Knowledge creation, where Brazil ranks in the top 50 worldwide.
OVERVIEW OF BRAZIL’S RANKINGS IN THE 7 GII AREAS

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

*The highest possible ranking in each pillar is 1.

BRAZIL’S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Brazil’s strengths and weaknesses in the GII 2019.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Code</strong></td>
<td><strong>Indicator name</strong></td>
</tr>
<tr>
<td>2.1.1</td>
<td>Expenditure on education, % GDP</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Gross expenditure on R&amp;D, % GDP</td>
</tr>
<tr>
<td>2.3.3</td>
<td>Global R&amp;D companies, top 3, in mn US$</td>
</tr>
<tr>
<td>2.3.4</td>
<td>QS university ranking, average score top 3*</td>
</tr>
<tr>
<td>3.1.3</td>
<td>Government’s online service*</td>
</tr>
<tr>
<td>3.1.4</td>
<td>E-participation*</td>
</tr>
<tr>
<td>4.3.3</td>
<td>Domestic market scale, bn PPP$</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Intellectual property payments, % total trade</td>
</tr>
<tr>
<td>5.3.2</td>
<td>High-tech imports, % total trade</td>
</tr>
<tr>
<td>6.1.5</td>
<td>Citable documents H index</td>
</tr>
<tr>
<td>6.2.2</td>
<td>New businesses/th pop. 15–64</td>
</tr>
</tbody>
</table>
STRENGTHS

- GII strengths for Brazil are found in five of the seven GII pillars.
- Human capital & research (48) is the pillar with the highest number of relative strengths of Brazil. Here, the country’s strengths are four indicators: Expenditure on education (18), R&D expenditures (28), Global R&D companies’ expenditures (22), and Quality of universities (25).
- In Infrastructure (64), Brazil’s strengths are indicators Government’s online service (22) and E-participation (12).
- In Business sophistication (40), two strengths are found in indicators Intellectual property payments (10) and High-tech imports (28).
- Other relative strengths of Brazil are indicators Domestic market scale (8) in Market sophistication (84) and Quality of scientific publications (24) in Knowledge & technology outputs (58).

WEAKNESSES

- Brazil’s weaknesses in the GII are found in six of the seven GII pillars.
- Market sophistication (84) is the area with the highest number of relative weaknesses. Here, Brazil’s weaknesses are sub-pillar Credit (105) and indicators Microfinance gross loans (74), Venture capital deals (61), and Applied tariff rate (104).
- Other two relative weaknesses for Brazil are in Human capital & research (48). These are indicators PISA results (64) and Tertiary inbound mobility (105).
- In Infrastructure (64), Brazil’s weaknesses are sub-pillar General infrastructure (102) and one of its indicators - Gross capital formation (115).
- In Knowledge & technology outputs (58), GII weaknesses are indicators Labor productivity growth (96) and New businesses (98).
- The last two weaknesses are indicators Ease of starting a business (106) in Institutions (80) and Printing & other media (86) in Creative outputs (82).
### BRAZIL

<table>
<thead>
<tr>
<th>Economic pillar</th>
<th>Score/Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output rank</strong></td>
<td>67</td>
<td>60</td>
</tr>
<tr>
<td><strong>Input rank</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td>210.9</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td>LCN</td>
<td></td>
</tr>
<tr>
<td><strong>Population (mn)</strong></td>
<td>3,370.6</td>
<td></td>
</tr>
<tr>
<td><strong>GDP, PPP$</strong></td>
<td>16,154.3</td>
<td></td>
</tr>
<tr>
<td><strong>GDP per capita, PPP$</strong></td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

#### 1.1 Political environment

- **Score/Value**: 88
- **Rank**: 48

#### 1.2 Regulatory environment

- **Score/Value**: 72
- **Rank**: 48

#### 1.3 Business environment

- **Score/Value**: 83
- **Rank**: 48

#### 2.1 Education

- **Score/Value**: 90
- **Rank**: 48

#### 2.2 Tertiary education

- **Score/Value**: 85
- **Rank**: 48

#### 2.3 Research & development (R&D)

- **Score/Value**: 32
- **Rank**: 48

#### 3.1 Information & communication technologies (ICTs)

- **Score/Value**: 36
- **Rank**: 48

#### 3.2 General infrastructure

- **Score/Value**: 28
- **Rank**: 48

#### 3.3 Ecological sustainability

- **Score/Value**: 65
- **Rank**: 48

#### 4.1 Credit

- **Score/Value**: 105
- **Rank**: 48

#### 4.2 Investment

- **Score/Value**: 45
- **Rank**: 48

#### 4.3 Trade, competition, & market scale

- **Score/Value**: 38
- **Rank**: 48

### BUSINESS SOPHISTICATION

- **Score/Value**: 40
- **Rank**: 48

#### 5.1 Knowledge workers

- **Score/Value**: 42
- **Rank**: 48

### KNOWLEDGE & TECHNOLOGY OUTPUTS

- **Score/Value**: 58
- **Rank**: 48

#### 6.1 Knowledge creation

- **Score/Value**: 47
- **Rank**: 48

#### 6.2 Knowledge impact

- **Score/Value**: 46
- **Rank**: 48

#### 6.3 Knowledge diffusion

- **Score/Value**: 66
- **Rank**: 48

### CREATIVE OUTPUTS

- **Score/Value**: 82
- **Rank**: 48

### NOTES

- ● indicates a strength; ○ a weak point; ◇ 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 II 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 missing or are outdated for Brazil.

#### Missing data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Country year</th>
<th>Model year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.3</td>
<td>GERD performed by business, % GDP</td>
<td>n/a</td>
<td>2017</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators</td>
</tr>
<tr>
<td>5.2.3</td>
<td>GERD financed by abroad, %</td>
<td>n/a</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
</tbody>
</table>

#### Outdated data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Country year</th>
<th>Model year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.3</td>
<td>School life expectancy, years</td>
<td>2015</td>
<td>2016</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.1.5</td>
<td>Pupil-teacher ratio, secondary</td>
<td>2016</td>
<td>2017</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.2.1</td>
<td>Tertiary enrolment, % gross</td>
<td>2016</td>
<td>2017</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Researchers, FTE/mn pop.</td>
<td>2014</td>
<td>2017</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Gross expenditure on R&amp;D, % GDP</td>
<td>2016</td>
<td>2017</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Firms offering formal training, % firms</td>
<td>2009</td>
<td>2013</td>
<td>World Bank</td>
</tr>
<tr>
<td>5.3.5</td>
<td>Research talent, % in business enterprise</td>
<td>2014</td>
<td>2017</td>
<td>UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators</td>
</tr>
<tr>
<td>6.2.5</td>
<td>High- &amp; medium-high-tech manufactures, %</td>
<td>2015</td>
<td>2016</td>
<td>United Nations Industrial Development Organization</td>
</tr>
<tr>
<td>7.2.4</td>
<td>Printing &amp; other media, % manufacturing</td>
<td>2015</td>
<td>2016</td>
<td>United Nations Industrial Development Organization</td>
</tr>
</tbody>
</table>
The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2019, the GII presents its 12th edition devoted to the theme Creating Healthy Lives—The Future of Medical Innovation.

Recognizing that innovation is a key driver of economic development, the GII aims to provide a rich innovation ranking and 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 countries 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 includes 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 containing three sub-pillars.