

GLOBAL INNOVATION INDEX 2018

United States of America

6th The United States of America is ranked 6th in the GII 2018, dropping 2 positions from the previous year.

The United States of America (the U.S.) is among the largest world contributors in all dimensions of innovation inputs and outputs and home to many of the world's most-famously innovative companies. As the report shows, the U.S. is the largest world contributor in important innovation inputs and outputs, including in investment in R&D, and patent applications, and scientific and technical publications.

The quality of its innovation inputs and outputs is also remarkable, ranking third in the world in this aggregate measure. The U.S. has been the top economy in the quality of scientific publications since 2013. For the third year in a row, the U.S. outranks the United Kingdom in the quality of its universities, taking the 1st place in this indicator globally thanks to top scores for Massachusetts Institute of Technology (MIT), Stanford, and Harvard University.

Finally, as shown in the last two editions of the GII, the U.S. has largest number of clusters in the world (overall 26 have been identified in the report, based on international patent filings), with San Jose–San Francisco in the top 5 of world clusters.

The U.S.'s comparative strengths registered from the GII's 80 indicators include: access to credit, level of R&D expenditures of global R&D companies, and research collaboration between research universities and the private sector (for a full list see page 3). Comparative weaknesses include: graduates in science and engineering, GDP per energy use, foreign direct investment as a percentage of GDP, and productivity growth (for a full list see page 4). In general, the U.S. performs well compared to its income-group peers (as shown in the bubble chart, page 5 of this brief).

The GII indicators are grouped into innovation inputs and outputs. Innovation inputs capture the efforts made by the country to boost innovation. Innovation outputs measure the results of these efforts in terms of scientific publications, patents, trademarks, production, exports and other outputs.

The table below presents the U.S.'s ranking over time in the overall GII, the Innovation Input and Output sub-Indices, which summarize the U.S.'s performance in innovation input and output

indicators, and in the Innovation Efficiency Ratio, which captures how does the economy translates innovation inputs into outputs. ¹

United States of America's ranking over time

	GII	Input	Output	Efficiency
2018	6	6	7	22
2017	4	5	5	21
2016	4	3	7	25

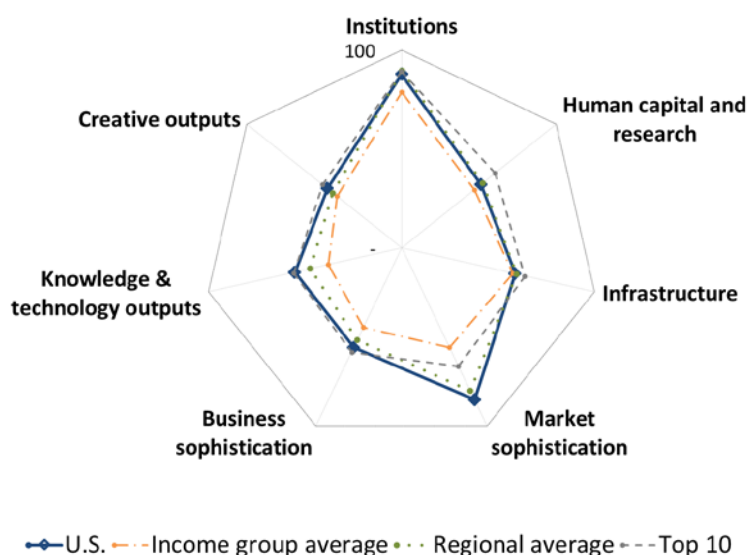
- The U.S. drops two positions in its innovation outputs where it ranks 7th, down from its best rank in 2017 (5th).
- Its position deteriorates in innovation inputs too. The U.S. exhibits a decrease in its rank in innovation inputs this year (6th), dropping 1 position from 2017.
- The U.S. is improving in its efficiency ratio, i.e. it is better able to translate its innovation inputs into more outputs (patents, publications, high-tech exports, etc.). The Innovation Efficiency Ratio (22nd in 2018) moves down one position from 2017, but shows an overall upward trend, improving steadily since 2013 when it ranked 86th.

6th The United States of America is ranked 6th among the 47 high-income countries in the GII 2018.

¹ Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

Benchmarking the U.S. to other high-income countries and the Northern America region

U.S.'s scores by innovation area



High-income countries

The U.S. has high scores in 1 area - **Market Sophistication**, in which it scores above the average of the top 10 countries in the GII 2018 ranking.

Top scores in all elements and almost all indicators in **Market Sophistication** are behind this high ranking.

Northern America region

Compared to Canada, the only other country in the Northern America region, the U.S. performs better in four areas: **Market Sophistication, Business Sophistication, Knowledge and Technology Outputs, and Creative Outputs.**

The U.S.'s innovation profile

Strengths

- The US ranks 1st in the world in **Market Sophistication**.
- It exhibits strengths in two areas of **Market Sophistication**: *Credit* (1st) and *Trade and Competition and Market scale* (1st). At the variable level, *Ease of getting credit* (2nd), *Domestic credit to private sector* (3rd), *Venture capital deals* (1st), and *Domestic market scale* (2nd) are also signaled as relative strengths.
- In **Institutions** (13th), the U.S. demonstrates strengths in *Business environment* (3rd), and indicators *Cost of redundancy dismissal* (1st) and *Ease of resolving insolvency* (3rd).
- In **Human Capital & Research** (21st), the U.S. has strengths in indicators *Global R&D companies' expenditures* and *Quality of universities*, both 1st in the world.
- In **Business Sophistication** (8th), the U.S. shows strengths in *University/industry research collaboration* (2nd), and *State of cluster development* (1st).
- In **Knowledge & Technology Outputs** (6th), the U.S. has strengths in *Knowledge impact* (3rd) as well as in indicators *Quality of scientific publications*, *Computer software spending*, and *Intellectual property receipts* – all ranking 1st in the world.
- In **Creative Outputs** (14th), it exhibits strengths in indicators *ICTs & organizational model creation*, *Cultural & creative services exports*; *Entertainment & Media market* and *Generic top-level domains* – all ranking 1st in the world.

Weaknesses

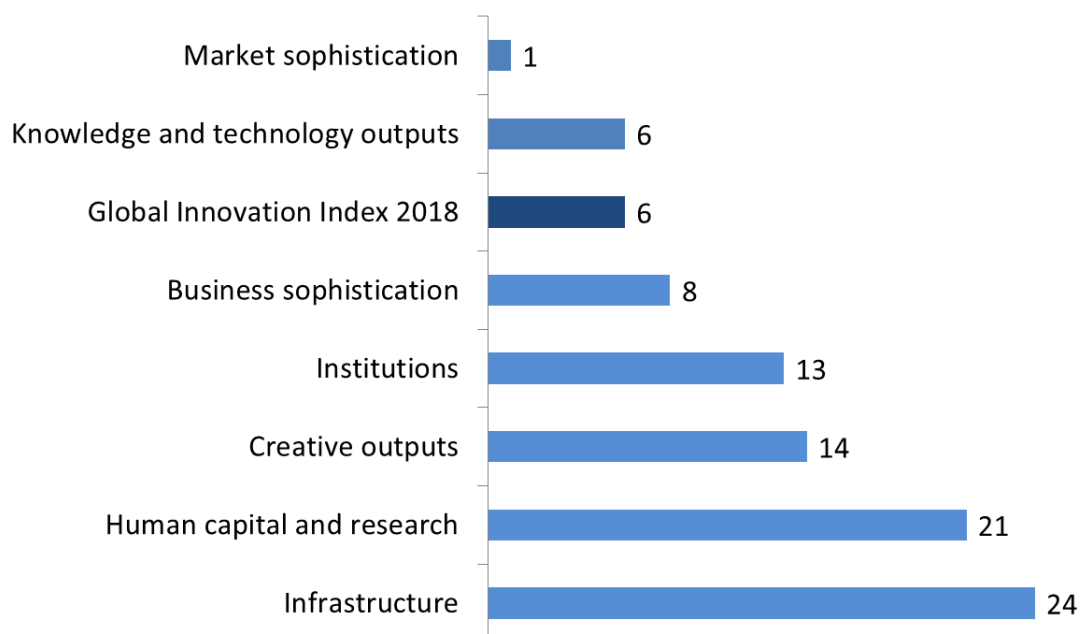
- In **Human Capital & Research** (21st), *Tertiary education* (88th) is a relative weakness for the U.S., as well as indicators *Pupil-teacher ratio* (67th) and *Graduates in science and engineering* (72nd).
- In **Infrastructure** (24th), the indicators *Gross capital formation* (92nd), *GDP/unit of energy use* (75th) and *ISO 14001 environmental certificates* (102nd) are identified as weaknesses.
- In **Business Sophistication** (8th), the U.S. ranks relatively weakly in *GERD financed by abroad* (62nd) and *FDI inflows* (74th).
- In **Innovation Outputs**, the U.S. demonstrates relative weaknesses in indicators *Productivity growth* (77th), *ISO 9001 quality certificates* (95th), and *Trademarks by origin* (86th).

The following figure presents a summary of the U.S.'s ranks in the 7 GII areas, as well as the overall rank in the GII 2018.

U.S.'s rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

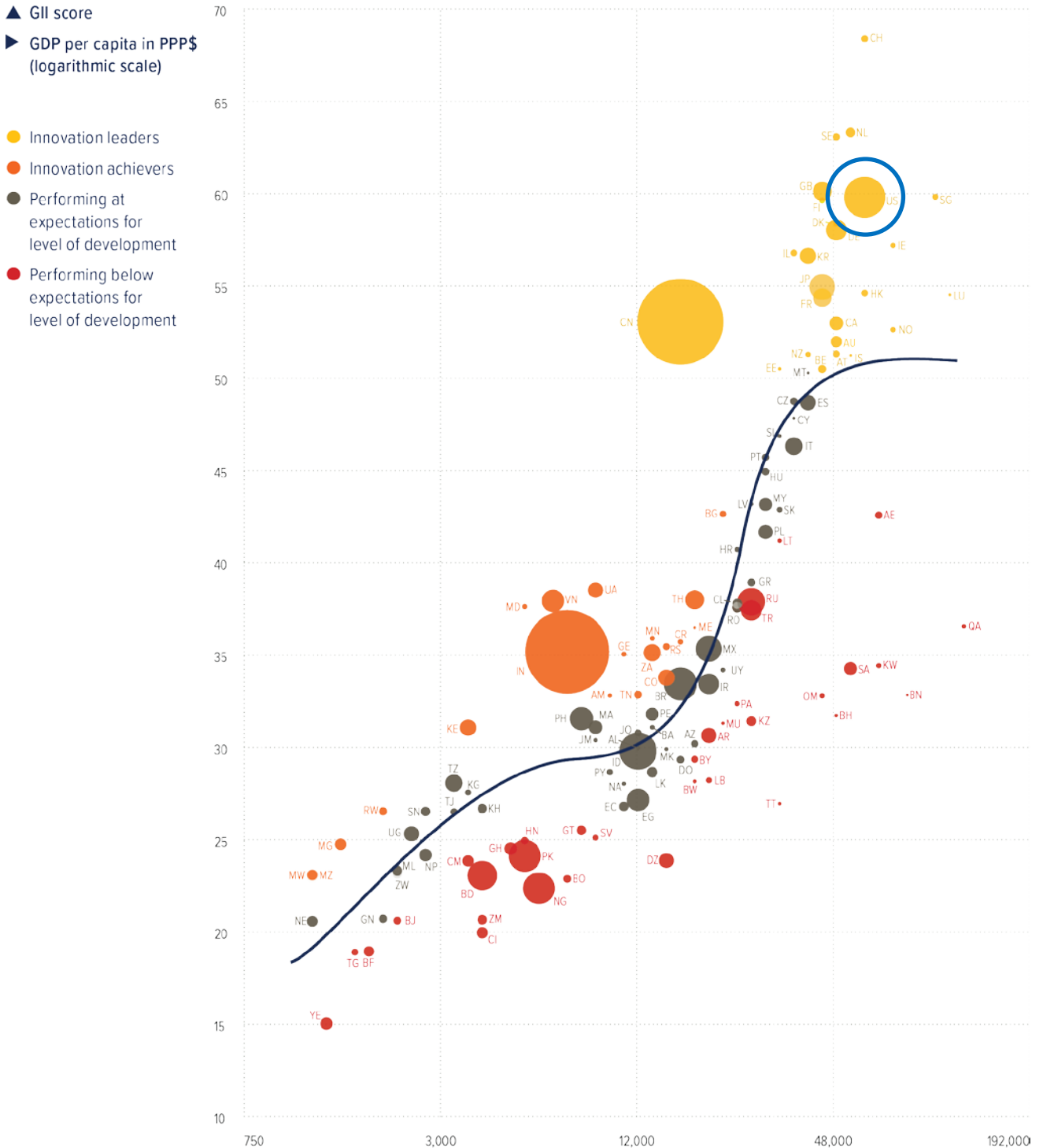
Total number of countries: 126



Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better than what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, the U.S. performs well above its expected level of development.



Missing and Outdated Data

More and better data improve the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for the U.S. that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
2.2.1	Tertiary enrolment, % gross	n/a	2016	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	n/a	2016	Microfinance Information Exchange, Mix Market
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank, Enterprise Surveys
5.1.5	Females employed w/advanced degrees, %	n/a	2016	ILO, ILOSTAT
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2016	WIPO, Intellectual Property Statistics
6.2.2	New businesses/th pop. 15-64	n/a	2016	World Bank, Doing Business

Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2015	2016	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2015	2016	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2015	2016	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2015	2016	UNESCO Institute for Statistics
5.1.1	Knowledge-intensive employment, %	2013	2016	ILO, ILOSTAT
5.3.5	Research talent, % in business enterprise	2015	2016	UNESCO Institute for Statistics
7.2.1	Cultural & creative services exports, % total trade	2015	2016	WTO, Trade in Commercial Services



UNITED STATES OF AMERICA

GII 2018 rank

6

Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
7	6	High	NAC	22	324.5	19,362.1	59,501.1	4

	Score/Value	Rank
Institutions	87.7	13
1.1 Political environment	78.9	21
1.1.1 Political stability & safety*	72.8	45
1.1.2 Government effectiveness*	81.9	17
1.2 Regulatory environment	93.0	12
1.2.1 Regulatory quality*	82.5	17
1.2.2 Rule of law*	89.6	14
1.2.3 Cost of redundancy dismissal, salary weeks	8.0	1 ●
1.3 Business environment	91.2	3 ●
1.3.1 Ease of starting a business*	91.2	42
1.3.2 Ease of resolving insolvency*	91.1	3 ●◆
Human capital & research	51.3	21
2.1 Education	52.8	47
2.1.1 Expenditure on education, % GDP	5.0	53
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.5	40
2.1.3 School life expectancy, years ⁽²⁾	16.5	21
2.1.4 PISA scales in reading, maths & science	487.6	29 ◇
2.1.5 Pupil-teacher ratio, secondary ⁽²⁾	14.7	67 ○◇
2.2 Tertiary education	22.2	88 ○◇
2.2.1 Tertiary enrolment, % gross	n/a	n/a
2.2.2 Graduates in science & engineering, % ⁽²⁾	17.4	72 ○
2.2.3 Tertiary inbound mobility, % ⁽²⁾	4.6	43
2.3 Research & development (R&D)	78.9	4 ◆
2.3.1 Researchers, FTE/mn pop. ⁽²⁾	4,313.4	20
2.3.2 Gross expenditure on R&D, % GDP	2.7	10
2.3.3 Global R&D companies, top 3, mn US\$	100.0	1 ●◆
2.3.4 QS university ranking, average score top 3*	99.0	1 ●◆
Infrastructure	58.8	24 ◇
3.1 Information & communication technologies (ICTs)	85.5	10
3.1.1 ICT access*	82.7	17
3.1.2 ICT use*	76.7	18
3.1.3 Government's online service*	92.8	9
3.1.4 E-participation*	89.8	12
3.2 General infrastructure	53.0	21
3.2.1 Electricity output, kWh/cap	13,253.4	9
3.2.2 Logistics performance*	89.2	10
3.2.3 Gross capital formation, % GDP	19.8	92 ○
3.3 Ecological sustainability	37.8	63 ◇
3.3.1 GDP/unit of energy use	7.8	75 ○
3.3.2 Environmental performance*	71.2	26
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	0.3	102 ○◇
Market sophistication	85.1	1 ●◆
4.1 Credit	89.6	1 ●◆
4.1.1 Ease of getting credit*	95.0	2 ●◆
4.1.2 Domestic credit to private sector, % GDP	192.2	3 ●◆
4.1.3 Microfinance gross loans, % GDP	n/a	n/a
4.2 Investment	73.5	4 ◆
4.2.1 Ease of protecting minority investors*	64.7	41
4.2.2 Market capitalization, % GDP	145.5	5
4.2.3 Venture capital deals/bn PPP\$ GDP	0.4	1 ●◆
4.3 Trade, competition, & market scale	92.3	1 ●◆
4.3.1 Applied tariff rate, weighted mean, %	1.6	47
4.3.2 Intensity of local competition [†]	83.3	5 ◆
4.3.3 Domestic market scale, bn PPP\$	19,362.1	2 ●◆

	Score/Value	Rank
Business sophistication	56.1	8
5.1 Knowledge workers	65.7	13
5.1.1 Knowledge-intensive employment, % ⁽²⁾	38.0	29
5.1.2 Firms offering formal training, % firms	n/a	n/a
5.1.3 GERD performed by business, % GDP	2.0	8
5.1.4 GERD financed by business, %	62.3	9
5.1.5 Females employed w/advanced degrees, %	n/a	n/a
5.2 Innovation linkages	48.8	16
5.2.1 University/industry research collaboration [†]	78.4	2 ●◆
5.2.2 State of cluster development [†]	78.4	1 ●◆
5.2.3 GERD financed by abroad, %	5.2	62 ○
5.2.4 JV-strategic alliance deals/bn PPP\$ GDP	0.1	17
5.2.5 Patent families 2+ offices/bn PPP\$ GDP	3.1	15
5.3 Knowledge absorption	53.8	7
5.3.1 Intellectual property payments, % total trade	1.8	16
5.3.2 High-tech net imports, % total trade	18.1	7 ◆
5.3.3 ICT services imports, % total trade	1.5	40
5.3.4 FDI net inflows, % GDP	2.2	74 ○
5.3.5 Research talent, % in business enterprise ⁽²⁾	71.1	4 ◆
Knowledge & technology outputs	55.6	6
6.1 Knowledge creation	65.0	6
6.1.1 Patents by origin/bn PPP\$ GDP	15.9	6 ◆
6.1.2 PCT patents by origin/bn PPP\$ GDP	2.9	13
6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
6.1.4 Scientific & technical articles/bn PPP\$ GDP	11.5	43 ◇
6.1.5 Citable documents H index	100.0	1 ●◆
6.2 Knowledge impact	58.1	3 ●◆
6.2.1 Growth rate of PPP\$ GDP/worker, %	0.1	77 ○
6.2.2 New businesses/th pop. 15-64	n/a	n/a
6.2.3 Computer software spending, % GDP	1.1	1 ●◆
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	1.6	95 ○◇
6.2.5 High- & medium-high-tech manufactures, %	0.5	11
6.3 Knowledge diffusion	43.7	16
6.3.1 Intellectual property receipts, % total trade	5.0	1 ●◆
6.3.2 High-tech net exports, % total trade	7.2	24
6.3.3 ICT services exports, % total trade	1.5	66
6.3.4 FDI net outflows, % GDP	1.8	36 ◇
Creative outputs	48.0	14
7.1 Intangible assets	50.3	35 ○◇
7.1.1 Trademarks by origin/bn PPP\$ GDP	20.9	86 ○◇
7.1.2 Industrial designs by origin/bn PPP\$ GDP	1.3	61
7.1.3 ICTs & business model creation [†]	80.7	9
7.1.4 ICTs & organizational model creation [†]	83.2	1 ●◆
7.2 Creative goods & services	51.0	5 ◆
7.2.1 Cultural & creative services exports, % total trade ⁽²⁾	2.3	1 ●◆
7.2.2 National feature films/mn pop. 15-69	3.5	53
7.2.3 Entertainment & Media market/th pop. 15-69	100.0	1 ●◆
7.2.4 Printing & other media, % manufacturing	1.5	30
7.2.5 Creative goods exports, % total trade	1.7	34
7.3 Online creativity	40.5	19
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	100.0	1 ●◆
7.3.2 Country-code TLDs/th pop. 15-69	2.6	60 ◇
7.3.3 Wikipedia edits/mn pop. 15-69	26.1	42 ◇
7.3.4 Mobile app creation/bn PPP\$ GDP	41.8	14

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25; * an index; † a survey question. ⁽²⁾ indicates that the country'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; see page 75 of this appendix for details.