



Office for
Life Sciences

Life Science Competitiveness Indicators 2021

Annual report on the UK life Science Sector

30 July 2021



Ministerial foreword



Nadhim Zahawi MP
Parliamentary Under
Secretary of State of the
Department of
Business, Energy and
Industrial Strategy

We are delighted to introduce the seventh annual Life Science Competitiveness Indicators report, a suite of metrics demonstrating the UK's performance in the Life Sciences sector and our position in global rankings.

Over the last year, the UK's contribution to global efforts in response to the coronavirus pandemic has been vital. With the support of the NHS, NICE, the MHRA, and the National Institute for Health Research, we have been at the forefront of global COVID-19 research. Our world-leading RECOVERY trial identified the first safe and effective treatment (dexamethasone) which is credited with saving tens of thousands of lives across the UK, and the partnership between Oxford University and AstraZeneca produced one of the first COVID-19 vaccines. In addition, we've seen the growth of a domestic diagnostics industry that is contributing to sequencing emerging viral variants. The NHS has showcased its ability to adopt innovation at scale and speed, with the rapid rollout of COVID-19 vaccines and new treatments alongside the widespread use of new technologies to support remote care delivery. In summary, the UK has made a rapid and significant contribution to the global fight against COVID.

The momentum from these phenomenal scientific successes must not be lost. We have a once in a generation opportunity to channel our scientific excellence to assist the NHS in tackling the great healthcare challenges of our time. The new Life Sciences Vision, published earlier this month, sets out government and the life science sector's ambitions for the sector over the next decade. It highlights seven core disease and technology areas where there is an opportunity for Government, industry, the NHS, medical research charities and academia to work together to meaningfully improve treatment options and patient outcomes.

The NHS will be central to the delivery of nearly every element of the Vision, at both a national and operational level, and its role as innovation partner is vital to the success of the Vision's ambitions. Despite the impact of Covid on NICE's work, the average time between marketing authorisation and final NICE guidance for new active substances was just 3.3 months in 2020/21, a decrease since 2019/20¹. We must continue to support the NHS to increase the adoption and spread of proven clinically and cost-effective innovations, to ensure they get into the hands of patients and clinicians faster than ever before.

We also recognise the importance of increasing investment in life sciences research and development (R&D), which aligns with the government ambition to increase R&D spending to 2.4% of GDP by 2027. This commitment is evidenced by the \$3.4bn UK government spend in health R&D in 2019, which was the second highest spend amongst comparator countries (behind only the USA)².

Attracting and encouraging R&D activity is contingent on the ability to access rich, linked datasets, and we recognise that there is more we must do over the next decade to unlock the full potential and patient benefit of UK health data while maintaining public trust. The governance and oversight of NHS data needs to be simplified – we need to make high quality data accessible, in a trustworthy and transparent way.

The Vision also outlines the importance of having a life sciences investment ecosystem in which companies have access to the long-term capital needed to innovate and grow. Through the Life Sciences Investment Programme, the government has provided £200 million of funding, which will help provide innovative life sciences companies with the capital to grow their operations and create highly skilled jobs here in the UK. In a further boost to the sector, British Patient Capital has recently agreed a collaboration with Abu Dhabi's Mubadala Investment Company, one of the world's leading sovereign investors. Under this partnership, Mubadala has committed to invest £800 million in the UK life sciences sector. The total £1 billion investment will support life sciences companies in driving innovation and bringing potentially life-saving products to market.

Through the Vision, our overarching ambition is for the UK to be a global leader in life sciences – with the right environment for companies to innovate and grow, the dedicated research infrastructure to support the development of cutting-edge treatments and technologies, and the NHS acting as a full and active partner to ensure all patients can benefit from cutting-edge innovations. By delivering on our Vision, we can tackle the greatest healthcare challenges of our generation and address health inequalities, all whilst stimulating economic growth and creating new opportunities for life science businesses across the country.

1. Life Sciences Competitiveness Indicators 2021, Speed and volume of NICE Technology Appraisals
2. Life Sciences Competitiveness Indicators 2021, Government spend on health research and development (OECD)



Lord Bethell
Parliamentary Under
Secretary of State of the
Department of Health
and Social Care



Revision notice: March 2022

This report was revised in March 2022 to reflect a clarification in metric 3, previously stated as “Pharmaceutical industry spend on research and development in the UK”. This has now been renamed to “Industry spend on pharmaceutical research and development in the UK”. This is to reflect that the figures includes spend on pharmaceutical research and development from all businesses and not just businesses in the pharmaceutical sector.



The Life Sciences Competitiveness Indicators report (LSCI) summarises the performance of the UK's Life Science sector. It brings together public and private sources of information to present a set of high-level indicators of the UK sector's competitiveness internationally.

About this publication

This is the 7th release of the LSCI - it follows the delayed 2020 LSCI in February 2021 and the [Bioscience and Health Technology Sector Statistics 2019](#) in September 2020. To maintain consistency with previous publications of the LSCI, minimal changes have been made since the 2020 report. Indicators have been updated with the latest data where available. In some cases, information sources are no longer available, or no longer report data in a way that allow metrics to be calculated. Where this is the case, data from the 2020 publication has been used. One metric (**14**), which relates to uptake of innovative medicines, has undergone a methodology change since the last publication of the LSCI. This has primarily involved changing how the date from which uptake is measured is determined for each product, meaning that uptake is now measured from the Health Technology Assessment (HTA) date instead of the sales launch date – we consider this methodology change to be an improvement to the accuracy of this metric. Please see the 'Changes to this publication' page for more detailed information on this methodology change.

OLS welcomes feedback on the content of the LSCI. We continue to work to improve the report to ensure it meets user needs. If you have any feedback relating to the publication, please contact us by emailing analysis@officeforlifesciences.gov.uk, quoting 'Life Sciences Competitiveness Indicators' in the email subject.

Notes on the data

Links to public sources of information and caveats, where appropriate, are provided for each indicator. The data used in this publication is provided in an accompanying spreadsheet, available on gov.uk. Where data is procured commercially or directly from an organisation the supplier is clearly credited, but no links are given. Due to differing availability across data sources, the list of comparator countries is not consistent across indicators.

The data presented is the latest available from each source. Figures may differ from previous publications where information sources have produced revised figures. In addition, direct comparability between publications in different years cannot be guaranteed, as sources may have revised how they collect and present their data.

OLS would like to thank all those who have contributed to these indicators, or supplied data for this publication.



Changes to this publication

Since the last publication of the LSCI, we have changed the methodology of the uptake metric for NICE-approved medicines - this metric is produced by ABPI using data provided by IQVIA. In previous publications, uptake has been measured from the IQVIA 'launch date' (which is based on sales data), whereas uptake is now being measured from the Health Technology Assessment (HTA) date.

There are the following exceptions to this:

- HTA dates are not available for Belgium, Italy, and Japan, so IQVIA launch dates have been used instead
- For US and Germany, 'Regulatory Approval dates' have been used when available, and IQVIA launch dates have been used otherwise.
- If no HTA assessment has taken place, the regulatory approval date is used instead
- Wherever the regulatory approval date/HTA date is earlier than the IQVIA launch date, the IQVIA launch date is used (as APBI do not have uptake data which precedes the IQVIA launch date)

Methodology

The following methodology is used when producing this metric:

1. **Normalizing monthly data to get annual DoT (Days of Therapy):** Products have different HTA dates/launch dates in separate countries. Hence, the data is aligned so that the first 12 months of sales for each country and then subsequent years is captured and compared
2. **DoT/capita calculation:** Annualized DoT is then divided by the population of that country (in thousands) based on the respective HTA year of the product
3. **Mean of comparator countries' uptake is calculated:** For a given product, for each country a mean DoT/capita of all the available comparator countries (excluding the focal country itself) is calculated.
4. **Uptake as % of comparator country mean:** For each product and country, uptake is divided by the mean of comparator countries' uptake to understand what proportion of the average comparator level of per capita sales each country is achieving
5. **Outcome:** A final median value for each respective year which is an aggregate of all products. Products are grouped into categories based on the UK HTA/Reg. date, to build different aggregates for 2013-17, 2014-18 and 2015-19

15 comparator countries have been included in this analysis: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Spain, Switzerland, Sweden, USA. However, the majority of products do not have data available from each of the 15 comparator countries, meaning that the average uptake for certain products covers only a subset of the comparator countries.

In previous publications we have also included an equivalent metric for uptake of **non-NICE reviewed** medicines (Chart 14B). This has now been removed following feedback from user engagement.



The LSCI forms part of a suite of metrics to measure the strength of the UK life sciences sector in relation to comparator countries. Other data sources in this field:

- OLS publishes the annual [Bioscience and Health Technology Sector Statistics](#) (BaHTSS) on the UK bioscience and health technology sector, providing a detailed analysis of the life science sector in the UK.
- NICE publish an annual [Innovation Scorecard](#). This reports the use of medicines and medical technologies in the NHS in England that have been positively appraised by NICE.
- NHS England publishes the AAC Scorecard. This is an interactive dashboard that monitors the impact of AAC programmes across a wide set of measures, including the uptake of specific supported innovations. To gain access the AAC Scorecard please contact england.irlsanalytics@nhs.net.



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Overview: Performance of the UK Life Science Sector

Section	#	Indicator	Reported value (year)	Current rank amongst comparator countries
Reinforcing the UK Science Offer	1	Government spend on health research and development	\$3.4bn (2019)	2 nd of 13
	2	Non-industry spend on research and development	£3.2bn (2018)*	N/A
	3	Industry spend on pharmaceutical research and development in the UK	£4.8bn (2019)	N/A
	4	Share of patients recruited to global studies (all trial phases)	2.8% (2019)	5 th (joint with Canada) of 10
	5	Time from core package received to first patient enrolled in country (all trial phases)	218 days (2019)	7 th of 10
	6A	Share of life sciences academic citations	12% (2014)‡	2 nd of 19
	6B	Share of most cited (top 1%) life science academic citations	18% (2014)‡	2 nd of 19
Growth & Infrastructure (part 1)	7A	Number of people employed in manufacture of basic pharmaceutical products and pharmaceutical preparations	50,126 (2018)*	4 th of 12
	7B	Number of people employed in manufacture of medical technology products	41,791 (2017)*	4 th of 12
	8	Gross Value Added for pharmaceutical manufacturing	€12.5bn (2018)	5 th of 11
	9A	Global exports of pharmaceutical products	\$25.9bn (2020)	9 th of 18
	9B	Global exports of medical technology products	\$4.7bn (2020)	9 th of 18

Table note - * = data source available but not updated or partially updated, ‡ = data source no longer available.



Overview: Performance of the UK Life Science Sector

Section	#	Indicator	Reported value (year)	Current rank amongst comparator countries
Growth & infrastructure (part 2)	10A	Global imports of pharmaceutical products	\$26.8bn (2020)	10 th of 18
	10B	Global imports of medical technology products	\$6.8bn (2020)	7 th of 18
	11A	Life sciences foreign direct investment projects	75 (2020)	2 nd of 15
	11B	Life sciences foreign direct investment – capital expenditure	£898m (2020)	5 th of 15
	12A	Share of global life science Initial Public Offerings (IPOs) in 2020	2.3% (2020)	5 th of 21
	12B	Amount raised in global life sciences Initial Public Offerings (IPOs) in 2020 (where known)	£133m (2020)	6 th of 21
NHS collaborations	13	Speed and volume of NICE Technology Appraisals – time from Marketing Authorisation to first NICE output	1.5 months (2020/21)	N/A
	13	Speed and volume of NICE Technology Appraisals – time from Marketing Authorisations to final NICE guidance	3.3 months (2020/21)	N/A
	14	Per capita uptake of new medicines – NICE approved (relative uptake compared against average comparator uptake 5 years after launch)	69% (2015 to 2019)	N/A
Skills	15	Percentage of graduates from tertiary education graduating from Natural Sciences, Mathematics, and Statistics programmes	14% (2016)*	2 nd of 14

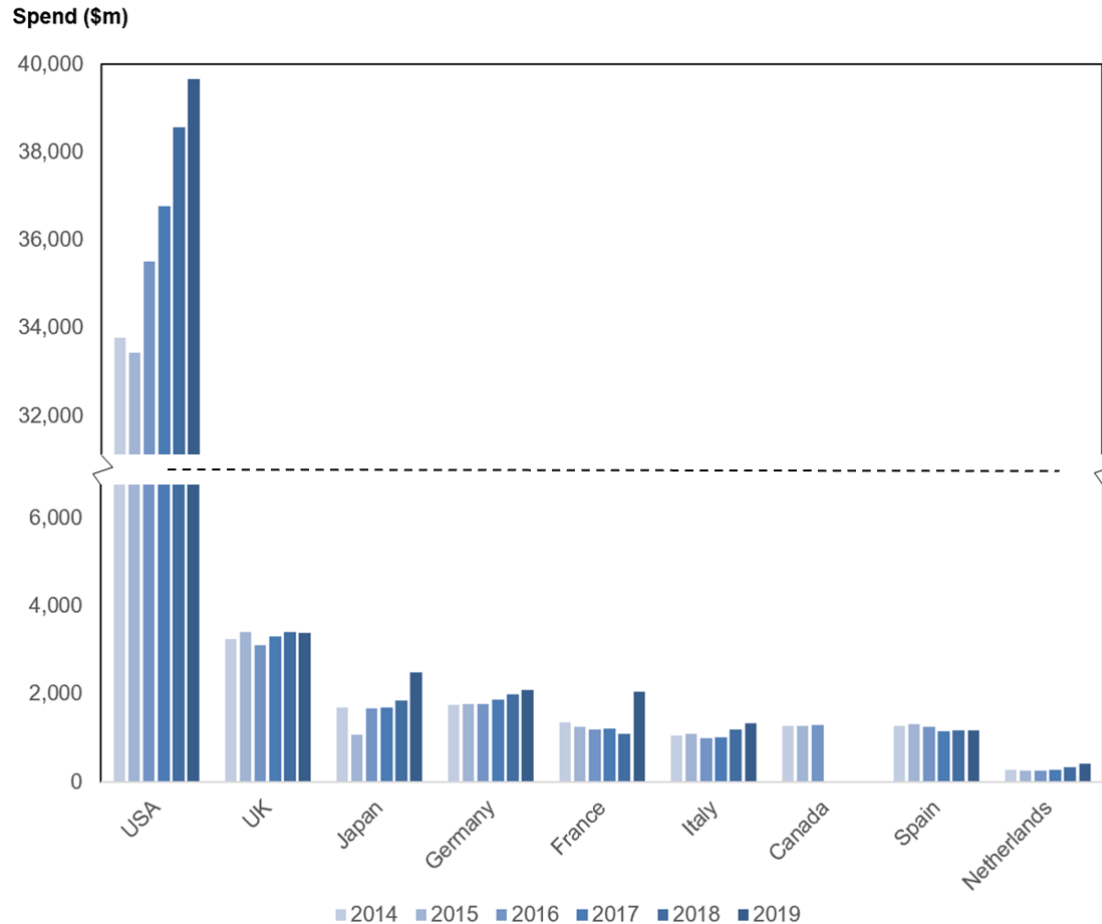
Table note - * = data source available but not updated or partially updated, † = data source no longer available.



Reinforcing the UK Science Offer



Chart 1: Government spend on health research and development



- The UK government spend on health research and development was **\$3.4bn in 2019** (the latest year with UK data).
- The UK maintains its position with the **second highest level of government spending on health R&D** amongst the comparators, behind only the United States of America.
- Rankings have been based on the latest available datapoint for each country. This approach was chosen because using the latest year with complete data (2015) would misrepresent countries such as Japan and France, which both saw notable increases in recent years. Japan's government spend on health R&D increased every year from 2015 onwards (from \$1.1bn in 2015 to \$2.5bn in 2019), and France saw a sharp increase of 88% between 2018 and 2019 (from \$1.1bn to \$2.1bn).

Source: [OECD Research & Development statistics, Government budget allocations for R&D \(GBARD\)](#).

Note: Figures are derived from government budget appropriations or outlays on R&D. Figures are shown in terms of 2015 Dollars - Constant prices and PPPs



Chart 2: Non-industry spend on research and development in the UK

Spend (£m)	2014	2015	2016	2017	2018	2019	2020
AMRC member charities	1,264	1,442	1,589	1,597	1,310	1,893	1,741

Spend (£m)	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Medical Research Council	772	928	756	814	-	-	-
National Institute for Health Research	1,035	1,037	1,032	1,062	-	-	-

Sources: [AMRC research expenditure dashboard](#), [MRC annual report 2017/18](#) and [NIHR annual report 2017/18](#)

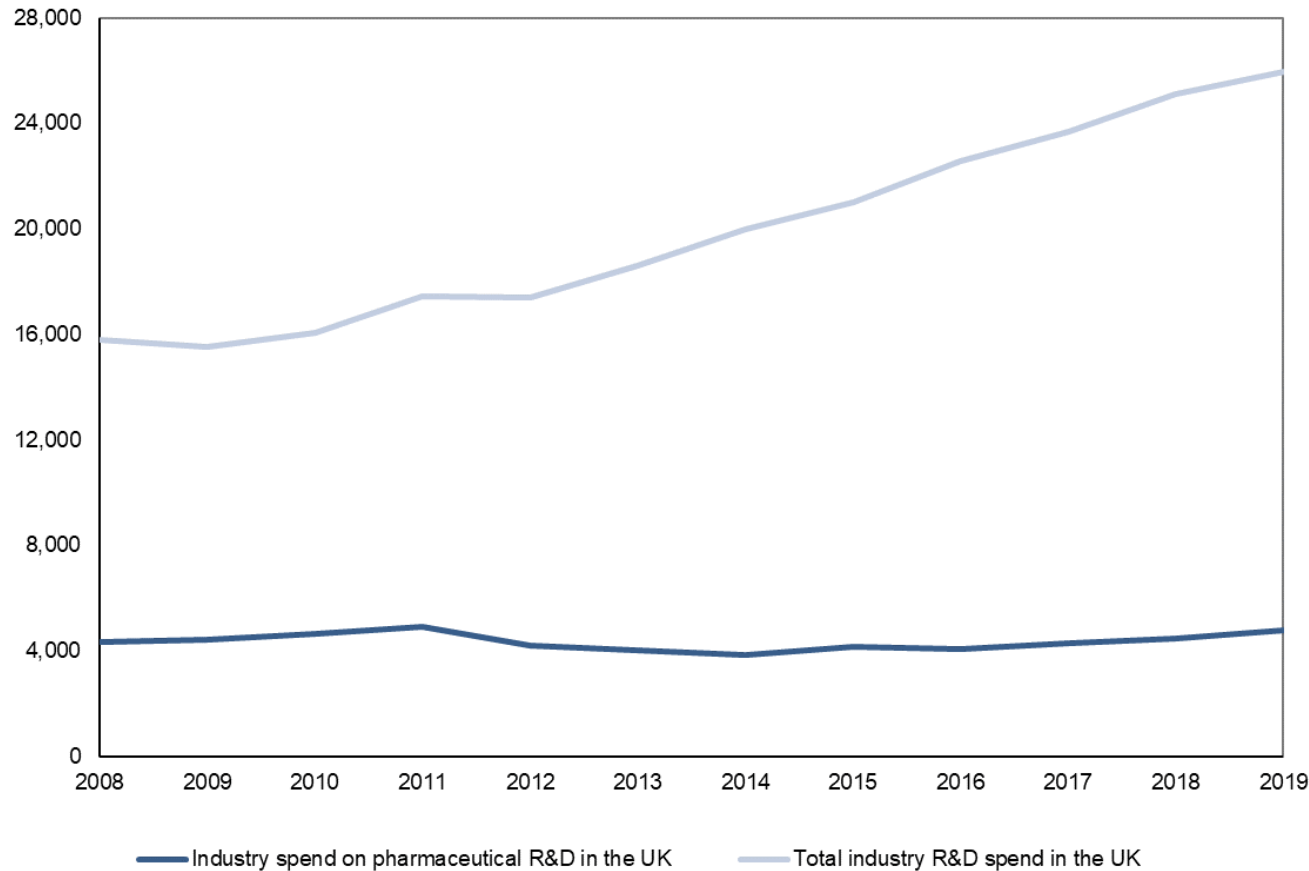
Note: Spend by health departments in Scotland, Wales and Northern Ireland not illustrated

- This indicator is a measure of the UK medical research charity sector spend on medical and health R&D. Due to changes in how some of the data points are recorded, **this metric has only been partially updated since the last publication.**
- In 2020, AMRC charities contributed £1.7bn of non-industry spending on R&D, a decrease of 8.0% from the £1.9bn spend in 2019.
- On April 1st, 2018 the Medical Research Council (MRC), along with eight other bodies, became part of UK Research and Innovation (UKRI). This has changed how MRC reports the data covered in this publication.
- During the same period the National Institute for Health Research (NIHR) also changed the format of its performance reports.
- These changes have interrupted the time series for this metric. We are now working to develop a solution for updating the indicator in future publications.



Chart 3: Industry spend on pharmaceutical research and development in the UK

Spend (£m)

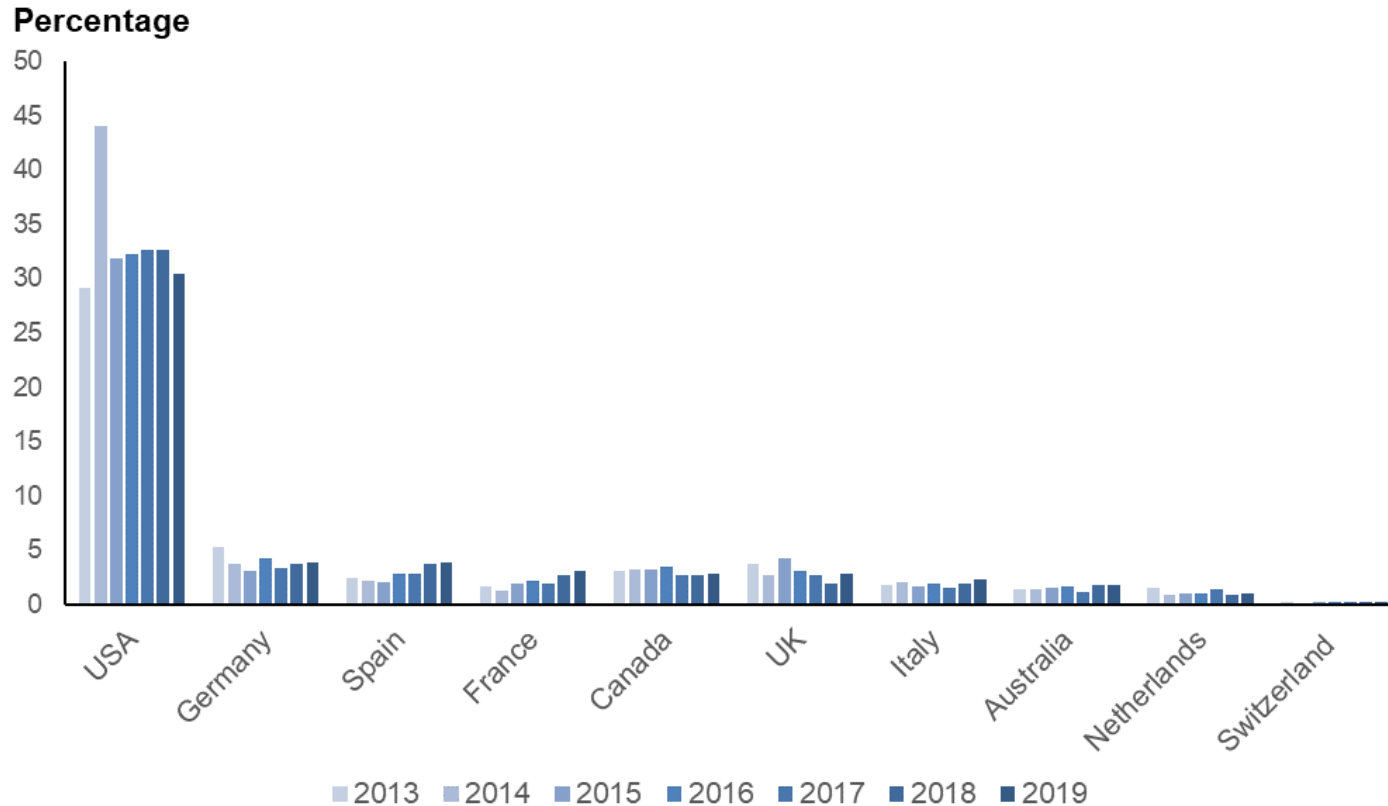


Source: [UK Business Expenditure on Research and Development \(BERD\) 2019 survey](#), Office for National Statistics (ONS)

- Industry's spend on pharmaceutical research and development (R&D) in the UK was **£4.8bn in 2019**.
- The industry spend on pharmaceutical R&D typically accounts for approximately **one fifth** of the total industrial spend on research and development in the UK.
- Between 2008 and 2011, industry spend on pharmaceutical R&D in the UK grew steadily. It peaked in 2011 at £4.9bn; 28% of all UK industry R&D spending at the time.
- From 2011 to 2014 the value of the industry spend on pharmaceutical R&D in the UK R&D fell to £3.9bn. This reduced it to 19% of the total UK industrial spending on R&D.
- Since 2014, industry spend on pharmaceutical R&D in the UK has grown, but has not yet passed its 2011 peak. This growth has been accompanied by an increase in R&D spending overall in the economy. As a result, the industry spend on pharmaceutical R&D spending as a proportion of total industrial R&D spend is holding at around one fifth.



Chart 4: Share of patients recruited to global studies (all trial phases)



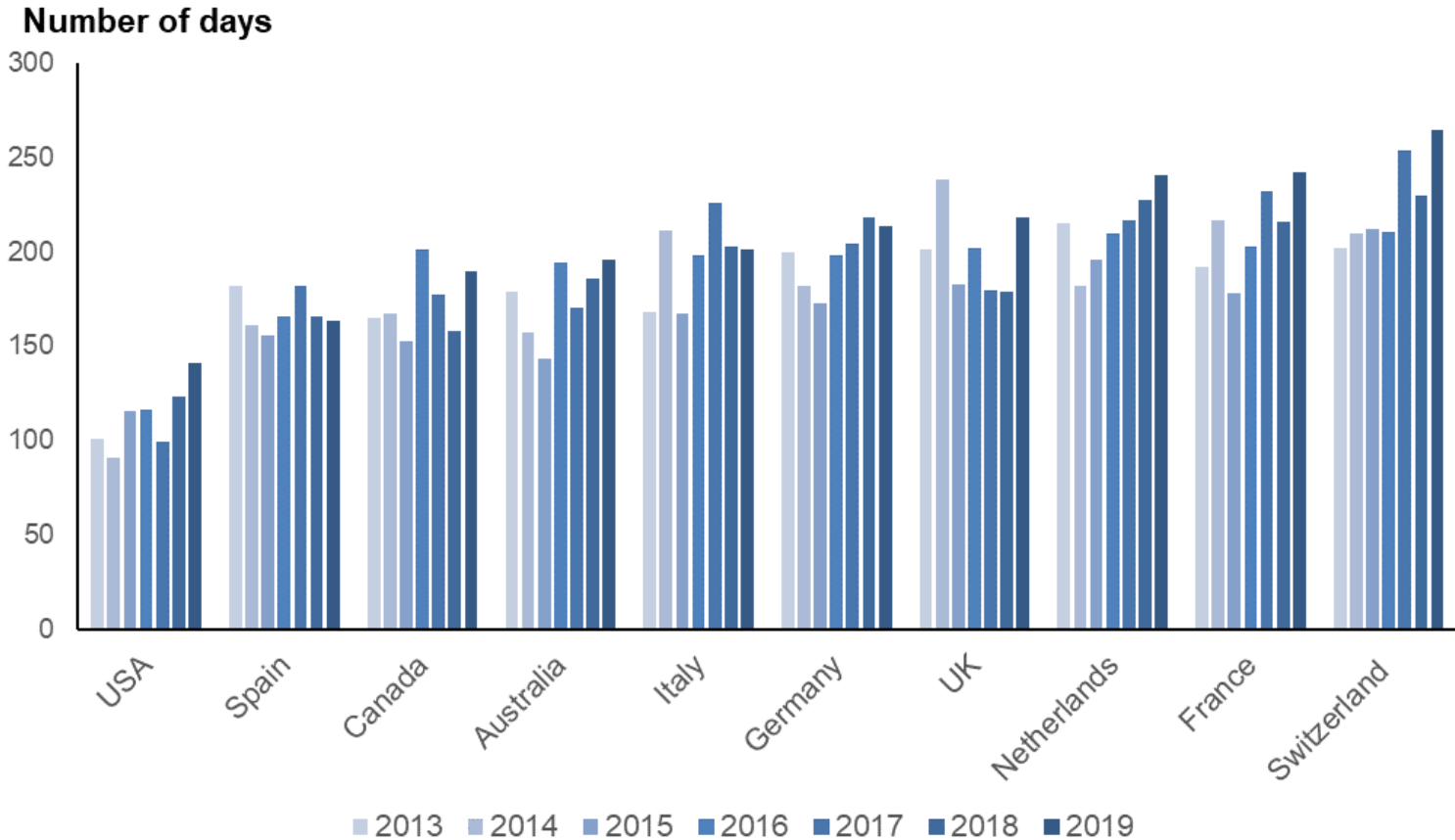
- The UK's share of patients recruited to global studies in 2019 was 2.8%, an increase from 1.9% in 2018.
- The UK ranked joint fifth (with Canada) among comparator countries, rising from seventh in 2018. The UK has overtaken Italy in the last year and has increased its share of patients recruited to equal Canada's in 2019.
- The USA consistently outstrips all other comparator countries with a share of 30.4% of participants in global trials in 2019.
- The National Institute for Health Research (NIHR) have reported in their [annual statistics](#) that the number of participants recruited to commercial contract studies has increased from 28,832 in 2019/20 to 35,488 in 2020/21 through the support of the NIHR Clinical Research Network.

Source: Clarivate Analytics; Medicines Healthcare Products Regulatory Agency; National Institute for Health Research (NIHR)



Chart 5:

Time from core package received to first patient enrolled in country (all trial phases)



- In 2019, the average time from core package being received to the first patient being enrolled in a trial was 218 days in the UK. This is an increase on the 2018 average of 179.
- The UK was the 7th fastest at transitioning from core package reception to patient enrollment amongst the comparator countries.
- Despite their average time increasing for two years running, the USA continued to be the quickest to enroll patients in 2019 with an average time taken of 141 days.

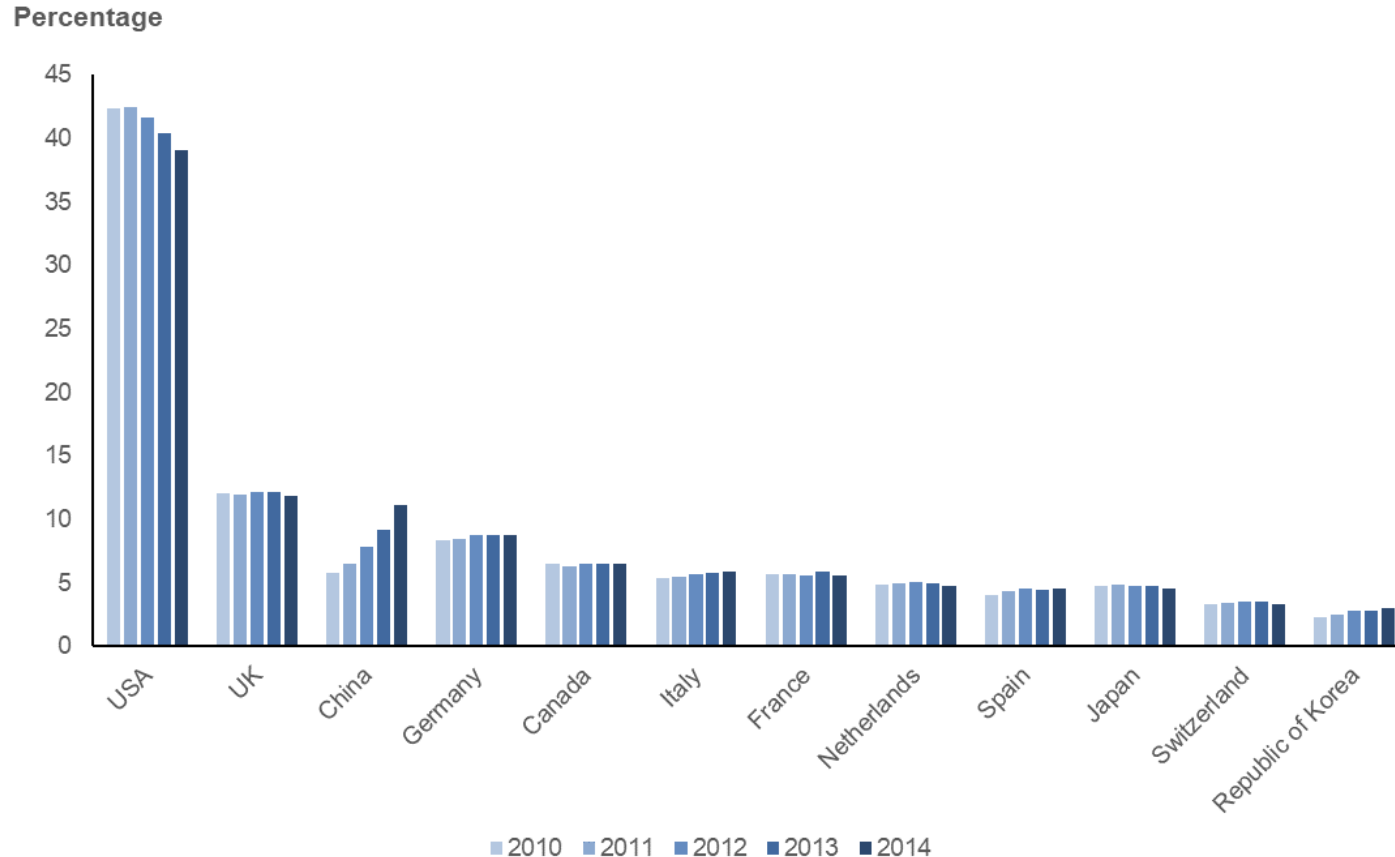
Core package received: Milestone date on which the final documentation relating to the clinical study is received within a participating country by the local operating company or their representative.

First patient enrolled: This is the date on which the first patient signed the consent form, irrespective of the study centre and whether they were randomised or not, and will be used for the beginning of enrolment.

Source: Clarivate Analytics
Note: There were fewer studies in 2017 than in previous years, but this does not seem to have substantially affected timescales for each country on average.



Chart 6A: Share of life sciences academic citations

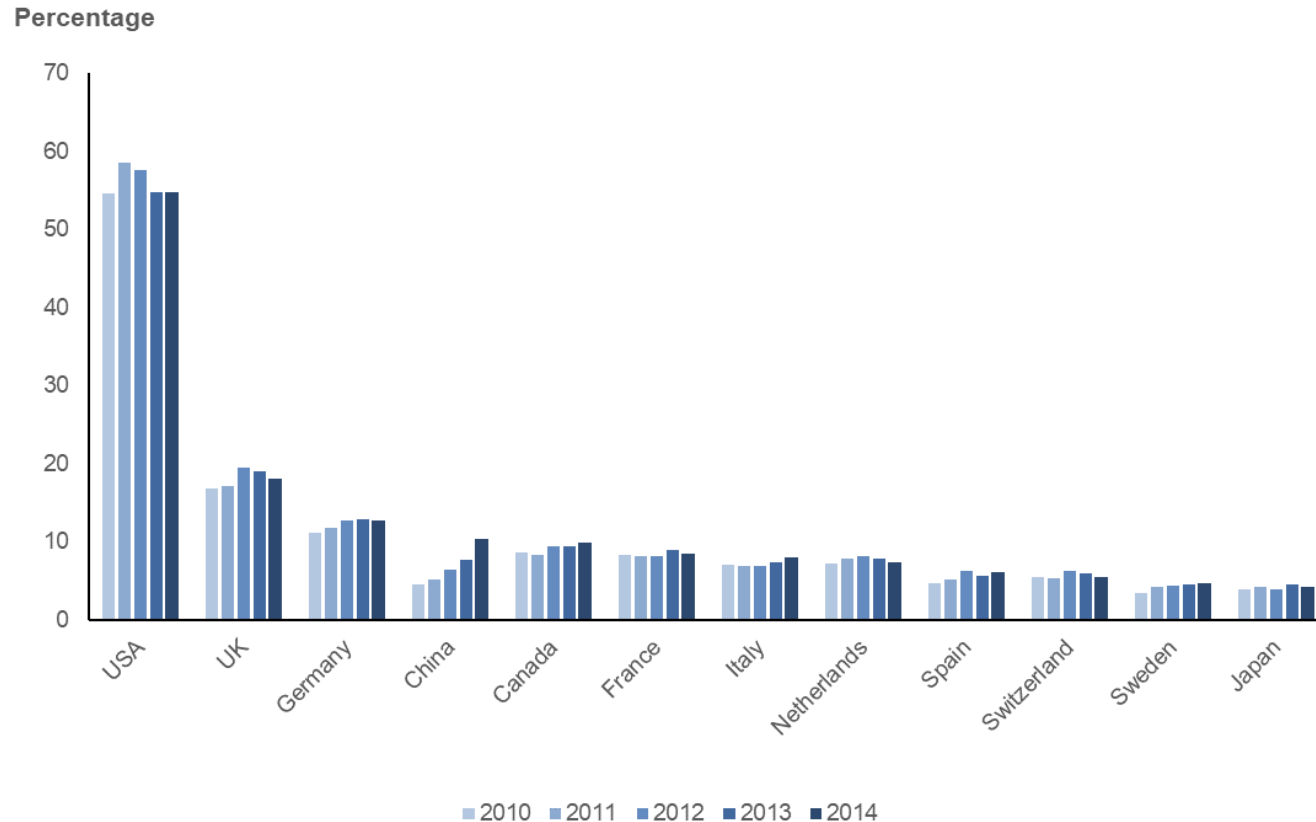


Source: [International Comparative Performance of the UK Research Base](#)

- This indicator is based on a biennial report published by the department for Business, Energy and Industrial Strategy that is no longer published. We are working to develop a replacement for this indicator for future publications.
- In 2014, the UK’s share of life science academic citations was 12%, ranking second among comparator countries, behind the USA.
- The UK’s share remained constant at 12% from 2005 to 2014.
- Most countries’ share remained steady from 2005 to 2014 with the exception of:
 - USA, whose share declined from 48% to 39% but remained the highest ranked;
 - China, whose share rose from 3% to 11% and so rose to third.
- Countries with a share smaller than 3% include: Brazil, Sweden, India, Belgium, Singapore, Ireland and Russia.
- Where papers are co-authored by researchers from different companies or institutions, citations are recorded for both countries.



Chart 6B: Share of top 1% (most cited) life sciences academic citations



Source: [International Comparative Performance of the UK Research Base](#)

- This indicator is based on a biennial report published by the department for Business, Energy and Industrial Strategy that is no longer published. We are working to develop a replacement for this indicator for future publications.
- The share of the top 1% of academic citations an academic publication receives is an indicator of the quality of the research reported.
- In 2014, the UK’s share of the top 1% of life sciences academic citations was 18%, with it ranking second among comparator countries, behind the USA.
- The UK’s share increased from 15% to 20% between 2005 and 2012, followed by a decline to 18% in 2014.
- Most countries’ shares have remained steady from 2005 to 2014 with the exception of:
 - USA, whose share declined from 62% to 55% but remained the highest ranked;
 - China, whose share rose from 2% to 10%, ranking fourth behind USA, UK and Germany.
- Countries with a share smaller than 4% are: Belgium, the Republic of Korea, Brazil, India, Singapore, Ireland and Russia.
- Where papers are co-authored by researchers from different companies or institutions, citations are recorded for both countries.

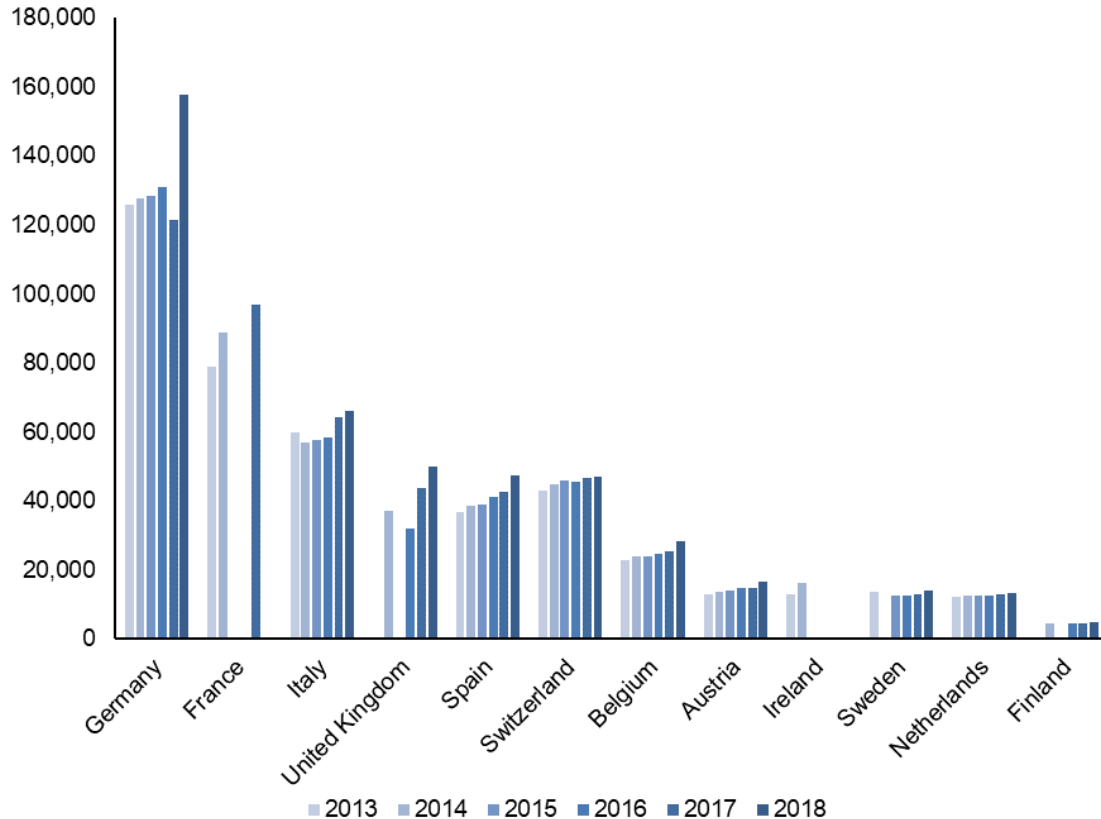


Growth and infrastructure



Chart 7A: Number of people employed in manufacture of basic pharmaceuticals and pharmaceutical products

Number employed



Source: [Eurostat - Data Explorer Annual Detailed Enterprise Statistics for Industry \(NACE Rev. 2, B-E\)](#) Economic indicator: V16110 Persons employed – number

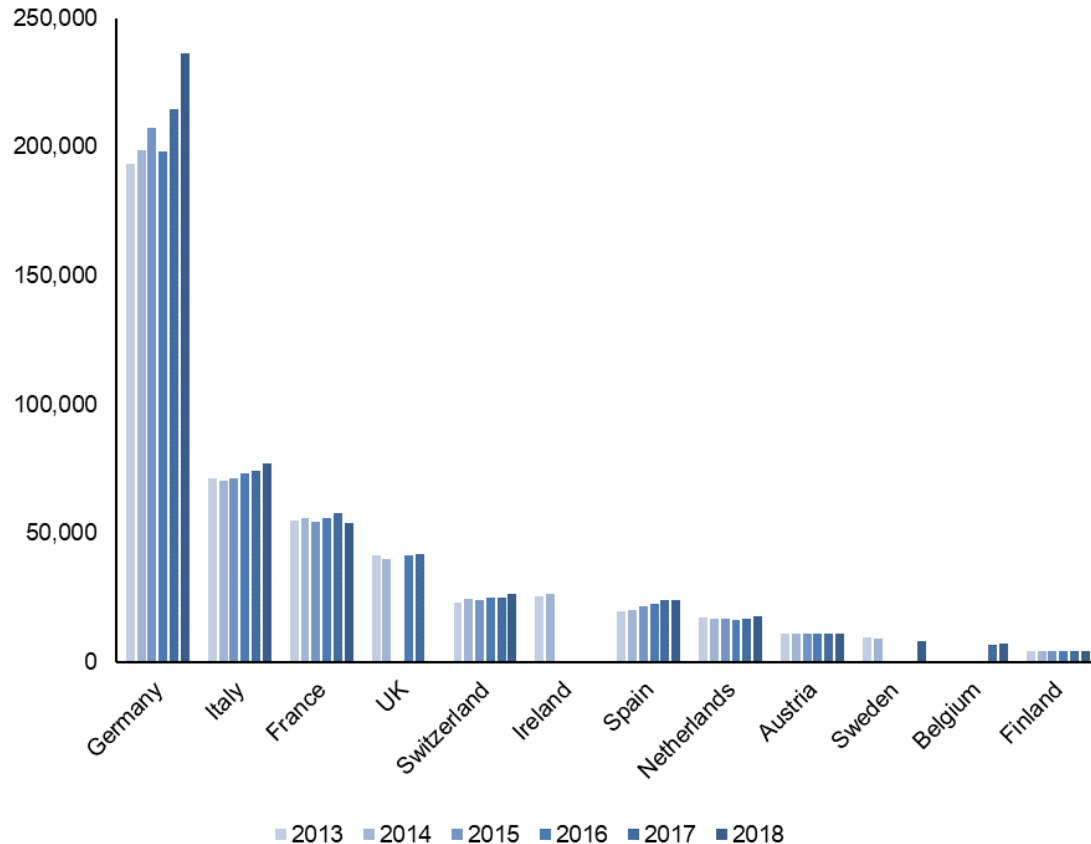
- Eurostat employment **data is not available for all years** for some of the countries in the comparator group. Comparisons have been made between **2018 figures, or the most recent year** where a country's data is available.¹
- In 2018 pharmaceutical manufacturing **employed 50,100 people in the UK**, an increase of 6,400 (15%) from 2017.
- The **UK overtook Spain and Switzerland to rank third** in the comparator group for the number employed in the manufacture of pharmaceuticals in 2018. When France is included using its 2017 data, the UK ranks fourth.
- Rankings may change as more data becomes available.
- Germany has been consistently the largest employer for pharmaceutical manufacturing amongst the comparator group across the entire time period for which data is available.
- The OLS [Bioscience and health Technology Sector Statistics](#) publication provides a more complete and up-to-date picture of employment in the UK life science sector.

1) Latest available data: France 2017, Ireland 2014



Chart 7B: Number of people employed in manufacture of medical technology products

Number employed



Source: [Eurostat - Data Explorer Annual Detailed Enterprise Statistics for Industry \(NACE Rev. 2, B-E\)](#) Economic indicator: V16110 Persons employed – number

Notes: Med Tech is compiled from figures for “Manufacture of irradiation, electromedical and electrotherapeutic equipment” and “Manufacture of medical and dental instruments and supplies”

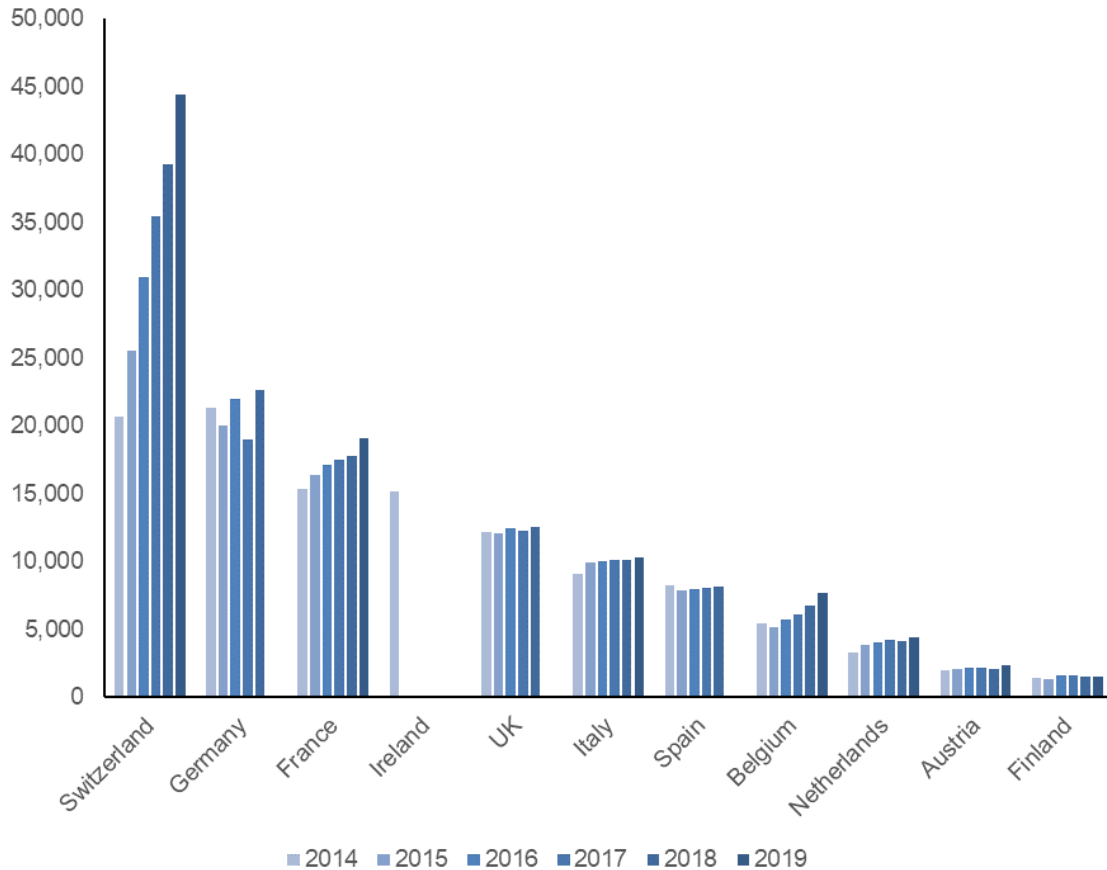
- Eurostat employment **data is not available for all years** for some of the countries in the comparator group. Comparisons have been made between 2018 figures, or the most recent year where a country’s data is available¹.
- In **2017 the UK employed 41,800** in the manufacture of medical technologies. UK employment has changed little since 2013, with a net growth of 300.
- By 2017 figures, the UK ranked fourth in the comparator group for the number employed in the manufacture of medical devices. Rankings may change as data becomes available.
- Germany has had the highest employment in this area amongst the comparator group across the entire period for which data is available. Between 2013 and 2018, Germany has also experienced the largest net growth in employment (from 193,400 to 236,300).
- This data allows for like-for-like comparisons internationally, but is known to underestimate employment and does not capture the full breadth of jobs manufacturing medical technologies.
- The OLS [Bioscience and health Technology Sector Statistics](#) publication provides a more complete and up-to-date picture of trends in UK life science employment.

1) Latest available year: UK 2017, Ireland 2014.



Chart 8: Gross Value Added for pharmaceutical manufacturing

Gross Value Added (€m)



Source: [Eurostat - Data Explorer National accounts aggregates by industry \(up to NACE A*64\)](#)

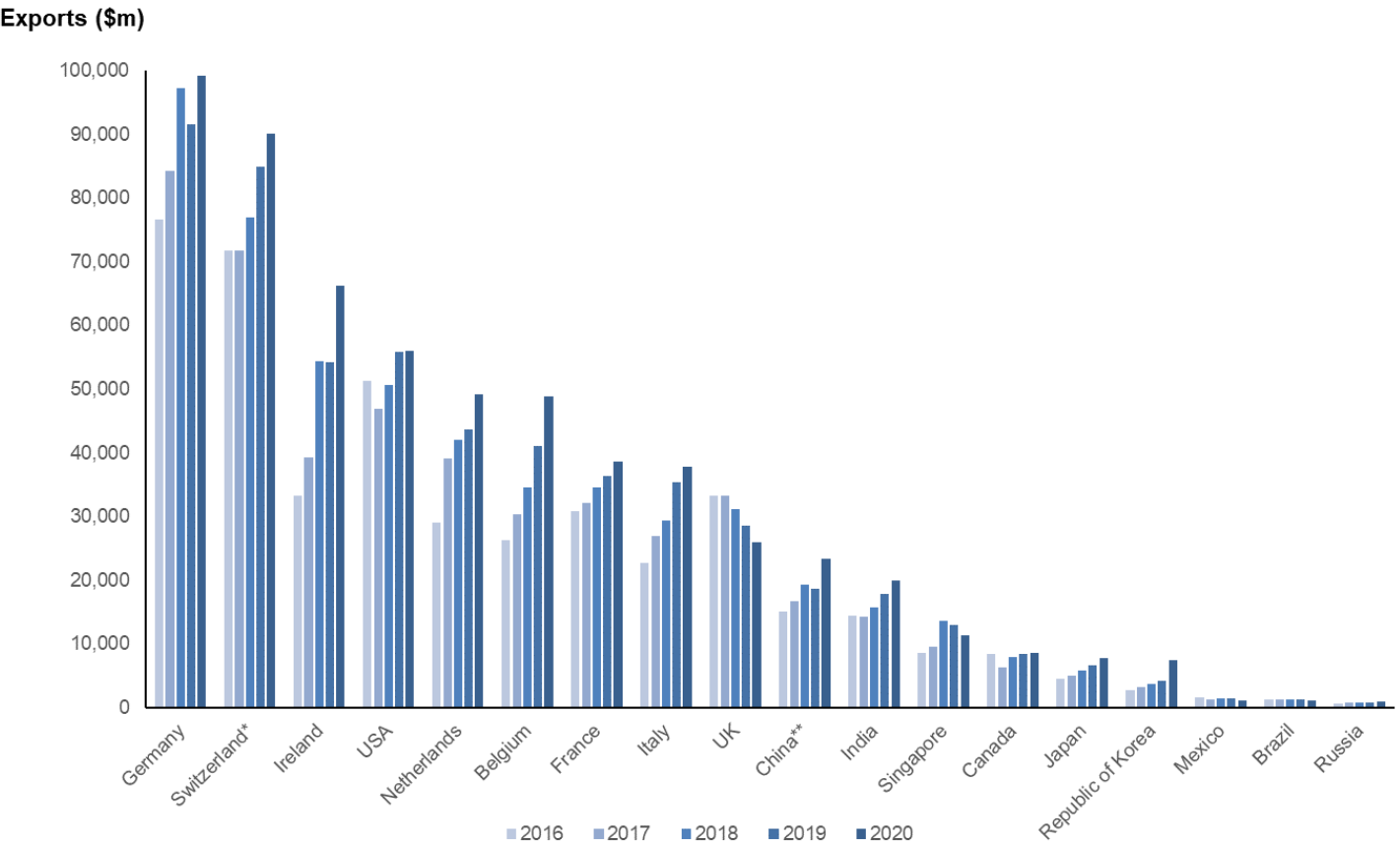
Notes: Category used is "Manufacture of basic pharmaceuticals and pharmaceutical products". Data are chain linked volumes.

- Eurostat data is not available for all years for the UK or some comparator countries. Comparisons have been made between 2019 figures, or the most recent year where a country's data is available¹
- Gross Value Added (GVA) measures the contribution to the economy that an industry makes. GVA is calculated as either the value of outputs from production minus the value of the inputs used, or; revenue from pharmaceuticals minus the costs of production
- In the UK, the GVA for pharmaceutical manufacturing was **€12.5bn in 2018**, up from €12.3 in 2017.
- In 2018, the **UK ranked fourth²** amongst comparator countries where data was available. This ranking may change as data is updated.
- The available data suggests Switzerland and Germany have consistently been the most productive economies for pharmaceuticals manufacturing in Europe. Switzerland also saw substantial growth in their GVA between 2014 and 2019; adding £23.8bn or 115% to their 2014 performance.

- 1) Latest available year: Germany 2018, Ireland 2014, UK 2018, Spain 2018
- 2) The latest available data for the Republic of Ireland (ROI) is from 2014. The ROI has been included in the chart using that data, but excluded from this ranking.



Chart 9A: Global exports of pharmaceutical products



* Data for Switzerland includes Liechtenstein
** Data for China includes Hong Kong and Macau

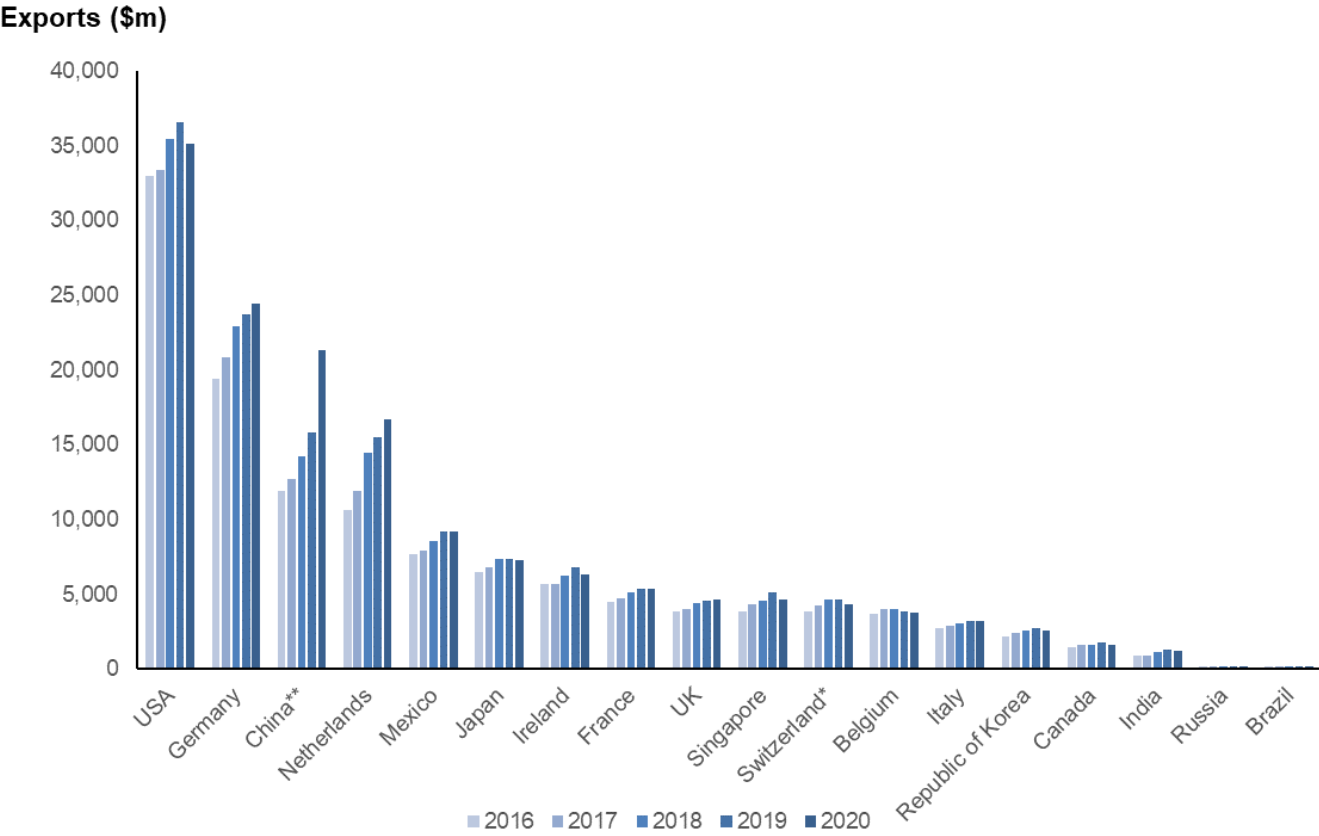
- UK Exports of pharmaceutical products were valued at **\$25.9bn in 2020**, down from \$28.5bn in 2019.
- This represents a **29% drop from 2015** when the UK’s pharmaceutical exports value peaked at \$36.7bn.
- In 2020 the UK was the 9th largest exporter of pharmaceutical goods amongst the comparator group. Germany and Switzerland have consistently been the largest exporters of pharmaceutical goods.
- Ireland showed substantial growth in exports in 2020, surpassing the USA to become the 3rd biggest exporter of pharmaceutical products in the comparator group. Belgium has also seen notable growth in recent years, increasing from \$26.3bn in 2016 to \$48.8bn in 2020.

Source: [UNCTAD STAT Data Center: International merchandise trade: trade structure: merchandise trade matrix](https://unctad.org/Trade-Development/Trade-Statistics)

Notes: Categories used are UNCTAD "Medicinal and pharmaceutical products, excluding 542" and "Medicaments (including veterinary medicaments)".



Chart 9B: Global exports of medical technology products



- The value of the UK’s exports of medical technology products was \$4.7bn in 2020, an increase of 2.9% since 2019.
- In 2020 the UK ranked 9th out of the 18 nations in the comparator group for value of medical technology exports.
- The latest data from the ONS¹ (not shown here) shows a 8.9% decrease in medical technology exports (in chained volume measures) from the UK between 2019 and 2020.
- In 2020, the largest growth by value of exports was seen in China (including Hong Kong and Macau), with exports increasing by 34.8% from \$15.8bn in 2019 to \$21.3bn in 2020. The USA remains at the top of the rankings despite seeing a decrease of \$1.5bn in the value of their medical technology exports between 2019 and 2020.

* Data for Switzerland includes Liechtenstein
 ** Data for China includes Hong Kong and Macau

Source: [UNCTAD STAT Data Center: International merchandise trade: trade structure: merchandise trade matrix](#)

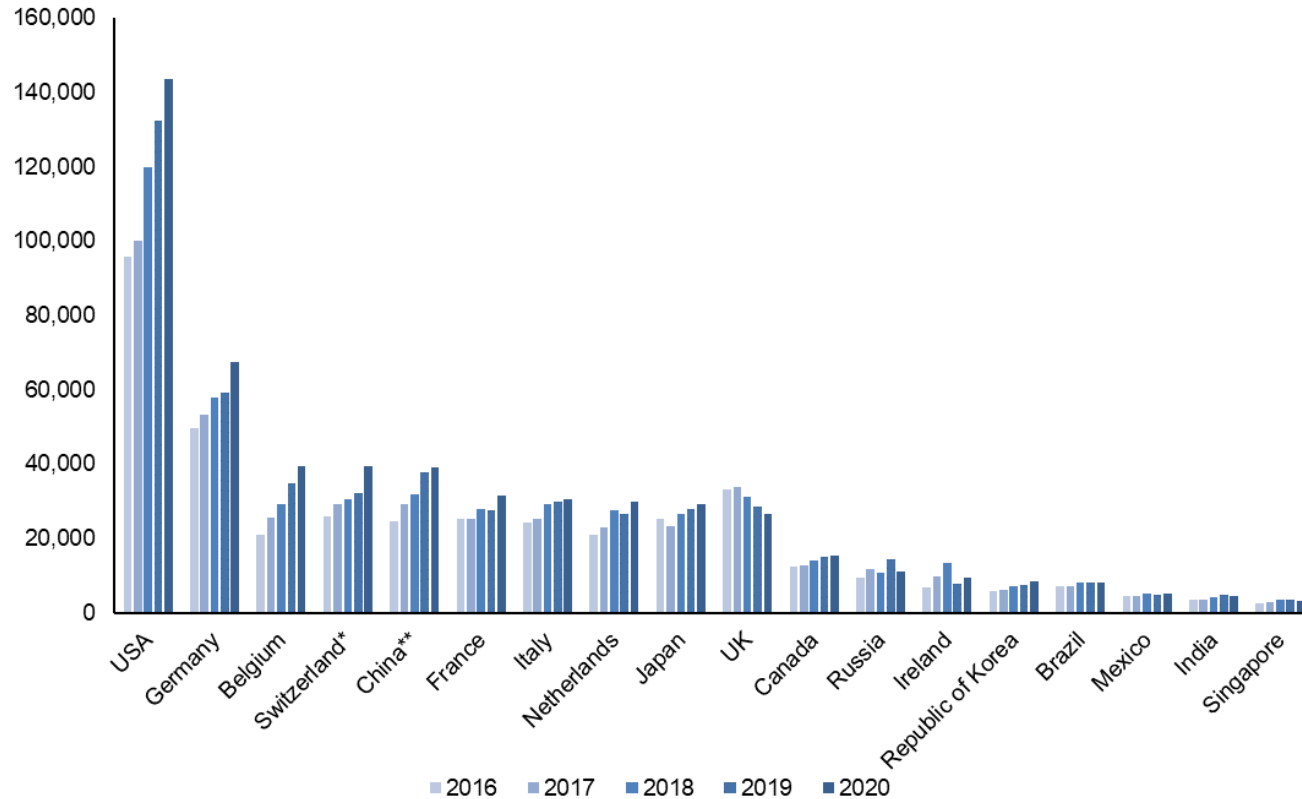
Notes: Categories used from UNCTAD STAT are “Electro-diagnostic apparatus for medical science etc.” and “Instruments and appliances, n.e.s, for medical, etc.”

1. Source: [UK trade in goods by classification of product by activity: Quarter 1 \(January to March\) 2021](#)



Chart 10A: Global imports of pharmaceutical products by importing country

Imports (\$m)



* Data for Switzerland includes Liechtenstein
** Data for China includes Hong Kong and Macau

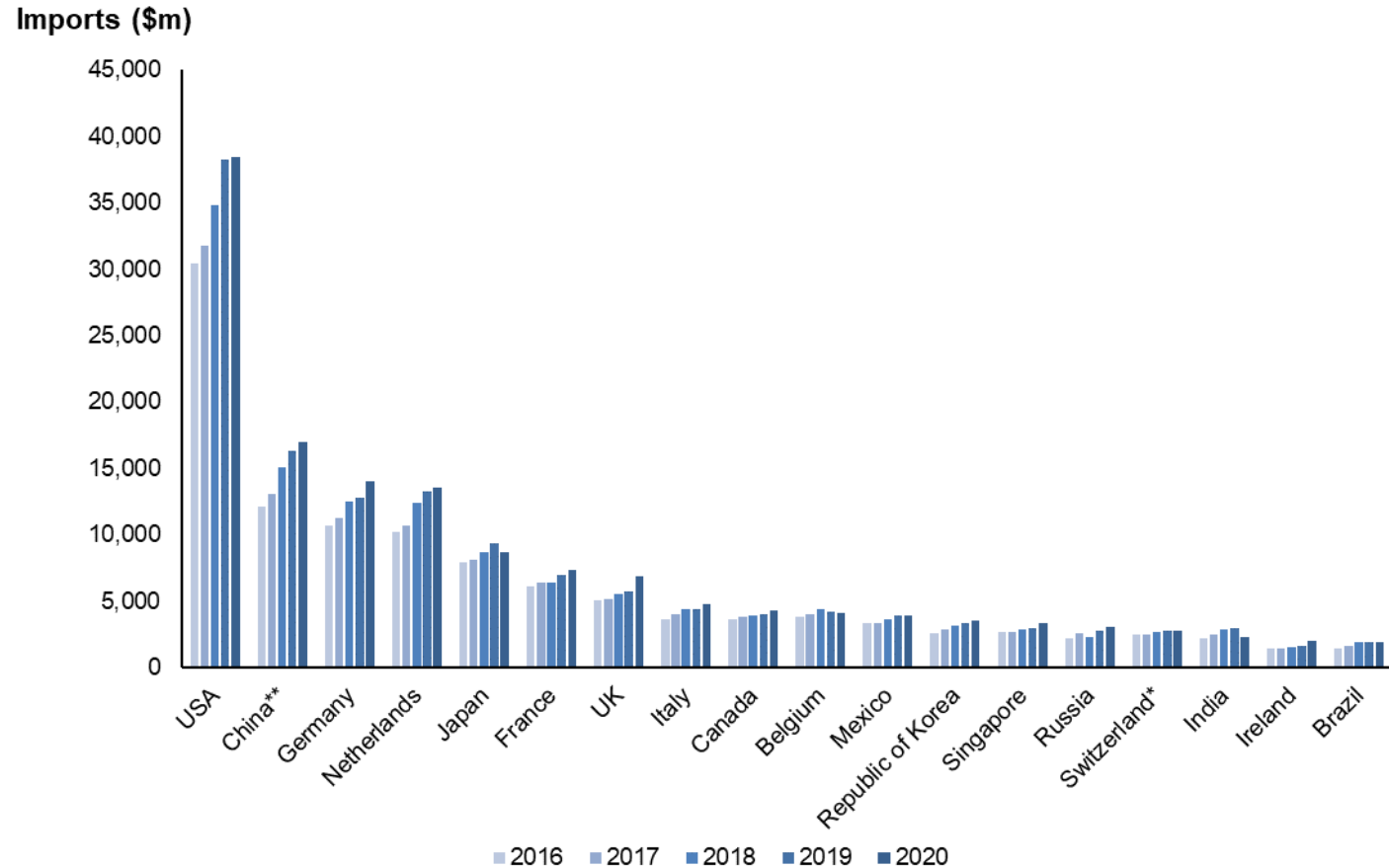
Source: [UNCTAD STAT Data Center: International merchandise trade: trade structure: merchandise trade matrix](https://unctadstat.unctad.org/)

Notes: Categories used are UNCTAD "Medicinal and pharmaceutical products, excluding 542" and "Medicaments (including veterinary medicaments)".

- UK imports of pharmaceutical products had a value of \$26.8bn in 2020. This was a decrease of \$2.0bn (6.9%) on the value of imports in 2019.
- This decrease was smaller than the decrease in value of pharmaceutical exports, meaning that the UK's pharmaceutical trade deficit widened to \$0.8bn in 2020 (from \$0.2bn in 2019).
- In 2020, the UK had the tenth largest value of pharmaceutical imports amongst comparator countries. The UK has fallen in the rankings since 2019 when it ranked seventh.
- The largest increase in the value of pharmaceutical imports was in the USA, which increased imports by \$11.2bn between 2019 and 2020.
- The largest percentage growth in pharmaceutical imports was seen in Switzerland, which increased imports by 22.5% (\$7.2bn) in 2020.



Chart 10B: Global imports of medical technology products by importing country



- The value of UK imports of medical technology products was \$6.8bn in 2020. This is an increase of \$1.1bn (18.7%) since 2019.
- In 2020 the UK had the seventh largest value of medical technology imports amongst the 18 comparator countries.
- The USA has had the largest value of medical technology imports, which was over double the value of the next largest importer (China, including Hong Kong and Macau).
- The value of medical technology imports in the United States has grown at an average of 6% a year since 2016, although growth slowed to 0.4% between 2019 and 2020.

* Data for Switzerland includes Liechtenstein
 ** Data for China includes Hong Kong and Macau

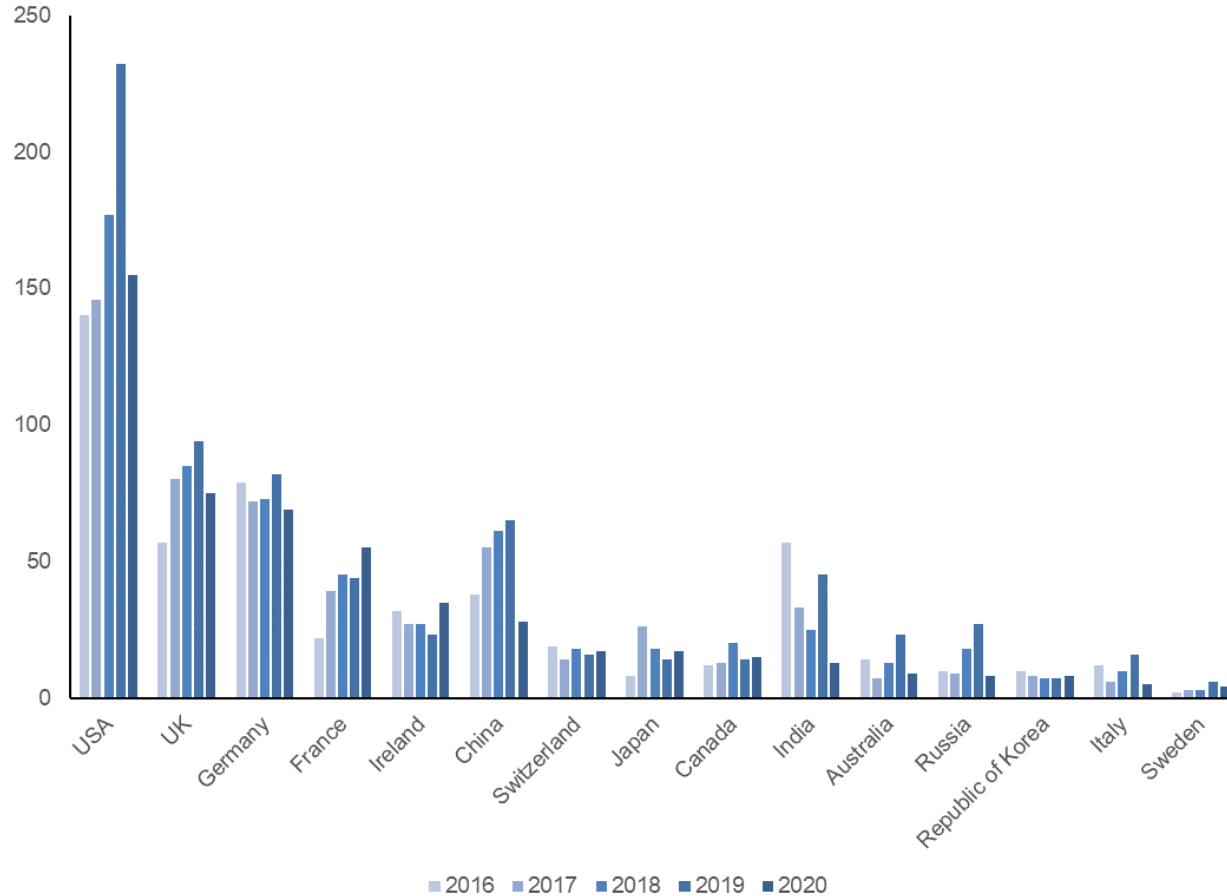
Source: [UNCTAD STAT Data Center: International merchandise trade: trade structure: merchandise trade matrix](https://unctadstat.unctad.org/)

Notes: Categories used from UNCTAD STAT are “Electro-diagnostic apparatus for medical science etc.” and “Instruments and appliances, n.e.s, for medical, etc.”



Chart 11A: Life sciences inward foreign direct investment projects

Number of projects



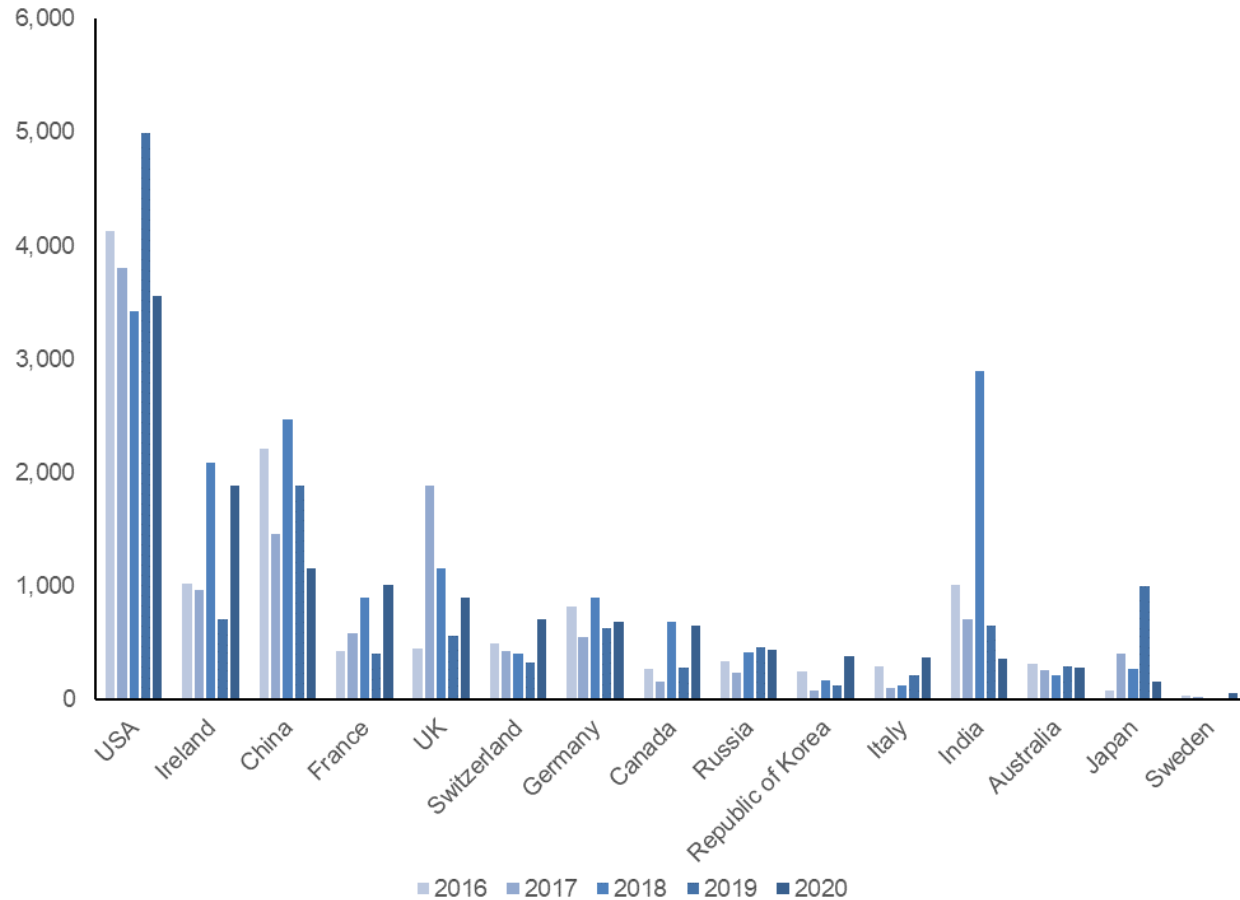
- There were 75 life science inward foreign direct investment (FDI) projects in the UK in 2020, down from 94 in 2018. It should be noted that the number of projects is highly volatile year-to-year.
- In 2020 the UK ranked second for the number of life science inward FDI projects amongst the comparator countries, behind only the USA (unchanged from 2019).
- The USA has consistently ranked first for the number of projects in recent years.

Source: fDi Markets, from The Financial Times Ltd.



Chart 11B: Life science inward foreign direct investment – capital expenditure

Expenditure (£m)

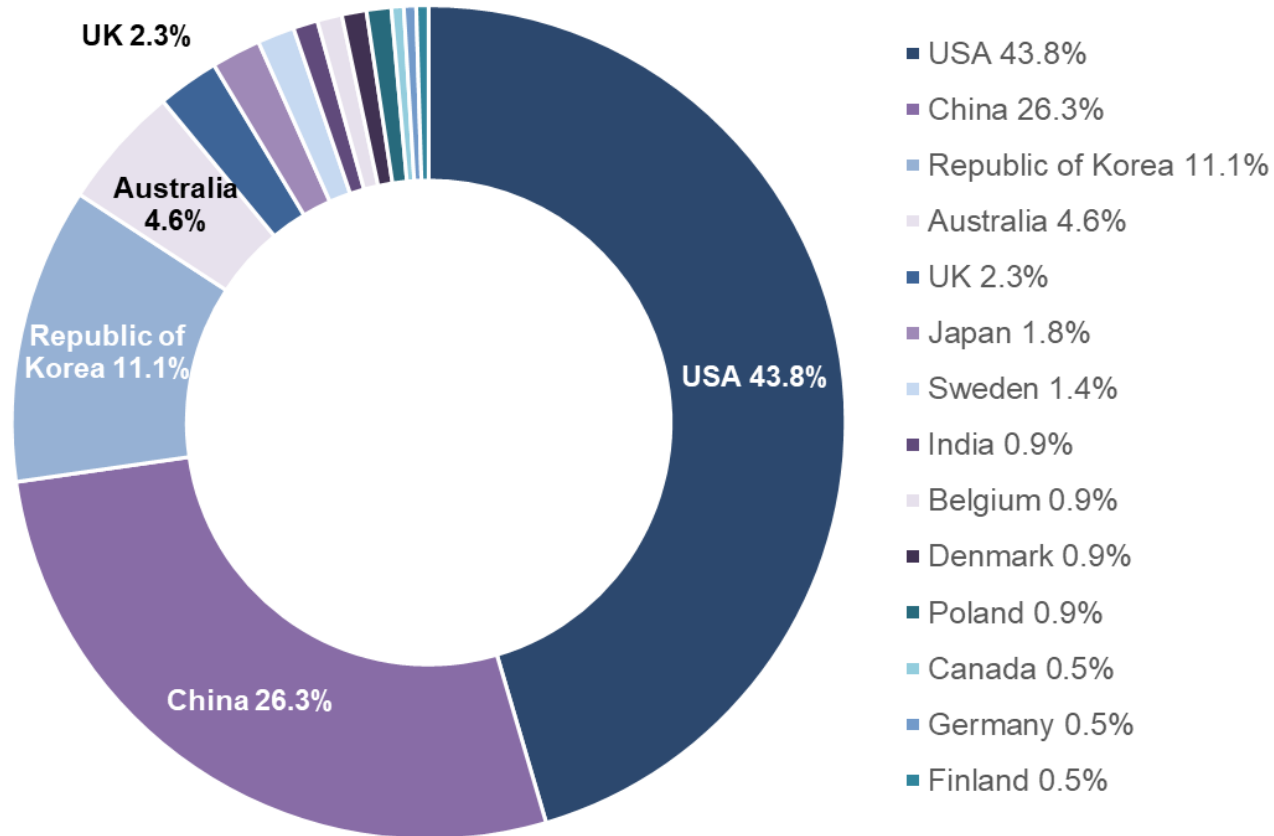


- The value of life science inward foreign direct investment (FDI) into the UK was **£898m in 2020**. This is an increase of £332m (58.7%) from 2019.
- The UK ranked fifth for inward FDI in 2020, up from seventh in 2019. Japan, India and Germany (ranked 3rd, 5th and 6th in 2019 respectively) have fallen below the UK in this ranking, whilst France surpassed the UK (moving from 9th to 4th). It should be noted that the value of life sciences inward foreign direct investment is highly volatile and varies greatly year-to-year.

Source: fDi Markets, from The Financial Times Ltd.



Chart 12A: Share of global life sciences Initial Public Offerings (IPOs) in 2020



- In 2020, the UK had five life sciences Initial Public Offerings (IPOs) which equates to a 2.3% share, similar to the share the UK held in 2019.
- The UK ranked 5th amongst comparator countries for the number of life sciences IPOs in 2020, after the USA, China, Republic of Korea, and Australia. The USA had the largest global share of life science IPOs in 2020, with 95 (43.8% of the global total).

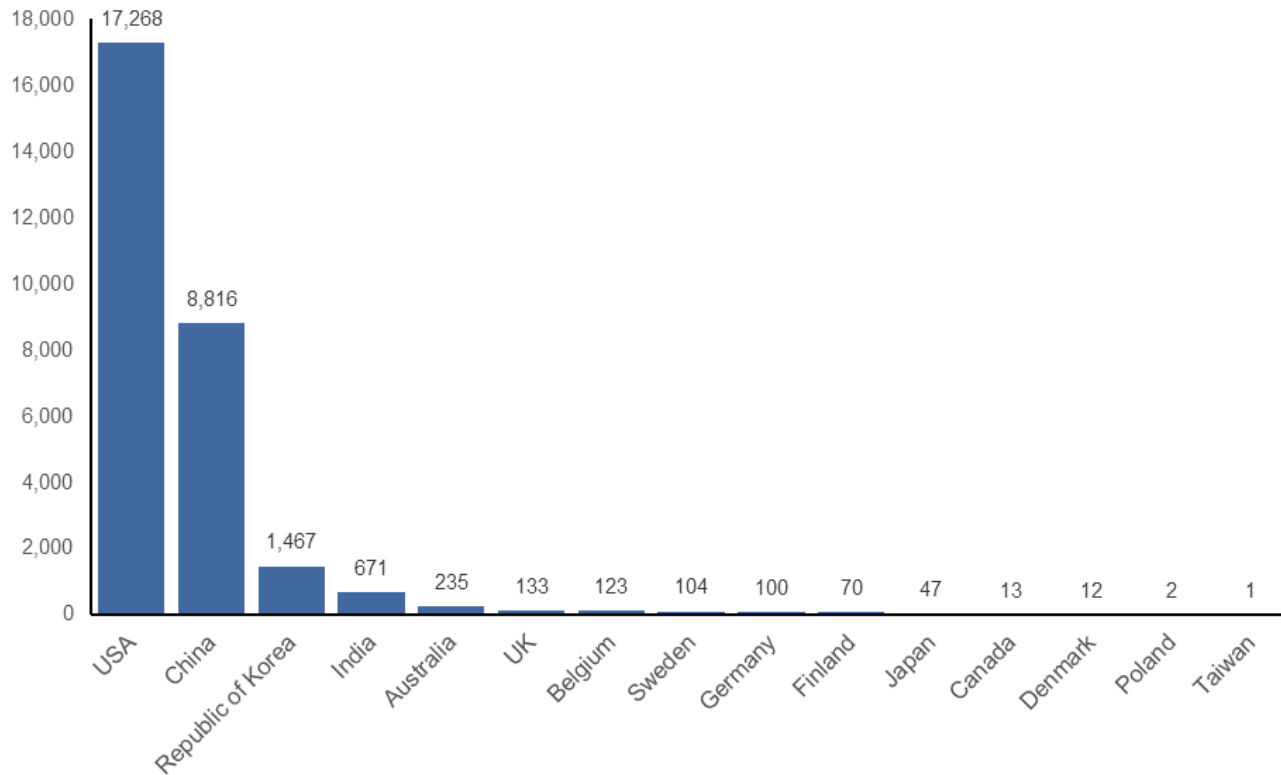
Source: [S&P Capital IQ](#)

- Notes:
1. The reported country is the jurisdiction in which the IPO was launched, not the domicile of the IPO company.
 2. Figures for China include Hong Kong



Chart 12B: Amount raised in global life sciences Initial Public Offerings (IPOs) in 2020 (where known)

Amount raised (£m)



Source: [S&P Capital IQ](#)

Notes:

1. The reported country is the country in which the IPO was launched, not the domicile of the IPO company.
2. Figures for China include Hong Kong

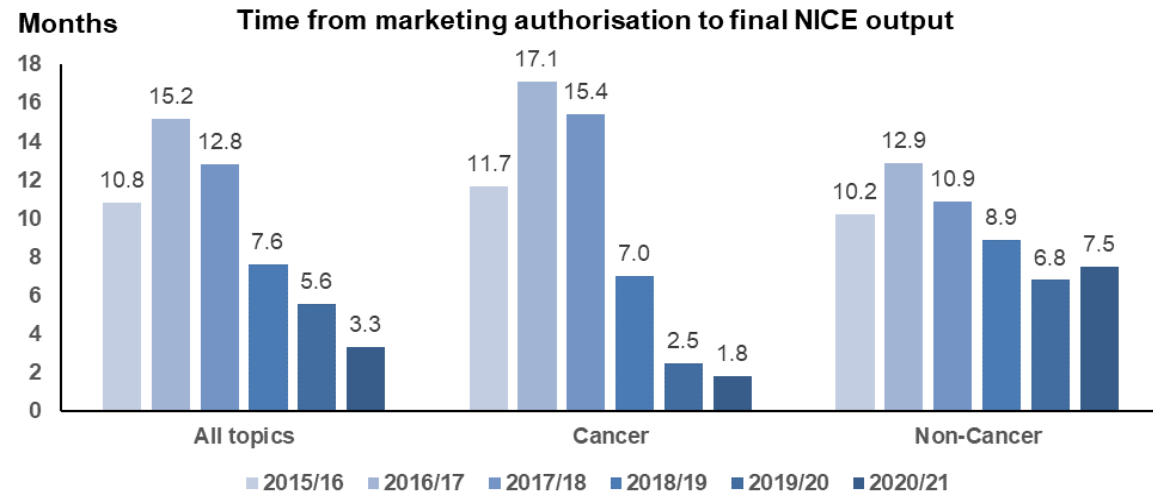
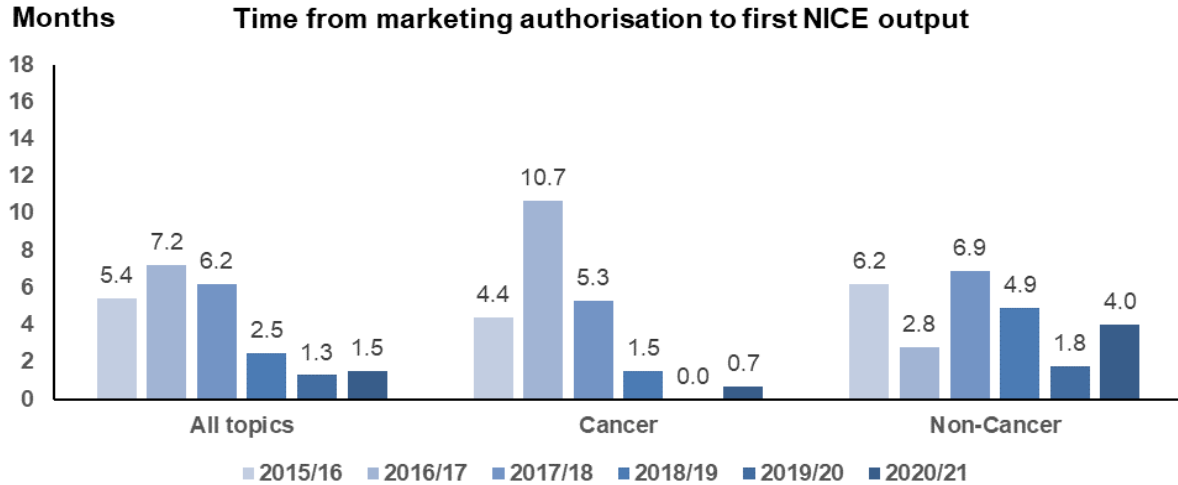
- UK Initial Public Offerings (IPOs) in life sciences raised £133m in 2020. This compares to approx. £36m raised in 2019, although it should be noted there is extreme volatility in these figures year-to-year.
- In 2020, the UK ranked sixth amongst 21 selected comparator countries. Countries with no life sciences IPOs in 2020 are not included in the chart shown.
- The USA raised the largest amount through IPOs in life sciences in 2020, with approximately £17.3bn.



NHS Collaboration



Chart 13: Speed and volume of NICE Technology Appraisals



- In 2020/21, the average time from Marketing Authorisation to 1st NICE output was 1.5 months, and to final NICE output was 3.3 months.
- Speed of appraisal output is affected by appeals, late referrals, additional committee meetings and companies negotiating timing of appraisals. These caveats are taken into account when measuring performance of the speed of production of NICE guidance. More information is available in the [2020/21 NICE business plan](#).
- In 2020, NICE delayed some appraisal topics due to the COVID 19 pandemic. This contributed to the increase in time from marketing authorisation to first and final NICE output for non cancer topics over the past year. Despite this, the average time from marketing authorisation to first NICE output in 2020/21 remains faster than in 2018/19, at 4.0 months for non cancer topics and under a month for cancer topics.
- NICE had a positive recommendation rate of over 80% between April 2013 and March 2021 (recommended, optimised and CDF).

Recommendation categories	Total (1 April 2013 to 31 March 2021)
Recommended	195 (43%)
Optimised	154 (34%)
CDF	43 (9%)
Only in Research	3 (1%)
Not Recommended	61 (13%)
Total	456

Notes: The Cancer drugs fund (CDF) was introduced in 2016; re-appraisals of existing products have been excluded.

Source: National Institute for Health and Care Excellence

Notes:

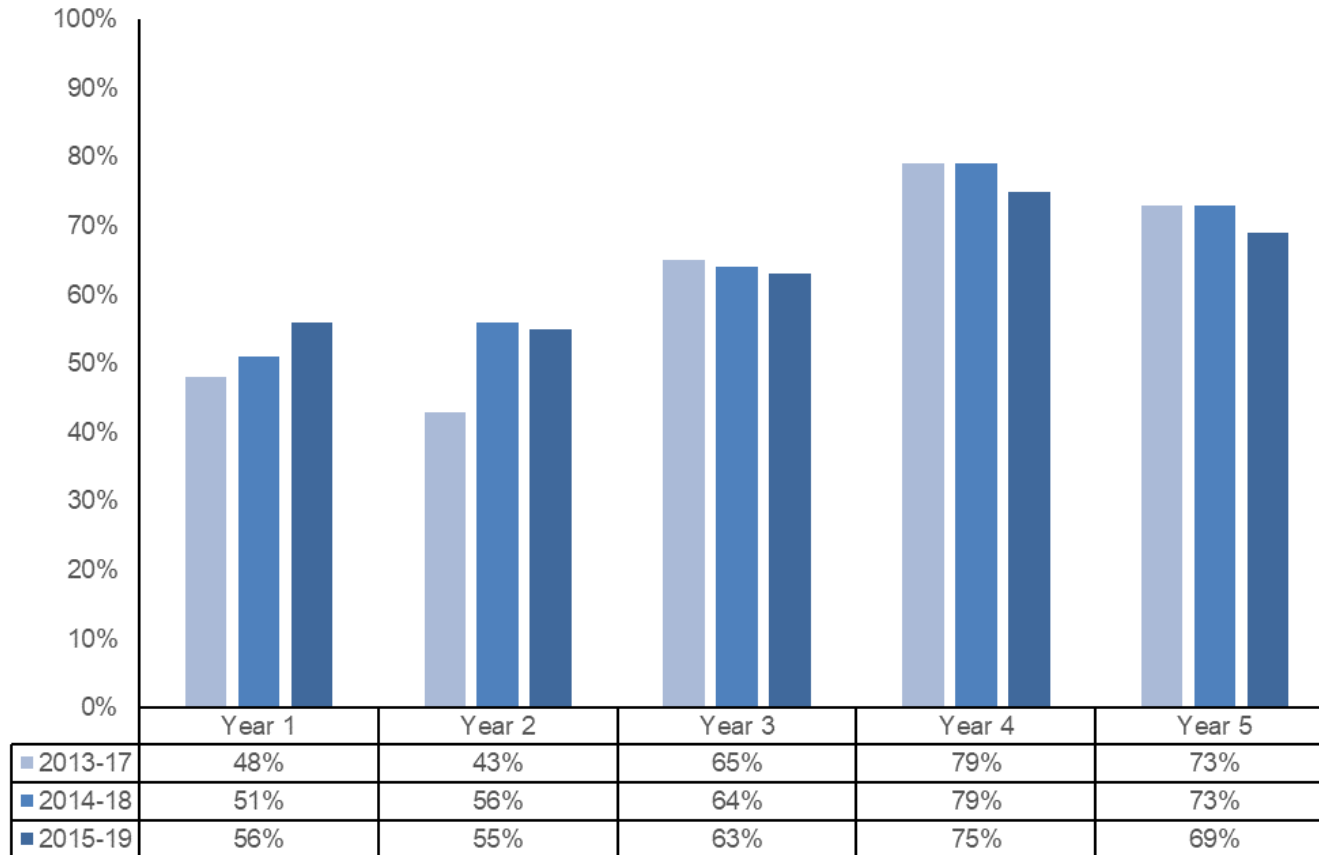
NICE delayed some appraisal topics in 2020 due to the COVID-19 pandemic. This contributed to the increase in time between marketing authorisation and first/final NICE output for non-cancer topics.

Average time to first output for cancer products in 2019/20 was less than one month; value is shown as zero on the chart.



Chart 14: Per capita uptake of new medicines – NICE approved

Per capita uptake vs comparator average



Source: ABPI analysis of IQVIA data

Notes: Comparator countries: Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Spain, Switzerland, Sweden, USA. Please note that the majority of products do not have data available from each of the 15 comparator countries, meaning that the average uptake for certain products covers only a subset of the comparator countries.

- This indicator is a measure of relative uptake in terms of Days of Therapy (DOT) per capita for new medicines which were recommended by NICE and first launched¹ between 2013 and 2019. The median uptake of medicines launched during 2013-2017, 2014-2018 and 2015-2019 in the UK is compared against other countries. A value of 100% means the median UK per capita consumption is equivalent to the average uptake per capita in the comparator countries.
- UK median uptake of NICE-approved medicines in the first year after launch for the 2015-2019 cohort was 56% of the comparator countries' **average**. By year 5 the percentage was 69%, which was a decrease on the year 4 figure of 75% (this was due to the fact that several products within the 2015-19 cohort which had seen strong uptake in year 4 had not yet completed a 5th year of sales).
- There were 76 medicines included in the 2015-19 cohort, compared to 68 in 2014-18 and 51 in 2013-17. Medicines were only included in this analysis that had UK sales above £1m in 2020 and were on sale for a minimum of 12 months in at least 4 of the comparator countries and the UK.
- This analysis adjusts for population size, but not for need (no. of cases & HTA authorities' recommended use-cases), standard clinical practice or total medicine spend in each country. It also does not adjust for the impact of different marketing or launch strategies in different countries. These factors are likely to have a significant impact on uptake figures.

1. The methodology for this metric has been changed since the last LSCIs publication. Uptake of NICE approved products is now measured from the Health Technology Assessment (HTA) date or regulatory approval date instead of the previously-used IQVIA launch date (which was based on medicine sales dates).

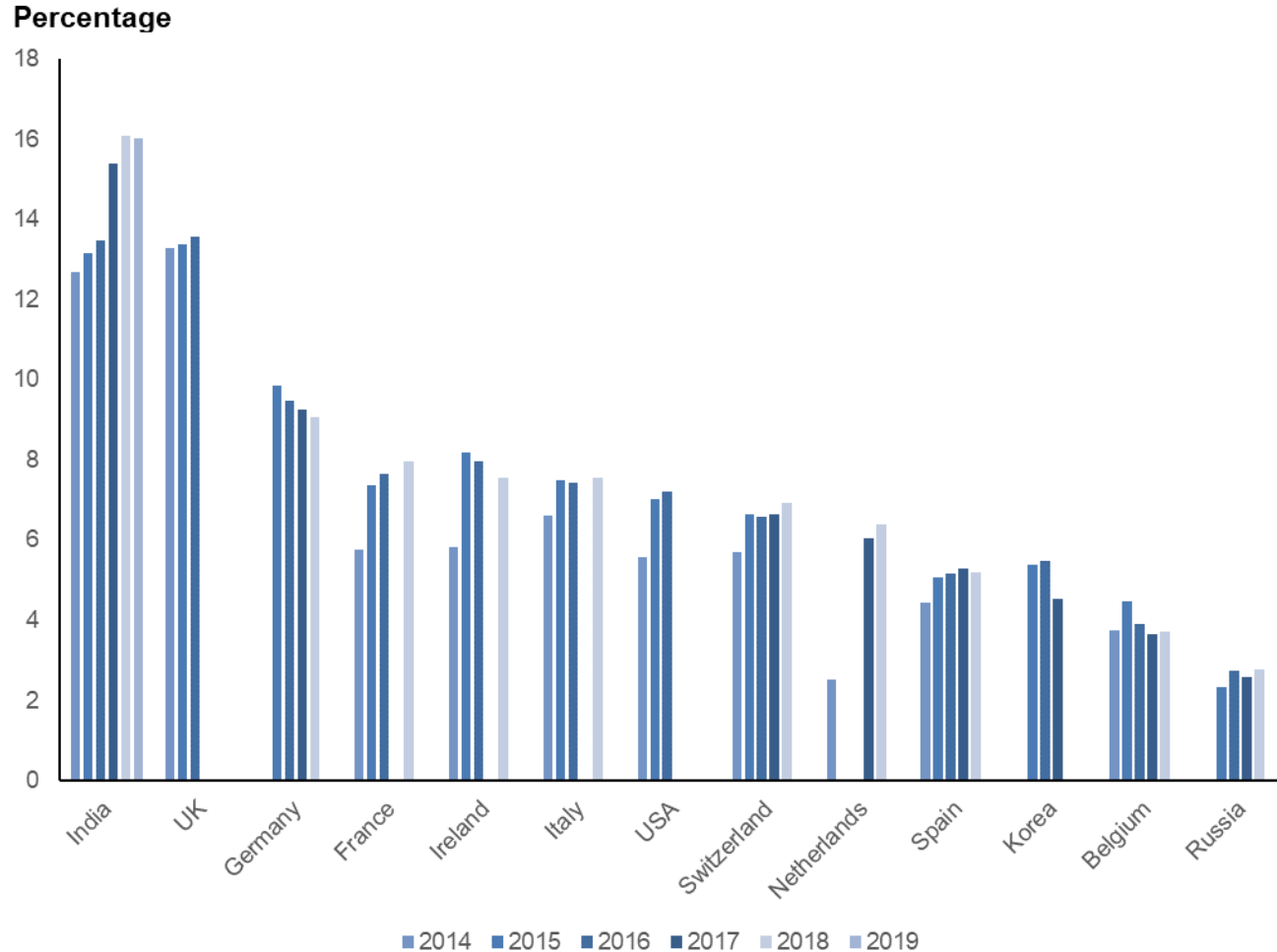


Skills



Chart 15:

Percentage of graduates from tertiary education graduating from Natural Sciences, mathematics, and Statistics programmes, both sexes (%)



- This indicator is a measure of upcoming talent and potential skills base for the life science sector. Tertiary education is an undergraduate degree or equivalent.
- UNESCO data is not available for all years for the UK or some comparator countries. Due to the limited availability of 2019 data comparisons have been made between 2018 figures, or the most recent year where a country's data is available¹
- The UK ranked second for the proportion of graduates coming from 'Natural Sciences, Mathematics and Statistics' programmes amongst the comparator countries (14% in 2016). India came first, with 16% of tertiary education graduates graduating from 'Natural Sciences, Mathematics and Statistics' programmes in both 2018 and 2019.
- Rankings are based on available data and may be updated as the data is improved in the future.

1. Latest available year: UK 2016, USA 2016, Korea 2017

Source: [UNESCO, Education theme](#)



Office for
Life Sciences

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