



UK Research
and Innovation

Regional distribution of UKRI spend





Key findings

The Regional Distribution of UKRI spend presents data on Research Councils, Innovate UK and Research England funding covering the majority of UKRI's activities. The publication maps the distribution of R&D spend across the country and contextualises the concentrations of different types of UKRI funding.

- The data shows that world-class research and innovation takes place across the UK. All nations and regions of the UK benefit from some level of UKRI support for R&D and innovation.
- Concentrations of R&D activity, people with university degree and more mature innovation ecosystems vary across the country. A relation between those and higher levels of UKRI spend in certain regions can be traced across the data – most notably in London, the South East and the East of England. It should be noted that these concentrations are smaller clusters within these regions.
- Data shows that concentrations of funding spend follow the concentration of eligible entities in receipt of UKRI funding – number of research organisations (for Research Councils), number of Higher Education Providers (for Research England), number of businesses in a region (for Innovate UK). The size, number and nature of those entities all affect concentrations of spend in place. In this publication we provide context in terms of the number of relevant entities, but for future publications we will look at whether other contextual data is more relevant or gives a more rounded picture.
- Research Councils spent the most in London and the South East, however when accounting for the number of research organisations in each region, Yorkshire and the Humber emerges as a clear area of research funding strength, closely followed by Scotland, North West and North East of England.
- West Midlands emerges as the top region for Innovate UK spend in financial year (FY) 2018-19. The regional distribution of Innovate UK spend is related to the economic composition of each part of the country, more specifically the presence of companies in research-active industries.
- Research England Quality Related (QR) research funding shows high concentrations in London and the South East, as well as Scotland (for the QR-equivalent funding delivered in the Devolved Administrations). This is reflective of the presence of high number of large research-intensive institutions in those regions.





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Background

UKRI's mission is to convene, catalyse and invest in close collaboration with others to build a thriving, inclusive research and innovation system. Our vision is for an outstanding research and innovation system in the UK that gives everyone the opportunity to contribute and to benefit, enriching lives locally, nationally and internationally.

In January 2020 we published the first iteration of the regional distribution of our funding¹, committing to a follow up publication with more data and greater granularity. This publication delivers on this promise by including data on Research Councils, Innovate UK and Research England funding covering the majority of our activities. Future publications will continue improving the quality, breadth and depth of the UKRI data, strengthening the evidence base and enabling further analysis.

In the R&D roadmap published in 2020, the government reaffirmed its commitment to publishing an R&D Places Strategy to drive place-based outcomes from our R&D system – accelerating economic recovery, levelling up across the UK. Enabling more places in the UK to fulfil their R&D potential will unlock long-term economic benefits across more areas.

Ensuring places make the most of their strengths starts with a better understanding of how they benefit from R&D funding currently. UKRI data shows that world-class research and innovation takes place right across the UK. However, concentrations of R&D activity, university graduates and more mature innovation ecosystems vary across the country. Some correlation between those and higher levels of UKRI spend in certain regions could be traced across the data – most notably in London, the South East and the East of England.

Research Council and Research England funding largely follows the geographical location of research-intensive universities and research organisations. While Innovate UK funding is associated with the presence of companies in research-active industries. Academic work^{2,3} on regional differences acknowledges the impact historical trends and local context have on spatial disparities in UK economic performance. The Industrial Strategy Council distinguishes three main narratives in the academic literature addressing the deep roots of spatial productivity differences:

- **Place fundamentals** – the geography, local culture, governance and infrastructure of a place
- **Agglomeration** – the ability to attract clusters of economic activity, which become self-sustaining as a result of a circular economic logic
- **Sorting** – the tendency of people to choose to work and live with residents similar to themselves, thus shaping regions' industry mix, investment attractiveness and, ultimately, productivity

1. <https://www.ukri.org/about-us/what-we-do/funding-data/regional-distribution-of-funding/>

2. Industrial Strategy Council: UK Regional Productivity Differences

3. Research England (UKRI) and WM REDI expert evidence forum: Informing Development of the UK Place-based R&D Strategy

The agglomeration and sorting effects go some way to explain the concentration of research organisations and industry clusters in certain parts of the country. Therefore, in order to be able to compare UKRI funding spend trends across regions with different ecosystems, it is useful to take into account several relevant ways to contextualize the data. This is explored in a bit more detail through the different breakdowns of the data provided in the publication.

The sections below go into detail, mapping the distribution of R&D spend across the country and explaining what drives concentrations of different types of UKRI funding.

Notes

- While spend data helps us understand how research and innovation money is distributed across the country, it is essential to take into account regional context, like the composition of local economy and size and density of the research organisations in the region.
- This publication offers several breakdowns of spend data using data on the number of organisations and businesses across the country. While the number, nature and size of the organisations are crucial to contextualising concentrations of funding, the current publication presents only data on the number of organisations. For future publications we will look into refining and building on this analysis.
- Figures given for institutional Higher Education Providers funding in Scotland, Wales and Northern Ireland reflect the policies and funding arrangements of the Devolved Administrations, rather than UKRI – however they are reflected here to maintain a UK-wide perspective.
- The figures presented in this publication do not cover spend data on research infrastructure capital and upkeep investment. This means that data on the funding spent on setting up and running institutes and physical research facilities is not included. Due to how data has been collected, this means that some funding to UKRI owned infrastructures has not been reflected in this release.
- Research England project funding is allocated on the basis of successful applications to funding schemes that are time-limited. These funding schemes are announced at various times of the year and are earmarked for specific purposes. This type of funding constitutes around 3% of its overall funding annually, is not included in the current publication.
- The breakdowns of spend data provided in this publication do not attempt to establish a causal link between a single local factor and concentrations of funding but to demonstrate there are different ways to look at regional 'hotspots' of funding.





- The tables and maps provided in this report are on NUTS1 level. This less granular level of presentation allows for a more general look at the effect of the different contextual economic indicators like gross value added (GVA), regional population, number of businesses or research organisations in an area, and others. Full data including UKRI spend on NUTS2 level is provided in the statistical annex of this publication.
- Some organisations could not be matched with a corresponding NUTS region. “Unknown” represents organisations which are UK based but had an invalid postcode, thus it was not possible to calculate a NUTS region. “Non-UK” represents organisations not based in the UK thus they do not have any NUTS values. These values are included in the statistical annex accompanying this publication, but have been excluded from the maps and tables here.
- The financial data presented in this publication depicts amount of funding being spent in the financial year (FY) 2018-19 and not necessarily the amount being allocated in that year, with the exception of Research England and the QR-equivalent data from the Devolved Administrations (DAs). For more details, please refer to the Methodology Section.

Research Council spend

Research Councils provide discipline-specific support for world class research and training. The Research Councils fund universities and research institutes and the researchers within those organisations. Because of this, the distribution of universities and research organisations as well as the number of researchers in each region would influence how funding is spread across the country.

The Research Councils' spend data in this publication represents grants awarded to universities and research institutes including research grants, training grants and fellowships but excludes research infrastructure capital and upkeep investment. Steps are being taken to improve the quality of this data in order for it to be included in future iterations of this report.

NUTS1 Region	RC Spend FY 2018-19 £M	RC Funding Spent per Research Organisation £	RC Spend as % of local GVA	RC Spend per capita £
East Midlands	102	387,479	0.10%	21
East of England	277	531,307	0.18%	44
London	469	353,222	0.11%	52
North East	104	623,157	0.20%	39
North West	265	639,642	0.16%	36
Northern Ireland	25	267,378	0.06%	13
Scotland	248	677,505	0.18%	45
South East	407	500,234	0.15%	44
South West	163	386,433	0.12%	29
Wales	29	211,413	0.05%	9
West Midlands	128	410,054	0.10%	22
Yorkshire and the Humber	191	678,916	0.16%	35

Table 1: Research Council Spend NUTS 1 FY2018-19

Figure 1 shows a type of thematic maps (choropleth maps) to present Research Councils spend in total and by number of research organisations in each NUTS1 area.

The research organisation data is sourced from the Global Research Identifier Database, which is comprised of a worldwide collection of institutes associated with academic research⁴. Not all organisations identified in this way would be in receipt of Research Council funding. The size and nature of the organisations have not been considered in this presentation of the data. However, we recognise that these are an essential part of contextualising concentrations of funding and will be considered in future iterations of this report.

Accounting for the number of research organisations in each region⁵, Yorkshire and the Humber emerges as an area of research funding strength,

4. Future publications will explore ways to enrich this analysis by adding more indicators of research activity including size of the organisation, type of research conducted, etc
5. Full information is included in the statistical annex accompanying this publication

closely followed by Scotland, North West and North East of England. While East and South East of England are the next most concentrated regions, London is the third least intensive region in terms of funding received per eligible research organisation.

Regional Research Council spend is presented as a percentage of local Gross Value Added (GVA) and per capita of local population in **Figure 2**.

It comes up as the highest proportion of local GVA in the North East of England (0.20%), where the GVA is one of the lowest in the country. London appears as a clear outlier – it has both the highest GVA and the highest Research Council spend, but the spend is a relatively low percentage of the economic output in the region (0.11%). The South East is the only region where the Research Council spend is a relatively high proportion of a high economic output (0.15%).

On the other hand looking at how much Research Council funding has been spent per capita of local population in each region, London, Scotland, the East and the South East of England appear as top performing regions. The combined population of those regions (~30m) is nearly half of the total population of the UK, suggesting that the concentration of Research Council funding is to some extent related to the concentration of people and economic activity in a place.

There are many factors that could influence the concentration of people in certain regions and some of those, including infrastructure, price of properties, etc., could also have an effect on the concentration of R&D activity in that region. A more complex economic analysis is needed in order to be able to attribute the impact of those different factors on R&D activity and funding and to establish causal links and potential collinearity of the data. The current breakdowns attempt to show there are different ways to look at regional 'hotspots' of funding, demonstrating correlation but not causation.

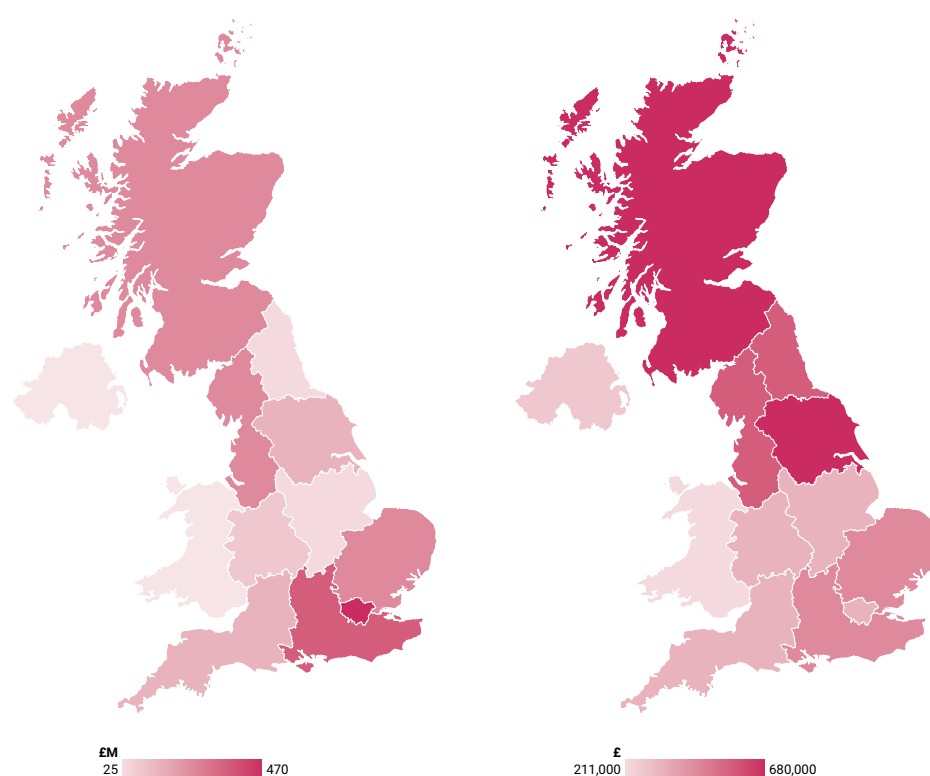


Figure 1: NUTS1 Research Council Spend total (left) and per Research Organisation (right) FY2018-19

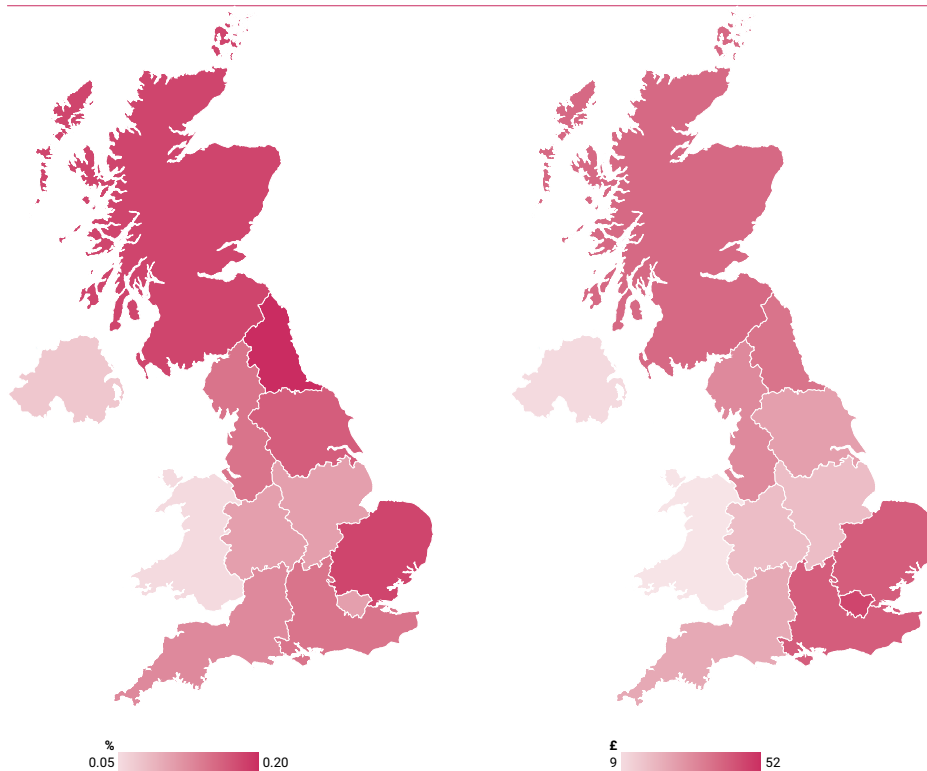


Figure 2: NUTS1 Research Council Spend as a Proportion of Local GVA (left) and by Local Population (right) FY2018-19

Innovate UK spend

Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas, including those from the UK's world-class research base. Innovate UK's funding goes to innovative and research-intensive businesses, which means that we would expect the funding distribution to be driven by the location of those businesses across the country.

Innovate UK data presented in this report includes innovation grants as well as funding which is spent on the national network of Catapult Centres. Although the Catapults are national resources, they are anchored in specific places, which is reflected in the distribution of funding across different regions. However, the positive impact of the Catapult Centres would be felt beyond the NUTS1 or NUTS2 boundaries considered in this publication.

Due to the fact that it is targeted at innovative businesses and businesses may have several post codes, Innovate UK data is subject to the so called "headquartering effect" (HQ effect). The HQ effect happens when a company's registered administrative headquarters are in one place but there are other sites where the funded R&D takes place. This occurrence can distort the data, wrongly indicating that funding has ended up in the administrative headquarters of companies. As a result, there is a bias towards large cities (e.g. London), where you typically see a greater density of headquarters of multi-site companies.

To mitigate the HQ effect for this report, we have conducted additional data analysis on the Innovate UK data combining two methods, explained in more detail in the methodology section of this publication.



Table 2 provides a breakdown of Innovate UK's spend across the UK with West Midlands, the South East of England and London emerging as the regions with highest levels of spending.

NUTS1 Region	IUK spend FY 2018-19 £M	IUK spend per business in the region £	IUK spend per R&D active business in the region £	IUK Spend as % of local GVA	IUK Spend per capita £
East Midlands	99	270.0	26,093	0.09%	21
East of England	82	145.4	14,402	0.05%	13
London	125	113.8	10,550	0.03%	14
North East	39	241.6	19,665	0.07%	15
North West	41	74.9	6,690	0.02%	6
Northern Ireland	11	85.5	7,023	0.03%	6
Scotland	57	171.0	19,376	0.04%	10
South East	129	147.4	14,359	0.05%	14
South West	116	212.5	26,029	0.09%	21
Wales	30	148.8	14,781	0.05%	9
West Midlands	133	297.6	24,447	0.10%	22
Yorkshire and the Humber	79	197.9	18,504	0.07%	14

Table 2: Innovate UK Spend NUTS1 FY 2018-19

To account for the differing economic structure and number of innovative businesses in each region and country, the data is broken down in a few different ways shown below. Contextualising the data by the total number of businesses (**Figure 3**) allows for a better understanding of the effect of the overall business population on the distribution of funding for business-led innovation. Not only does the total business population provide a fuller picture of the local business density and industry context, but it also captures those businesses which might not be formally classified as innovative. The maps in **Figure 3** illustrate that once the number of businesses in an area is taken into account, West and East Midlands emerge as an even more intensive area of concentrated funding while London and the South East fade considerably. It is worth noting that several large grants to a small number of organisations in the Midlands have a significant effect on the concentration of funding there.

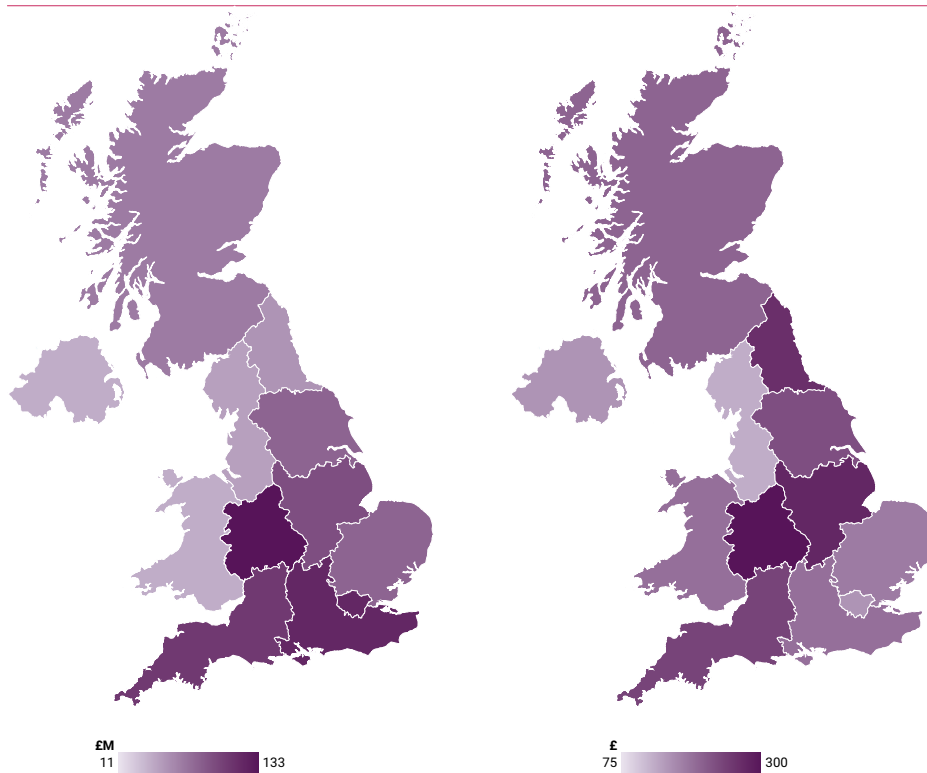


Figure 3: NUTS1 Innovate UK Spend total (left) and per business (right) FY2018-19

Data on the number of businesses claiming R&D taxes provides a proxy for the subset of the business population which could be defined as R&D&I intensive. Looking at this specific subset of the business population in **Figure 4** allows us to see to what extent the R&D&I intensive businesses drive regional concentrations of Innovate UK funding. The trend remains relatively similar with West and East Midlands remaining the top places of Innovate UK spend in FY2018-19.

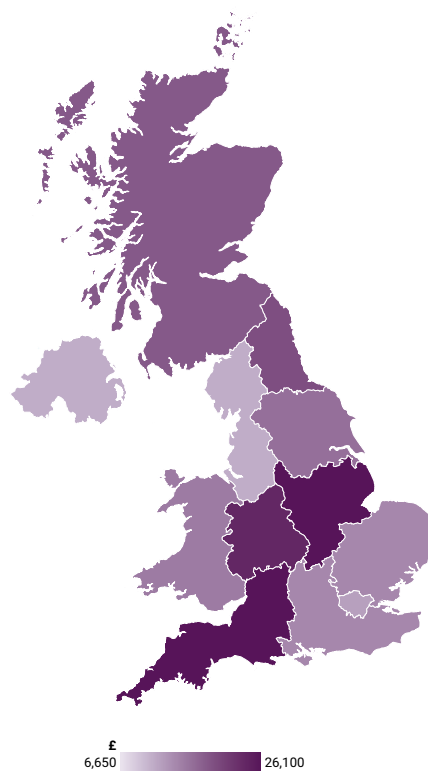


Figure 4: NUTS1 Innovate UK Spend by number of R&D active businesses FY2018-19

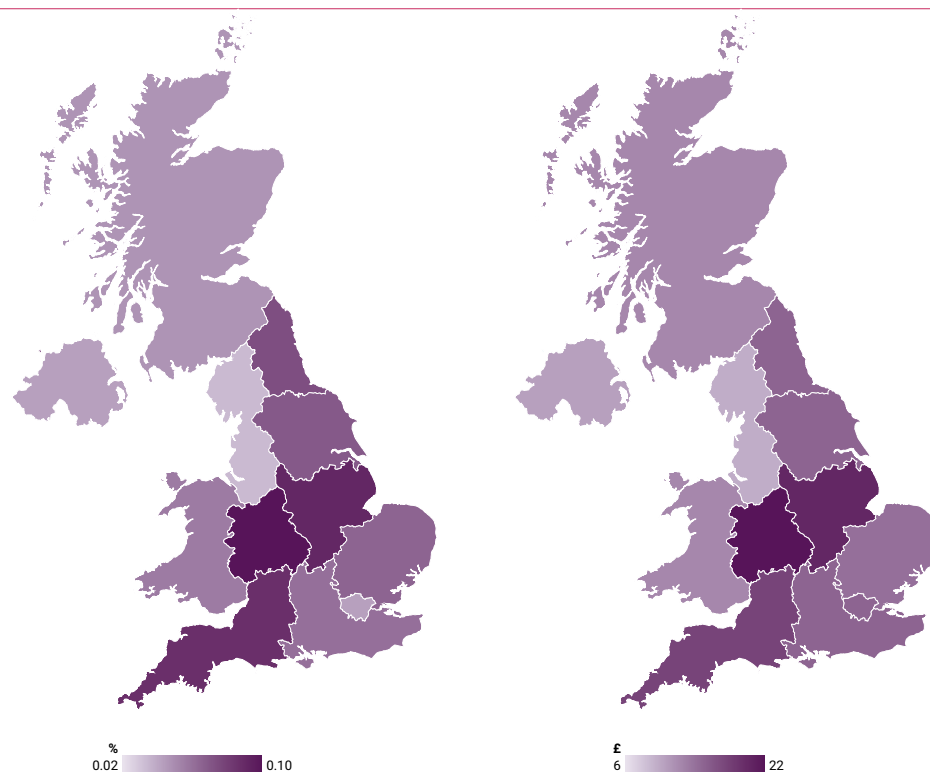


Figure 5: NUTS1 Innovate UK Spend as a Proportion of Local GVA (left) and by per capita (right) FY2018-19

The GVA and population breakdowns in **Figure 5** provide an additional layer of context for the Innovate UK funding across the country. Regional R&D concentrations across the wider economy (i.e. the composition of the local economic output) would play a role in the intensity of business-led innovation in that region and subsequently - the funding for innovative businesses.

Research England quality related and equivalent funding and HEIF

Research England has responsibility for supporting research and knowledge exchange (KE) activities undertaken by Higher Education Providers (HEPs) in England. It delivers high value, strategic and agile formula funding such as quality-related research funding (QR) underpinned by the [Research Excellence Framework \(REF\)](#) and support for knowledge exchange via the Higher Education Innovation Fund (HEIF). It also delivers some project funding – constituting around 3% of its overall funding annually, which is not included in the current publication. We intend for future iterations to cover the full range of Research England funding.

Research England works in partnership with the Devolved Administrations, to ensure, as practicably as possible, system wide approaches are identified and implemented. As a result of this, some types of funding like QR have

close equivalents in the DAs⁶. This additional data is included in this publication, **Table 3** for purposes of comparability, but it is important to note that policy responsibility sits with the Devolved Administrations and delivery of these funds sits with the relevant Higher Education Funding Bodies in the devolved nations.

In addition to QR and QR equivalent, a breakdown of RE's HEIF is provided in **Table 4**. This data covers England only.

As the nature of RE's allocation means that funding is mostly spent in the year it has been provided, we can safely assume that for the purposes of this publication in this section allocation equals spend. For more details, refer to the methodology section of this publication.

NUTS1 Region	QR and QR Equivalent FY 2018-19 £M	Per number of HEPs in receipt of QR (or equivalent funding) £M	QR and QR Equivalent Spend Per researcher £
East Midlands	100	11	6,152
East of England	171	17	8,568
London	485	14	9,554
North East	71	14	6,539
North West	151	11	5,753
Northern Ireland	50	17	10,377
Scotland	288	16	9,876
South East	295	17	8,312
South West	107	8	6,349
Wales	73	9	6,670
West Midlands	101	9	5,458
Yorkshire and the Humber	135	13	6,030

Table 3: QR and QR Equivalent Funding NUTS1 FY 2018-19

6. Research Excellence Grant (Scotland), Quality Research-funding stream (Wales), Quality-Related research funding (Northern Ireland)



NUTS1 Region	HEIF Funding per university FY 2018-19 £M	HEIF Funding FY 2018-19 £M	HEIF Funding per researcher £
East Midlands	2.10	17	1,039
East of England	3.18	22	1,115
London	1.64	49	971
North East	1.88	9	864
North West	1.97	24	899
South East	1.82	27	768
South West	1.82	15	866
West Midlands	1.91	19	1,029
Yorkshire and the Humber	2.42	19	866

Table 4: HEIF Funding NUTS1 FY 2018-19

The distributions of both QR and HEIF funding follow similar trends as the allocations are driven by the scale, cost and quality of research and knowledge exchange activity in HEPs. **Tables 3 and 4** show high concentrations of funding in London and the South East, as well as Scotland (for the QR-equivalent funding). While this may be reflective of the presence of very large research-intensive institutions in those regions, indicators on research-intensity and size of the providers are missing from the current publication and will be considered in the future.

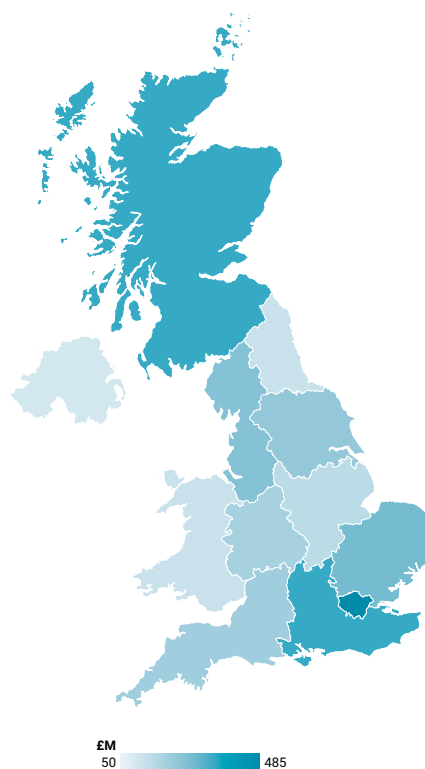


Figure 6: NUTS1 QR and QR equivalent funding FY 2018-19

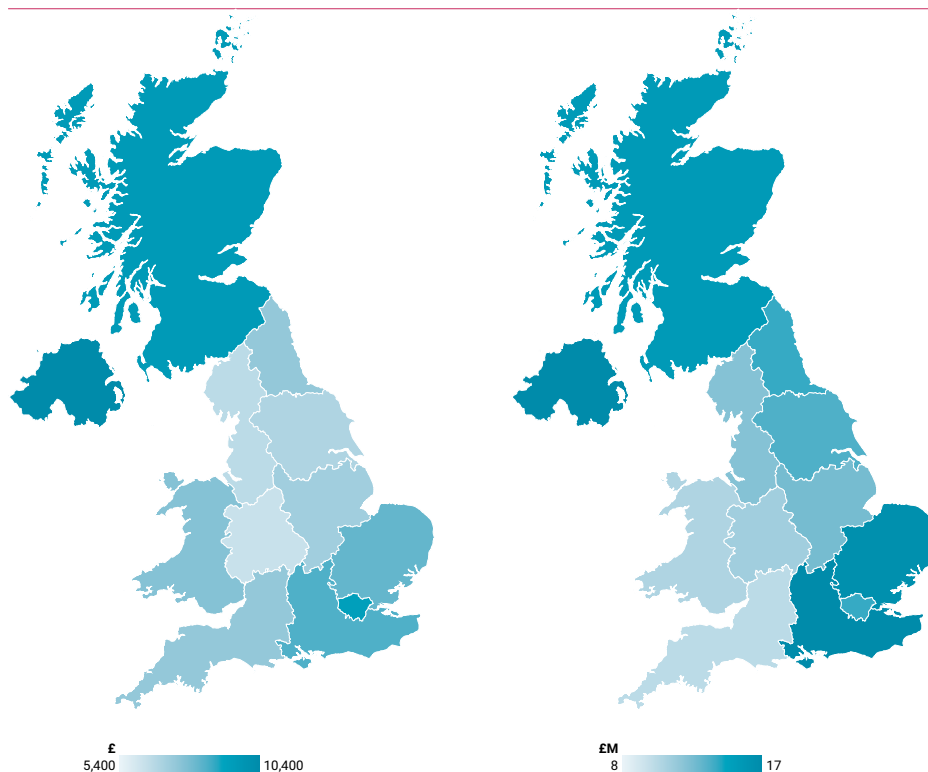


Figure 7: NUTS1 QR and QR equivalent funding by number of researchers (*left*) and number of HEPs in receipt of funding (*right*) FY 2018-19

Figure 7 illustrates how the picture changes for QR and QR equivalent funding when both the number of HEPs in receipt of that funding and the number of researchers are taken into account.

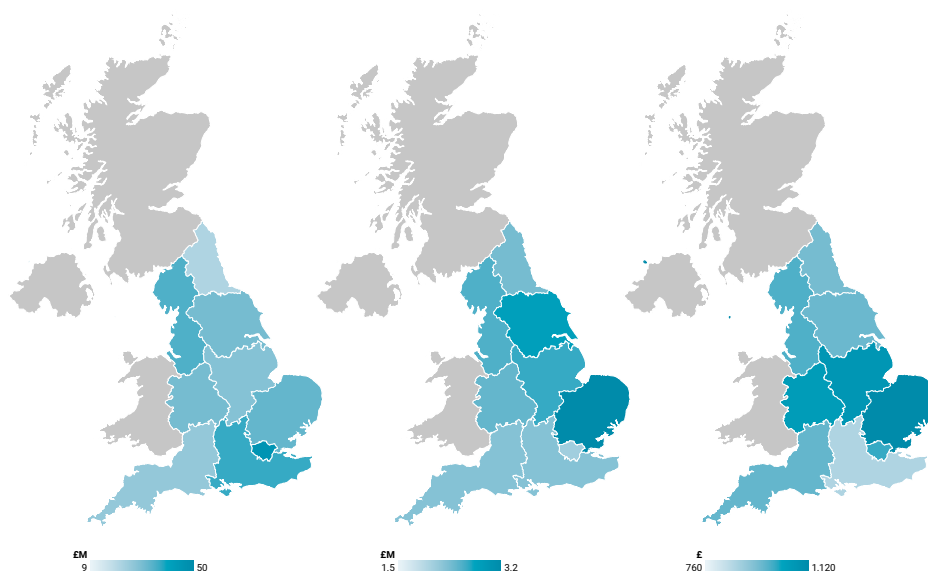


Figure 8: NUTS1 HEIF Funding total (*far left*), by HEP (*middle*), NUTS1 by researcher FY 2018-19 (*right*)

The number of researchers in each region gives a better indication of the size of the HEPs in the area. The distribution of QR (or equivalent) funding is still reflective of the concentration of research-intensive universities and skills but using the number of researchers as a way to normalise the data shifts the intensity of some regions as seen on the map.

NUTS1 Region	RE Funding FY 2018-19 £M	RE Funding as % of local GVA	RE Funding per capita £
East Midlands	116	0.11%	23
East of England	193	0.12%	32
London	534	0.13%	59
North East	81	0.15%	27
North West	175	0.10%	25
South East	323	0.12%	36
South West	122	0.09%	20
West Midlands	121	0.09%	20
Yorkshire and the Humber	154	0.13%	26

Table 5: Research England Spend NUTS1 FY 2018-19

RE funding presented here includes QR and HEIF which around 97% of RE total funding

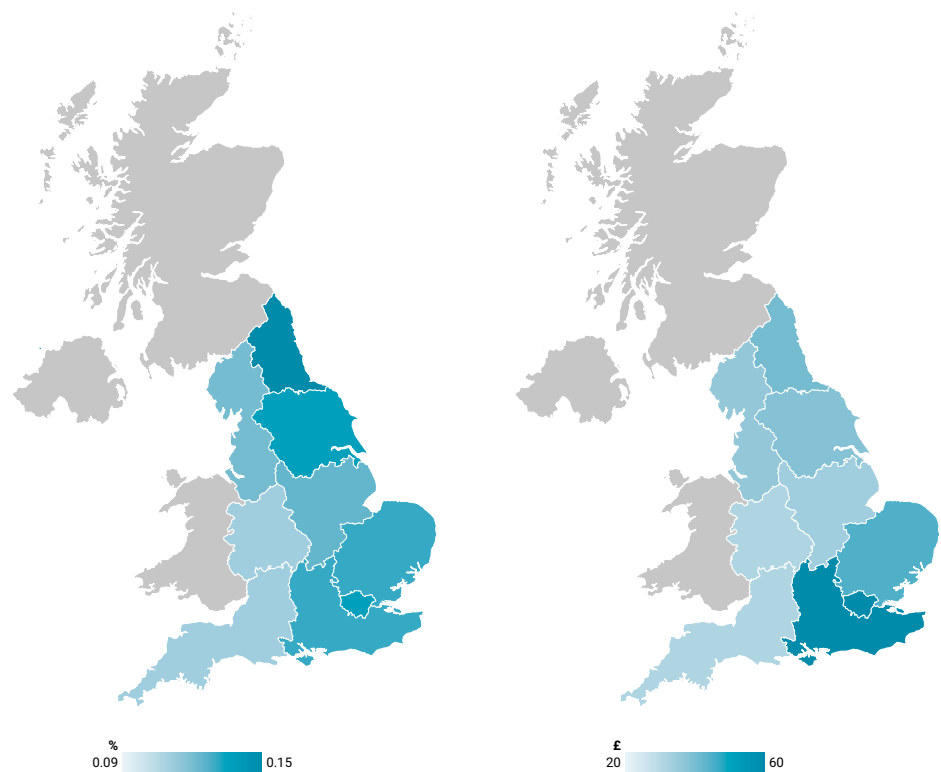


Figure 9: NUTS1 Research England Funding as % of local GVA (left) and per capita in NUTS1 region (right)

UKRI Spend

Table 6 shows the total of UKRI UK-wide funding that is presented in this publication plus the QR equivalent data from the Devolved Administrations.

According to this data, London, the South East of England and Scotland were the main areas of concentration of research and innovation spend. This logically follows from the breakdown data presented in the previous sections of this document and reinforces the understanding that regional and local concentrations are largely driven by the density and scale of the organisations that draw down UKRI funding (universities, institutes, innovative businesses) and reflective of the historical developments that led to those conditions in each place.

Looking at UKRI spend as a percentage of the local GVA brings the North East of England as one of the top two recipients of UKRI funding.

On the other hand, the regions with the highest per capita spend are those who also host large urban agglomerations with a strong and complex industrial make up – London, Scotland and the South East of England.

NUTS1 Name	UKRI Spend* FY 2018-19 £M	UKRI Spend as % of local GVA	UKRI Spend per capita £M
East Midlands	301	0.29%	62
East of England	530	0.34%	85
London	1079	0.26%	120
North East	215	0.40%	80
North West	457	0.27%	62
Northern Ireland	87	0.22%	46
Scotland	593	0.43%	109
South East	831	0.32%	91
South West	386	0.29%	69
Wales	131	0.21%	42
West Midlands	363	0.27%	61
Yorkshire and the Humber	406	0.34%	74

Table 6: UKRI spend NUTS1 FY2018-19

** UKRI spend is the sum of Research Councils, Innovate UK and QR and QR equivalent funding presented in this publication. These numbers exclude HEIF funding numbers because it covers only England and will distort the data.*

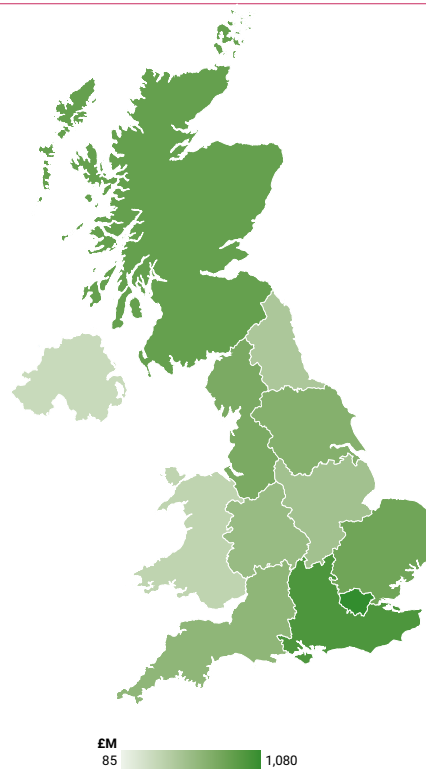


Figure 10: NUTS1 UKRI spend NUTS1 FY2018-19

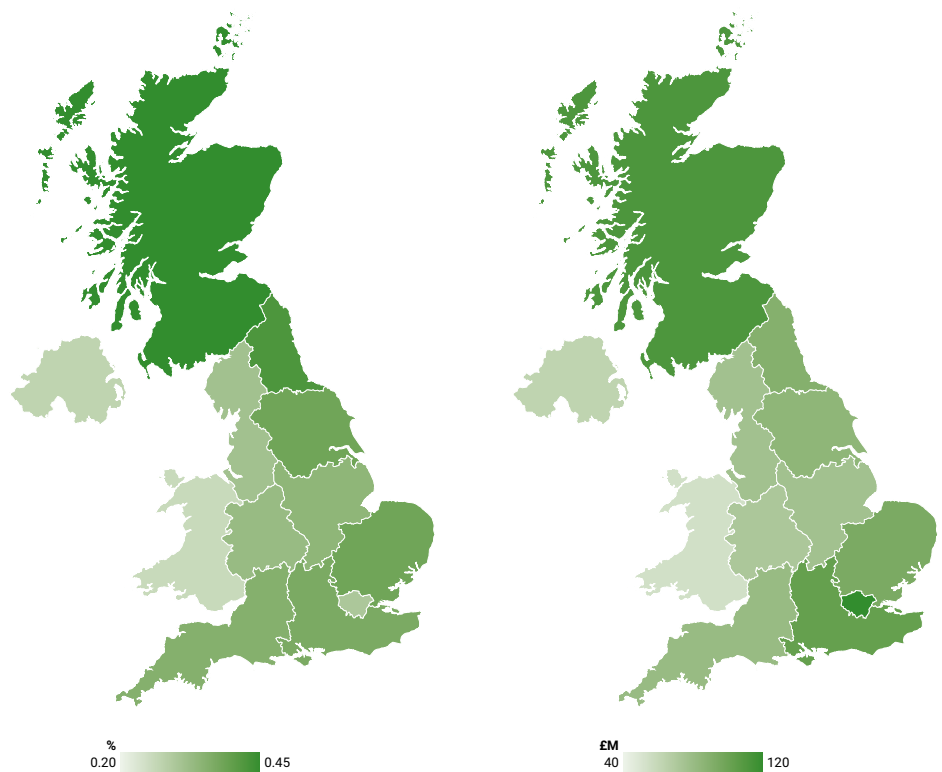


Figure 11: UKRI Spend as a Proportion of Local GVA (*left*) and per capita (*right*) FY2018-19

The following tables are included in the statistical annex accompanying this publication		
Research Councils Spend NUTS1	FY 2018-19	The whole of UK
Research Councils Spend NUTS2	FY 2018-19	The whole of UK
Research Councils Spend by number of research organisations NUTS1	FY 2018-19	The whole of UK
Research Councils Spend by local GVA NUTS1	FY 2018-19	The whole of UK
Research Councils Spend per capita of local population NUTS1	FY 2018-19	The whole of UK
Innovate UK Spend NUTS1	FY 2018-19	The whole of UK
Innovate UK Spend NUTS2	FY 2018-19	The whole of UK
Innovate UK Spend by total number of businesses in the region NUTS1	FY 2018-19	The whole of UK
Innovate UK Spend by number of R&D active businesses in the region NUTS1	FY 2018-19	The whole of UK
Innovate UK Spend by local GVA NUTS1	FY 2018-19	The whole of UK
Innovate UK Spend per capita of local population NUTS1	FY 2018-19	The whole of UK
Research England QR and QR equivalent funding NUTS1	FY 2018-19	The whole of UK
Research England QR and QR equivalent funding NUTS2	FY 2018-19	The whole of UK
Research England HEIF funding NUTS1	FY 2018-19	England only
Research England HEIF funding NUTS2	FY 2018-19	England only
Research England HEIF and QR funding NUTS1	FY 2018-19	England only
Research England HEIF and QR funding NUTS2	FY 2018-19	England only
Research England HEIF and QR funding NUTS1 by local GVA	FY 2018-19	England only
Research England HEIF and QR funding NUTS1 per capita of local population	FY 2018-19	England only
Research England QR and QR equivalent funding by number of HEPs in receipt of QR NUTS1	FY 2018-19	The whole of UK
Research England QR and QR equivalent funding by number of researchers NUTS1	FY 2018-19	The whole of UK
Research England HEIF funding by number of HEPs in receipt of HEIF NUTS1	FY 2018-19	England only
Research England HEIF funding by number of researchers NUTS1	FY 2018-19	England only
UKRI Spend NUTS1	FY 2018-19	The whole of UK

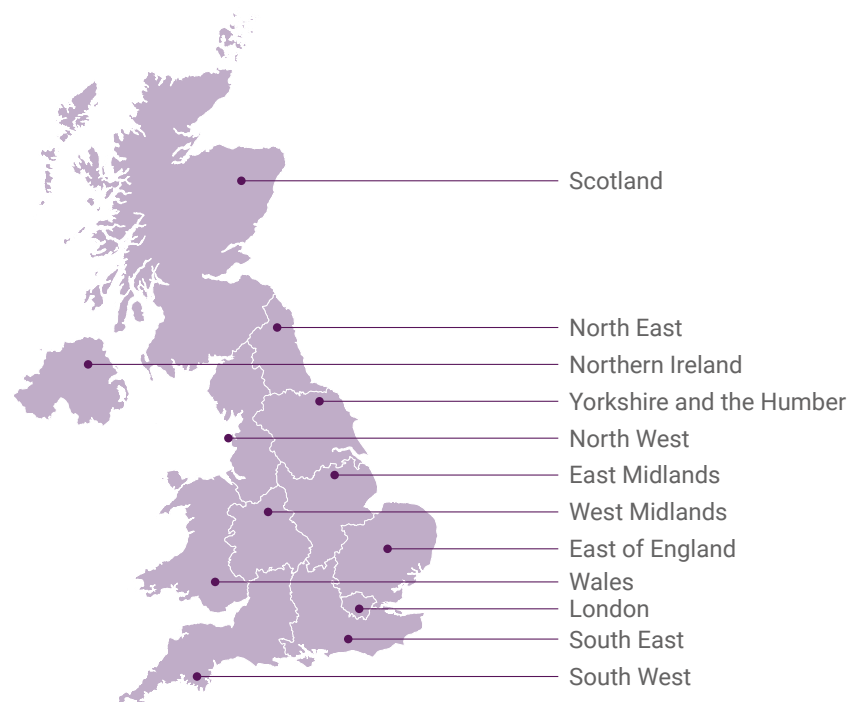
Methodology

The UKRI spend data for financial year 2018-19 combines the three fundamental perspectives within UKRI to support research, development and innovation – the Research Councils (RCs), Research England (RE) and Innovate UK (IUK). Since RE's remit is England only, we have included some analogous funding data for the Devolved Nations to provide a level of comparability and enable a more holistic understanding of the funding landscape.

Throughout this publication, the place-based statistics of the UK are presented according to the EU's Nomenclature of Units for Territorial Statistics (NUTS).

This nomenclature splits the UK into the 9 administrative regions of England, and the 3 devolved administrations (DAs), as labelled in the map. Each region or devolved administration contains a population of between roughly 2 and 9 million, and boundaries follow established electoral boundaries.

NUTS is predominantly used by both the Office for National Statistics (ONS) and Eurostat for their place-based statistical releases.



Index to maps

Spend vs allocation of funding

Some grants are subject to a multi-year funding being allocated in a single year but spent in several years. This results in uneven distribution of the funding allocations data with apparent spikes and certain years followed by no funding allocation being recorded in subsequent years. Those spikes in the data could be misleading when a single financial year is being considered. However, compiling enough historical data to 'smooth' the spikes can be challenging due to legacy inconsistencies of data collection.

In order to correct for this effect, the current publication presents financial data of amount of funding being spent in the financial year (FY) 2018-19. This means that a grant worth £5m with spend evenly distributed across 5 years, starting in May 2018 will contribute £1m to the FY 2018-19 figure.

Research Councils data

This data includes all Research Grants Fellowships and Training Grants where payments have been made in financial year 2018-19 and covers the whole of the UK. Each payment is made to an organisation and each organisation's postcode is matched with the corresponding NUTS1 and NUTS2 region to come up with the compiled figure of the total payments by region.

The current publication does not cover research infrastructure spend. This can comprise of everything from set-up and running costs of centres, facilities and institutes, to capital upgrades, estates etc. Steps are being taken to improve the quality of this data in order for it to be included in the next iteration of this report.

In addition to the geographical breakdown by NUTS1 and NUTS2, several further breakdowns are provided for the Research Councils spend data to account for some of the contextual differences of each region. Those breakdowns are using additional data sets including number of research organisations in each region, total population and GVA obtained from publicly available sources like the Global Research Identifier Database (GRID) and ONS.

In cases where there has been a consortium of organisations successfully applying for and securing a grant, the data is recorded against the post code of the lead organisation only. The lead organisation is usually the one receiving the grant and following up with further distribution among the members of the consortium according to their agreement. UKRI recognises that this might represent a small degree of bias of regional data towards the lead organisation's location, meaning that regions with more organisations that are usually leading a consortium might see a more pronounced concentration of funding.

Innovate UK data

Innovate UK Data presented in this publication combines innovation grants and Catapult Centres funding where payments have been made in financial year 2018-19. Similar to the methodology used with the Research Councils data each payment is associated with an organisation's post code, which in turn is matched with the corresponding NUTS1 and NUTS2 region.

Due to the fact that it is targeted at innovative businesses and businesses may have several post codes, Innovate UK data is subject to the so called "headquartering effect" (HQ effect). The HQ effect happens when a company's registered administrative headquarters are in one place but there are other sites where the funded R&D takes place. This occurrence can distort the data, wrongly indicating that funding has ended up in the administrative headquarters of companies. As a result, there is a bias towards large cities where businesses tend to be registered (e.g. London).

To alleviate the effect of the HQ effect, we have combined two methods of checking and improving the location of the businesses in receipt of Innovate UK funding. The first method included applying a work location postcode





which was provided in addition to the HQ postcode in the data Innovate UK has collected since May 2018. These postcodes have been approximated for awards that were spent in financial year 2018-19. Since a grant could have started before FY 2018-19 but part of it would be spent in 2018-19, we have adjusted the postcodes using the most frequent work location postcode provided by an organisation since May 2018.

The second method involved manually checking each grant allocation. Using company reference number, organisation name, company size, and postcode, data was examined against information retrieved from Companies House, Google search and Fame database.

We have used hierarchical logic to combine the two methods - first checking if there is a work location postcode provided (first method) and if there was not, applying the results from the manual check (second method). This allowed us to correct the NUTS1 location of approximately 17% of the funding spent in FY2018-19. This data correction has had the greatest effect on London and the East Midlands at NUTS 1 level, largely due to the correction of one large company's location from London to Derby. This resulted in an approx. 7-8% change in value spent in those regions.

Catapult centres

Although Innovate UK Catapult Centres could be classed as UKRI infrastructure, which as outlined above is not included in this publication, the Catapults financial data is reported separately and thus does not require additional quality assurance steps. This data covers a total of 19 national sites and is compiled with the rest of the Innovate UK spend to present a total distribution of IUK funding across the country.

Research England

The data from Research England (RE) included in this publication covers Quality Related funding (QR) and Higher Education Innovation Fund (HEIF), which are both formula-driven funds and comprise the majority of RE's funding. Both data sets used in this publication cover the funding allocated by university for the academic years 2017/18 and 2018/19.

Due to the type of activities supported through QR and HEIF funding, the allocated funding is usually spent by each institution in the year it has been allocated. This principle allows us to safely assume that for the purposes of this publication the RE funding presented equals spend and thus is comparable with the rest of the data sets.

Since, the rest of the publication's data is for the financial year 2018-19, an additional adjustment of the RE data had to be made in order for all data sets to be comparable. The method used involves taking four months of the AY 2017/18 and eight months of academic year 2018/19 to correspond to FY2018-19. This is possible to do because RE's funding is distributed equally across the year. This principle was applied to each organisation's funding data calculating the aggregate number using the simple formula $\frac{1}{3} \times A + \frac{2}{3} \times B = C$, where A is the funding received in AY2017/18, B is the funding received in AY18/19 and C is the estimated funding for FY2018-19.

The distribution of RE's QR and HEIF funding data is contextualised through several breakdowns including number of institutions in receipt of the respective funding (QR or HEIF), as well as the number of researchers in each region.

Researchers' data is extracted from HESA and covers staff and student researchers. Staff researchers have been defined as staff who are on an 'Academic contract that is research only' or an 'Academic contract that is both teaching and research'. Student researchers have been defined as those completing a postgraduate research degree.

Due to the complexity of dividing non-financial data between two academic years to establish a financial year equivalent, we are using only the number of researchers and relevant organisations for AY 2018/19.

The difference between the total number of researchers in the two academic years is less than 16%, while the difference in the total number of organisations in receipt of QR and HEIF is less than 8%. The regional effect of this would be even smaller so we are using the AY2018/19 numbers as a proxy to provide the contextualising breakdowns.

QR Equivalent data

Since RE's remit is England only, we have added corresponding to QR data from Scotland, Wales and Northern Ireland in this publication. RE works in partnership with the Devolved Administrations, to ensure, as practicably as possible, system wide approaches are identified and implemented. This additional data does not represent UKRI funding, but it has been added for the purpose of comparability and offering a more complete picture of the funding landscape. The methodology used to extract and present the DA's QR-equivalent data is the same as the one outlined in the previous section of the methodology.





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