GLOBAL INNOVATION INDEX 2019

THE UNITED KINGDOM

5th The United Kingdom ranks 5th 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 the U.K. 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 the U.K.'s ranking in the GII 2019 is between 3 and 5.

The U.K.'s GII Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	5	6	4
2018	4	4	6
2017	5	7	6

- The U.K. performs better in Innovation Outputs than Inputs in 2019.
- This year the U.K. ranks 6th in Innovation Inputs, worse than in 2018 and 2017.
- In Innovation Outputs, the U.K. ranks 4th, better than in 2018 and 2017.

5th The United Kingdom ranks 5th among the 50 high-income economies.

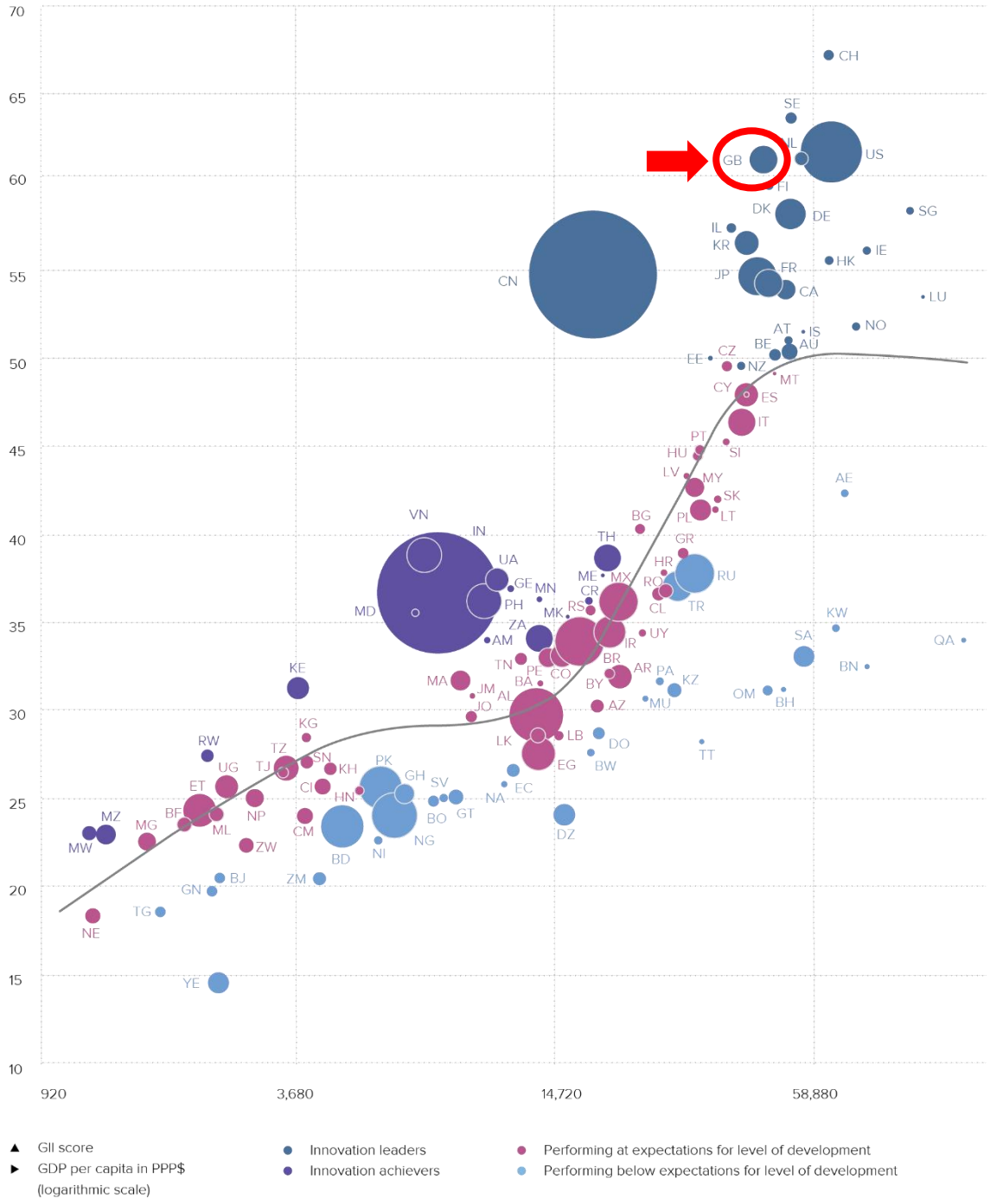
4th The United Kingdom ranks 4th among the 39 economies in Europe.

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, the U.K. performs well above its expected level of development.

GII scores and GDP per capita in PPP US$
(bubbles sized by population)

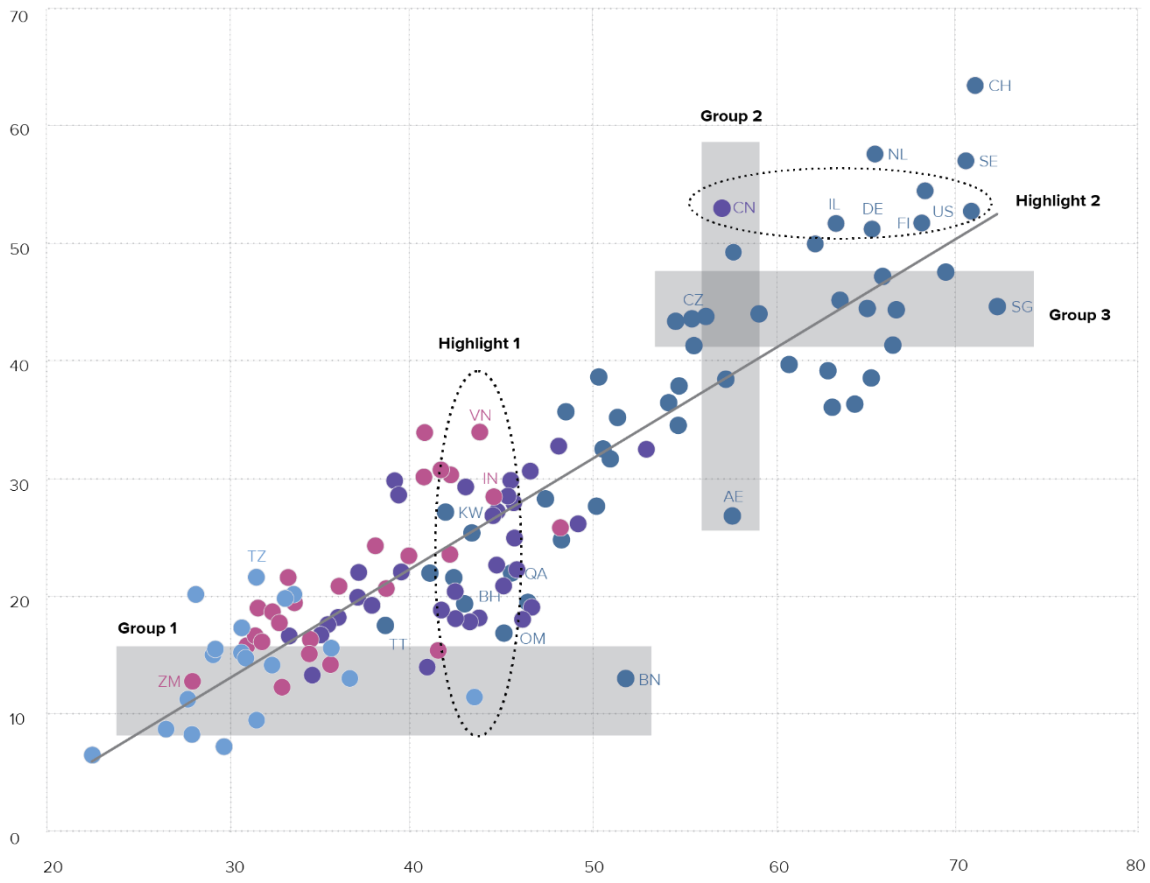


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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

The U.K. produces more outputs relative to its level of innovation inputs.

Innovation input/output performance by income group, 2019



▲ Output score
▶ Input score

● High income
● Upper-middle income

● Lower-middle income
● Low income

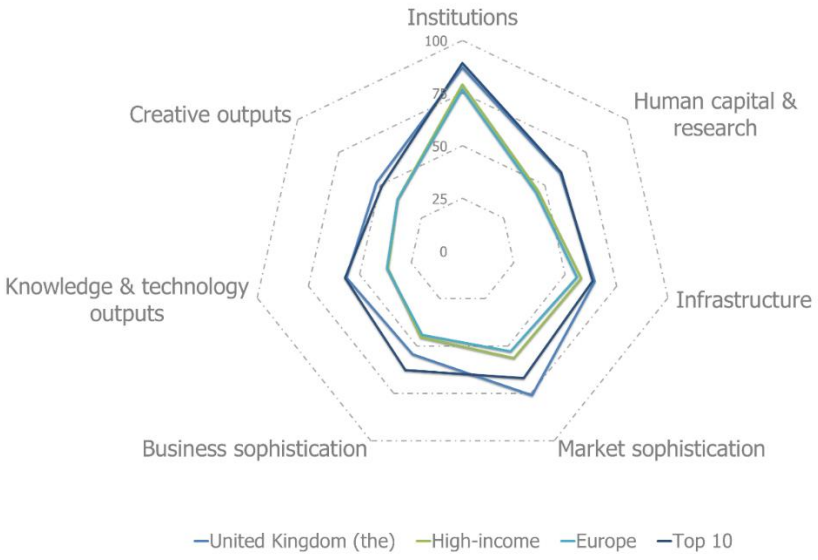
— Fitted values

AE United Arab Emirates
BH Bahrain
BN Brunei Darussalam
CH Switzerland
CN China
CZ Czech Republic
DE Germany
FI Finland
IL Israel
IN India
KW Kuwait
NL Netherlands
OM Oman
QA Qatar
SE Sweden
SG Singapore
TT Trinidad and Tobago
TZ United Republic of Tanzania
US United States of America
VN Viet Nam
ZM Zambia

Source: Global Innovation Index Database, Cornell, INSEAD, and WIPO, 2019.

BENCHMARKING THE U.K. TO OTHER HIGH-INCOME ECONOMIES AND THE EUROPE REGION

The U.K.'s scores in the seven GII pillars



High-income economies

The U.K. has high scores in all the seven GII pillars, which are above the average of the high-income group.

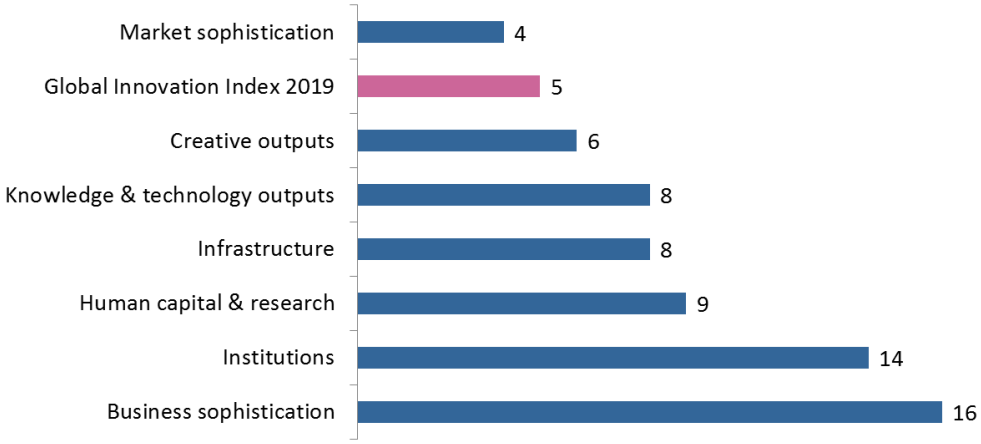
Europe Region

Compared to other economies in the Europe region, the U.K. performs above average in all seven GII pillars.

The U.K. ranks in the top 5 in the following areas: Information & communication technologies (ICTs); Ecological sustainability; Trade, competition, & market scale; and Knowledge creation.

OVERVIEW OF THE U.K.'S RANKINGS IN THE 7 GII AREAS

The U.K. performs the best in Market sophistication, and its weakest performance is in Business sophistication.



*The highest possible ranking in each pillar is 1.

THE U.K.'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the U.K.'s strengths and weaknesses in the GII 2019.

Strengths

Code	Indicator name	Rank
2.1.3	School life expectancy, years	6
2.3.4	QS university ranking, average score top 3*	2
3.1	Information & communication technologies (ICTs)	3
3.1.1	ICT access*	3
3.1.3	Government's online service*	4
3.3	Ecological sustainability	5
3.3.2	Environmental performance*	6
4	Market sophistication	4
4.2	Investment	6
4.2.3	Venture capital deals/bn PPP$ GDP	4
4.3	Trade, competition, & market scale	5
6.1	Knowledge creation	5
6.1.5	Citable documents H index	1
6.2.3	Computer software spending, % GDP	4
7	Creative outputs	6
7.1.4	ICTs & organizational model creation†	6
7.2.1	Cultural & creative services exports, % total trade	6

Weaknesses

Code	Indicator name	Rank
1.1.1	Political & operational stability*	42
2.1.2	Government funding/pupil, secondary, % GDP/cap	55
2.1.5	Pupil-teacher ratio, secondary	87
2.2.1	Tertiary enrolment, % gross	47
3.2	General infrastructure	44
3.2.1	Electricity output, kWh/mn pop	44
3.2.3	Gross capital formation, % GDP	109
4.3.1	Applied tariff rate, weighted mean, %	23
5.3.5	Research talent, % in business enterprise	33
6.2.1	Growth rate of PPP$ GDP/worker, %, 3-year average	75
7.1.1	Trademarks by origin/bn PPP$ GDP	40

STRENGTHS

- The U.K.'s strengths are found in 5 of the seven GII pillars.
- The pillar Market sophistication (4) is a relative strength, as well as two of its three sub-pillars – Investment (6); and Trade, competition, & market scale (5). The indicator Venture capital deals (4) is also a strength.
- In Infrastructure (8), the U.K. performs well in two of its three sub-pillars: Information & communication technologies (ICTs) (3), and Ecological sustainability (5). At the variable level, ICT access (3), Government's online service (4), and Environmental performance (6) are also strengths.
- Other relative strengths for the U.K. are scattered in three GII pillars, as follows:
    - In Human capital & research (9), two indicators are relative strengths: School life expectancy (6), and Quality of universities – in which it ranks 2nd in the world.
    - In Knowledge & technology outputs (8), the U.K. has strong performance in sub-pillar Knowledge creation (5) as well as in two indicators: Computer software spending (4) and the Quality of scientific publications – where it ranks 1st worldwide.
    - Indicators ICTs & organizational model creation (6), and Cultural & creative services exports (6) are strengths in the Creative outputs (6) pillar.

WEAKNESSES

- The U.K.'s relative weaknesses are in all seven GII pillars.
- Three relative weaknesses are found in Human capital & research (9). These are indicators Government funding per pupil (55), Pupil-teacher ratio (87), and Tertiary enrolment (47).
- In Infrastructure (8), the U.K. performs weakly in sub-pillar General infrastructure (44) and in two of its three indicators - Electricity output (44) and Gross capital formation (109).
- In Institutions (14), the U.K. exhibits weakness in a single indicator - Political & operational stability (42).
- In Market sophistication (4), indicator Applied tariff rate (23) is a relative weakness.
- Indicator Research talent in business enterprise (33) is a relative weakness in Business sophistication (16).
- In Knowledge & technology outputs (8), the only relative weakness for the U.K. is indicator Labor productivity growth (75).
- In Creative outputs (6), indicator Trademarks by origin (40) is a relative weakness.

UNITED KINGDOM (THE)

GII 2019 rank

5

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
4	6	High	EUR	66.6	3,033.7	45,704.6	4

		Score/Value	Rank	
INSTITUTIONS		**87.1**	**14**	
1.1	**Political environment**	**80.2**	**23**	
1.1.1	Political and operational stability*	78.9	42	○ ◇
1.1.2	Government effectiveness*	80.8	18	
1.2	**Regulatory environment**	**93.7**	**11**	
1.2.1	Regulatory quality*	88.0	12	
1.2.2	Rule of law*	90.8	14	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	25	
1.3	**Business environment**	**87.4**	**13**	
1.3.1	Ease of starting a business*	94.6	17	
1.3.2	Ease of resolving insolvency*	80.3	13	
HUMAN CAPITAL & RESEARCH		**59.3**	**9**	
2.1	**Education**	**57.7**	**34**	
2.1.1	Expenditure on education, % GDP	5.5	26	
2.1.2	Government funding/pupil, secondary, % GDP/cap	19.0	55	○
2.1.3	School life expectancy, years	19.0	6	●
2.1.4	PISA scales in reading maths & science	499.9	21	
2.1.5	Pupil-teacher ratio, secondary ⏲	19.4	87	○ ◇
2.2	**Tertiary education**	**52.4**	**11**	
2.2.1	Tertiary enrolment, % gross ⏲	59.4	47	○
2.2.2	Graduates in science & engineering, %	26.3	25	
2.2.3	Tertiary inbound mobility, %	18.1	6	◆
2.3	**Research & development (R&D)**	**67.8**	**9**	
2.3.1	Researchers, FTE/mn pop	4,377	19	
2.3.2	Gross expenditure on R&D, % GDP	1.7	22	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	86.8	8	
2.3.4	QS university ranking, average score top 3*	95.2	2	● ◆
INFRASTRUCTURE		**64.4**	**8**	
3.1	**Information & communication technologies**	**93.0**	**3**	● ◆
3.1.1	ICT access*	92.9	3	● ◆
3.1.2	ICT use*	82.7	9	
3.1.3	Government's online service*	97.9	4	●
3.1.4	E-participation*	98.3	5	
3.2	**General infrastructure**	**39.3**	**44**	○ ◇
3.2.1	Electricity output, kWh/mn pop	5,041.	44	○
3.2.2	Logistics performance*	90.0	9	
3.2.3	Gross capital formation, % GDP	17.2	109	○ ◇
3.3	**Ecological sustainability**	**61.0**	**5**	● ◆
3.3.1	GDP/unit of energy use	14.7	14	
3.3.2	Environmental performance*	79.9	6	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.0	19	
MARKET SOPHISTICATION		**76.0**	**4**	● ◆
4.1	**Credit**	**70.4**	**10**	
4.1.1	Ease of getting credit*	75.0	29	
4.1.2	Domestic credit to private sector, % GDP	136.2	14	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**75.4**	**6**	● ◆
4.2.1	Ease of protecting minority investors*	75.0	14	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.3	4	● ◆
4.3	**Trade, competition, & market scale**	**82.0**	**5**	●
4.3.1	Applied tariff rate, weighted avg., %	1.8	23	○
4.3.2	Intensity of local competition+	79.9	9	
4.3.3	Domestic market scale, bn PPP$	3,033.	9	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**54.3**	**16**	
5.1	**Knowledge workers**	**67.5**	**12**	
5.1.1	Knowledge-intensive employment, %	48.6	7	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business % GDP	1.1	18	
5.1.4	GERD financed by business, %	51.8	25	
5.1.5	Females employed w/advanced degrees, %	22.8	16	
5.2	**Innovation linkages**	**50.1**	**13**	
5.2.1	University/industry research collaboration+	72.7	7	
5.2.2	State of cluster development+	69.8	9	
5.2.3	GERD financed by abroad, %	15.6	26	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.1	12	
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.3	17	
5.3	**Knowledge absorption**	**45.4**	**27**	
5.3.1	Intellectual property payments, % total trade	1.5	23	
5.3.2	High-tech imports, % total trade	11.9	20	
5.3.3	ICT services imports, % total trade	1.8	30	
5.3.4	FDI net inflows, % GDP	4.7	34	
5.3.5	Research talent, % in business enterprise	37.9	33	○ ◇
KNOWLEDGE & TECHNOLOGY OUTPUTS		**56.6**	**8**	
6.1	**Knowledge creation**	**66.9**	**5**	●
6.1.1	Patents by origin/bn PPP$ GDP	6.4	16	
6.1.2	PCT patents by origin/bn PPP$ GDP	1.9	19	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	23.8	16	
6.1.5	Citable documents H-index	100.0	1	● ◆
6.2	**Knowledge impact**	**55.2**	**7**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.5	75	○
6.2.2	New businesses/th pop. 15-64	15.7	6	◆
6.2.3	Computer software spending, % GDP	0.7	4	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.8	26	
6.2.5	High- & medium-high-tech manufactures, %	0.4	21	
6.3	**Knowledge diffusion**	**47.7**	**12**	
6.3.1	Intellectual property receipts, % total trade	2.6	8	
6.3.2	High-tech net exports, % total trade	9.0	18	
6.3.3	ICT services exports, % total trade	3.2	28	
6.3.4	FDI net outflows, % GDP	1.8	31	
CREATIVE OUTPUTS		**52.2**	**6**	●
7.1	**Intangible assets**	**58.3**	**12**	
7.1.1	Trademarks by origin/bn PPP$ GDP	56.2	40	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	7.9	16	
7.1.3	ICTs & business model creation+	80.4	8	
7.1.4	ICTs & organizational model creation+	79.1	6	●
7.2	**Creative goods & services**	**40.**	**8**	
7.2.1	Cultural & creative services exports, % total trade	2.0	6	● ◆
7.2.2	National feature films/mn pop. 15-69	6.3	35	
7.2.3	Entertainment & Media market/th pop. 15-69	62.0	9	
7.2.4	Printing & other media, % manufacturing	2.0	19	
7.2.5	Creative goods exports, % total trade	2.9	20	
7.3	**Online creativity**	**51.6**	**11**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	60.7	12	
7.3.2	Country-code TLDs/th pop. 15-69	73.1	7	
7.3.3	Wikipedia edits/mn pop. 15-69	69.3	13	
7.3.4	Mobile app creation/bn PPP$ GDP	25.9	18	

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-ranked GII economies; * 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 the U.K..

Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2017	World Federation of Exchanges
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2017	World Intellectual Property Organization

Outdated data

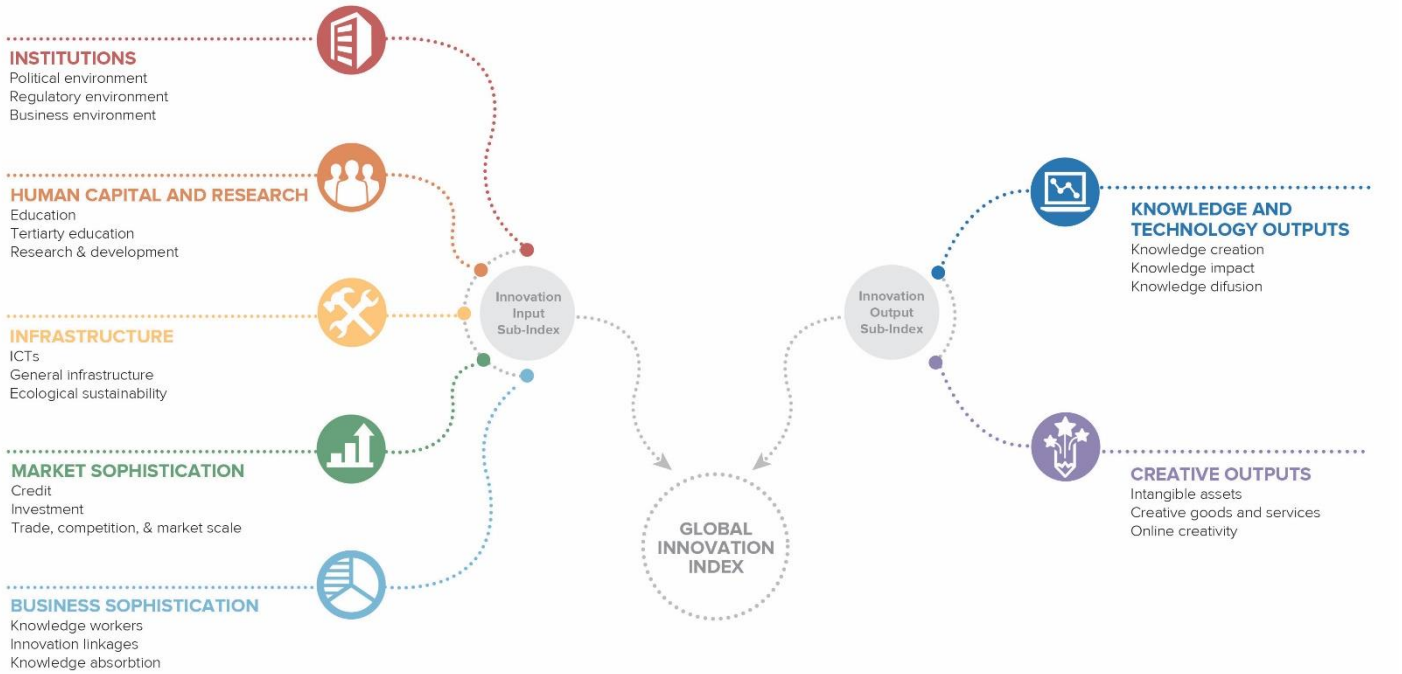
Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	2016	2017	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics

ABOUT THE GLOBAL INNOVATION INDEX

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.

Framework of the Global Innovation Index 2019



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.