Guidance – Research and Discovery End User Reports

Contents

What is a Report?

- A report is built by the Data and Analytics Team in collaboration with key subject matter experts in Research and Business Engagement, Finance and People and Organisation Development from a verified and trusted Dataset (also produced in Power BI). It is available for users in the Business Intelligence Power BI app.
- The report is designed for "end users" rather than analysts. Users are provided with a link to the app and should be able to explore the report pages and visuals in Power BI. Guidance is provided below on how to navigate Power BI Reports.
- The reports are designed to be used directly in the Power BI interface to find answers to specific questions. If it is not possible to answer these questions from the reports provided then feedback can be given to the team, who will review the requirement and add further report visuals.
- In some cases, more detailed data may be required to serve a local requirement and the best route for the request will be for an analyst to use the original dataset.

Overview of the "Report – Research and Discovery"

The report is built from a dataset designed to support users to understand external benchmarking data and, for some data, how that relates to internal records aligned to our organisational structure.

The initial priorities for the report have been to replicate the Board Scorecard metrics and add additional internal data for users across the Faculties. There are some key exceptions to the dataset that will be priorities for future enhancement, particularly the applications and awards data from Pure and internal research student data records.

The report is intended to support strategic reporting and includes the ability to drill down to Level 4 of the organisational hierarchy (equivalent to Department / Division).

Data Sources

HESA benchmarking data – HESA Open data via website and HEIDI plus data

As our key R&D ambitions are based on relative position of our research teams vs other UK institutions, benchmarking data forms a key part of our reporting.

HESA Research Income is sourced from HESA Open Data https://www.hesa.ac.uk/data-and-analysis/finances/income#research

For 2021/22, we applied some corrections to the UoM data following discussion with Finance colleagues.

HESA Staff full-time equivalent (FTE) data is sourced from HEIDI plus, which is a data tool we subscribe to as an organisation. We extract unrounded data on staff with an academic employment function of Teaching and Research, broken down by academic year, cost centre and organisation. We follow HESA Rounding and Suppression rules in our measures and report pages, so you will see numbers rounded to the nearest 5 and ratios suppressed where staff FTEs are below 7.

HESA postgraduate research student (PGR) data is sourced from HEIDI plus, where Level of Study is postgraduate (research), again by year, cost centre and organisation and using rounding and suppression rules.

SciVal

Citation data has been sourced from SciVal – each year (in June) we have downloaded all publications data from Russell Group institutions only (due to size of the data we are not able to do this for the whole sector) for a five-year publication window. The data have then been analysed to calculate the number and proportion of publications in the top decile of outputs for that year and publication type.

Funder Awards

Research Strategy Group identified priority research funders for tracking the market share of funding awards made through competition. These are sourced from funder websites and have different practices and formats.

- UKRI data are downloaded annually from https://www.ukri.org/what-we-do/what-we-have-funded/competitive-funding-decisions/
  From the spreadsheet of awards made in each financial year (April to March), we use the "Organisation by owner" summary tab as this provides the most complete record of awards – other tabs exclude some of the grants for confidentiality purposes. The awards are based on lead organisations and do not include values from collaborative

grants led by other institutions. They also exclude Innovate UK which we source separately from https://www.ukri.org/what-we-do/what-we-have-funded/innovate-uk/

- NIHR awards are sourced from a live API on their website. This means that prior year records can change as data are updated in NIHR.
- Wellcome Trust data are sourced from https://wellcome.org/grant-funding/funded-people-and-projects
  The latest spreadsheet runs to 9 March but their financial year is different to other funders and operates October to September. This means that 2022/23 data records are incomplete compared to previous years. The data will be updated once the spreadsheet is re-published.
- Cancer Research UK – funding awarded is sourced from annual report pages here - https://www.cancerresearchuk.org/about-us/our-organisation/how-we-spend-your-money
  These pages include PDF documents of awards by institution for each financial year e.g. for 2022/23:
  https://www.cancerresearchuk.org/sites/default/files/list_of_institutes_we_fund_r3.pdf
- European Research Council awards – the data have been sourced from the EU funding portal in the past but this has changed in format several times and does not now provide the data required for ongoing reporting. Records are included up to 2020/21.
- Royal Society, British Academy, Royal Academy of Engineering awards are sourced from financial reports and accounts / trustee reports.

HESA Staff Snapshots (internal records)

In order to provide information about where our staff are reported to in terms of HESA cost centres, we have included data from P&OD as submitted to HESA for 2020/21 to 2022/23.

Oracle Financials

Internal research income data have been pulled from a view in Oracle Financials – this is the same data as used for internal financial reporting (201 reports).

PGR Completions

Data for PGR completions are sourced from a Power BI dataset created by the Student Data Team as used in the Power BI report SR: PGR Sub & Comp Rates (PGR Submission and Completion Rates).

How to access the app

The report is housed in the Business Intelligence app available from [this link](#).

Contents and navigation

What can I see?

There are 21 pages on the report and some additional data available through interacting with the pages (linked reports). The page order is organised by data topic, as indicated below.

- **About** – This provides contextual information about the report and how it has been produced
- **Navigation** – This lists the report pages as navigation buttons, and includes examples of the questions that can be answered with each.
- **Definitions** – This provides plain English descriptions of the key measures used in the report and any filters applied.

Scorecard Summaries

- **Board Scorecard** – A one page overview of UoM performance in the five metrics used to report progress to the Board of Governors.
- **Scorecard Summary by UoA (APR report)** – This provides summary data for the Board Scorecard metrics at Unit of Assessment level (this only includes three of the five measures as the others are not available for UoAs). This page is used in the annual deep-dive for R&D, part of the Annual Performance Review process.
- **Benchmarking summary (HESA and SciVal)** – Summary data over five years for T&R staff, research income, PGR FTEs and top decile publications. This page can be filtered to one or more UoAs or a Faculty summary level.
- **Detailed benchmarking data** – Table of data for all benchmarking metrics, institutions and years, which can be filtered to give a detailed picture of a particular Unit of Assessment or group of institutions.

Research Income

- **Research Income summary (HESA benchmarking)** – Summary data for the top 8 UK institutions on research income data from HESA. This covers change over five years, and broad source of funding mix for the most recent year. It can be filtered to a particular Faculty or UoA.
- **Research Income Source of Funding (HESA benchmarking)** – Market share of the top 8 UK institutions by broad source of funding grouping.
- **Research Income per FTE (HESA) – APR summary** – A summary page of sector ranks for each Unit of Assessment for research income per FTE of staff in Teaching and Research roles. This page is used in the R&D deep-dive.
- **Research Income per FTE by UoA (HESA detail)** – Additional detail over five years for the research income per FTE metrics. In this page users can see the gap to a fifth place position and trend over time.
- **Internal Research Income (Oracle Finance)** – This presents research income using the same HESA definition and the relationship between Unit of Assessment and the internal organisational structure. You can access further detail using the drill through feature (see later section).
- **Internal RI and RI per FTE** – This is a detailed data table showing research income from Oracle Finance, staff FTE from HESA staff return and the calculated research

income per FTE. This can be used to see how activity varies within a Unit of Assessment across different internal units.

Research Funding Awards

- **Funder Awards Market Share Summary (benchmarking)** - this is based on data extracted from research funder websites and collated by financial year. The financial year definitions vary according to differences in funder practice, detailed in a later. In some cases the source of data has gaps in coverage which means there are caveats in the data.
- **Funder Awards UKRI Market Share Summary** – similar to the previous report but with a focus on UKRI sources and detail on the different Councils.

Postgraduate Research Students

- **PGR per staff FTE (HESA) - APR** – A summary of position relative to PGR thresholds calculated for HESA data. This focuses on PGRs per staff FTE in Russell Group institutions ranked in the top 5 for research income per FTE. This page is used in the R&D deep-dive.
- **PGR Completion Rates - APR** – PGR completion rates by cohort start year, for a snapshot of the data taken on 31st July 2023. Further snapshots will be added for each year on 31st July to give a time series perspective. This is used in the R&D deep-dive.
- **PGR Completion Rates by School – APR** – PGR completion rates for the most recent cohort year used for APR reporting (at the time of release this is the 2017/18 starting cohort)

Citations Data

- **Citations by UoA Summary – APR (SciVal)** – Summary of Russell Group ranks for each UoA for proportion of outputs in the top decile for citations. This is used for the R&D deep-dive.
- **Citation detail (SciVal)** – further detail on citation trends for the Russell Group.

Mappings

- **Mapping Information** – reference data on how source data has been mapped to Units of Assessment and sources of funding. Rules and caveats are included in this report.

Linked pages accessible through drill-through

- **Research Income Detail for Selected School** – provides a level 4 breakdown of research income by source of funding
- **Unit of Assessment Research Income and Staff from Internal Data** – provides a breakdown of 2020/21 and 2021/22 research income and staff FTE by UoA, School and Level 4 area, and a breakdown of the staff FTE role titles and FTEs.
- **Detailed Benchmarking table** – provides the detailed benchmarking data for a particular UoA, for all institutions and all five years. This is the same table as the Detailed Benchmarking data page, but pre-filtered to look at a particular UoA

Benchmarking institutions

Many of the benchmarking reports are set up with default filters – focussing on the institutions that Strategic Planning Group has agreed are the standard ones for comparison – Core institutions that are our key competitors across all activities (UCL, Edinburgh, King's College, Bristol) and R&D leading institutions (Oxford and Cambridge). Together these are the top performing institutions from REF2021, apart from excluding LSE.

You can amend the institutions in the filter pane by unselecting the benchmarking institution filters and choosing your favoured institutions in the separate filter.

To return to the default benchmarking institutions, select "RESET FILTERS"

Units of Assessment – the "UoM UoAs only" filter

You can choose to view only the Units of Assessments Manchester submitted activity to in the last REF by selecting this filter and choosing "UoM". However, please be aware that this will also filter the other institutions to only show activity in those UoAs, so you are likely to only see a partial picture of the other institutions. If you want to compare activity at overall institution or Faculty level you should ensure this filter is selected to "All".

Example Use Cases

I want to see an overview of performance for my Faculty (Biology, Medicine and Health used in this example)

- For the **APR summary page**, go to Scorecard Summary by UoA (APR report)
- Click on the three lines to open the filter pane
- Select Faculty of Biology, Medicine and Health in the Faculty filter
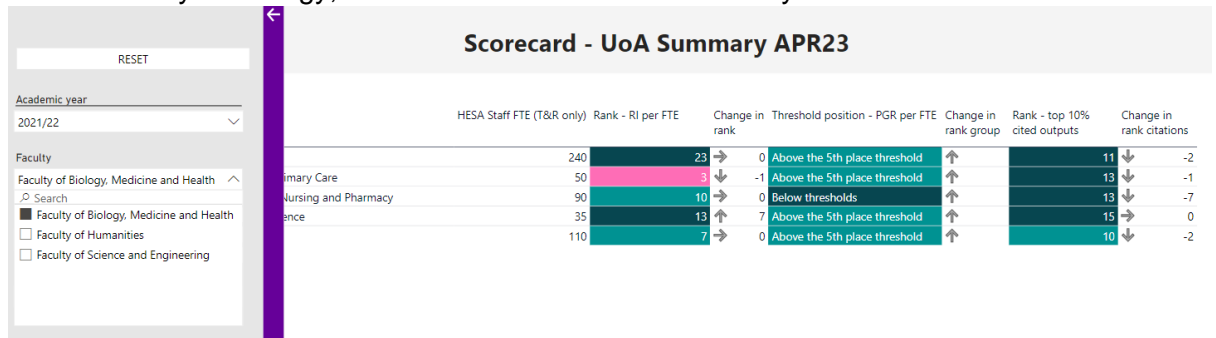
- Close the filter pane by clicking on the purple bar.
- This page will now display the relevant UoAs for the Faculty and show performance in the most recent year, with change since the prior year indicated as columns with arrows.
- For a broad overview of performance vs named other institutions, go to **Benchmarking summary (HESA and SciVal)**
  Use the filter pane to limit which institutions you want to view – e.g. select "Member" in the Russell Group filter. If you want to limit to selected institutions within the Russell Group, you can untick the institutions you would like to exclude from the page
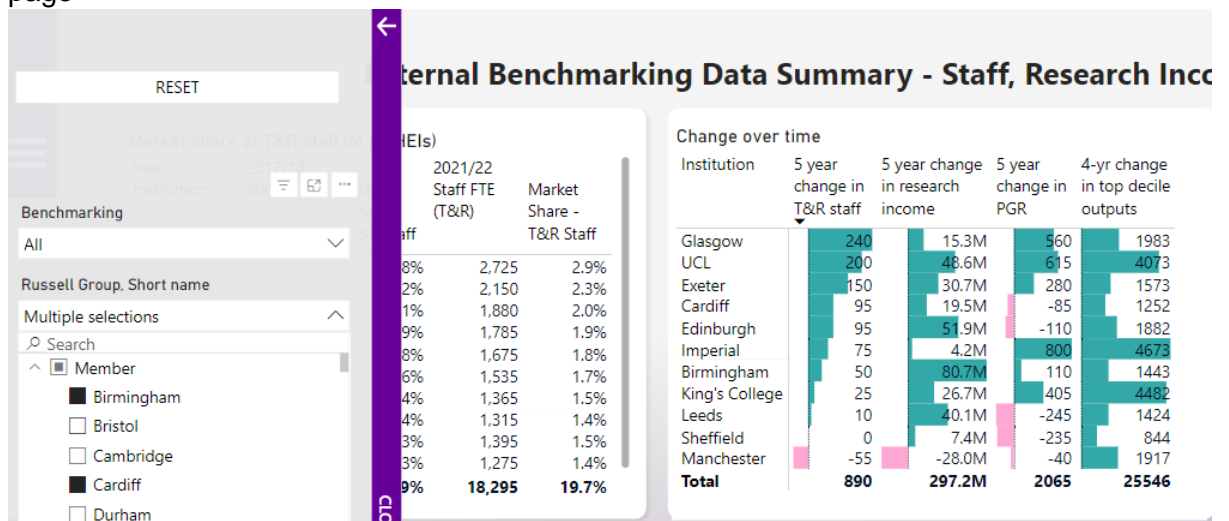
- In the tables and graphs you can see key changes for relevant UoAs aggregated into Faculty-equivalent metrics e.g. for BMH as a whole Manchester is the third largest of the institutions selected here with 2% of the staff in 2021/22, although this has dropped since five years ago 2017//18.
- The bottom tables show the Scorecard metrics by year for the Faculty as a whole.

I want to understand trends in research income for a particular Unit of Assessment – using Engineering as an example.

To understand broad HESA research income performance (with no reference to staff FTE), go to Research Income summary

- Open the filter pane, and go to the UoA as number, REF unit of assessment filter. Select the UoA (number 12) – you can check the name by clicking the down arrow next to the number
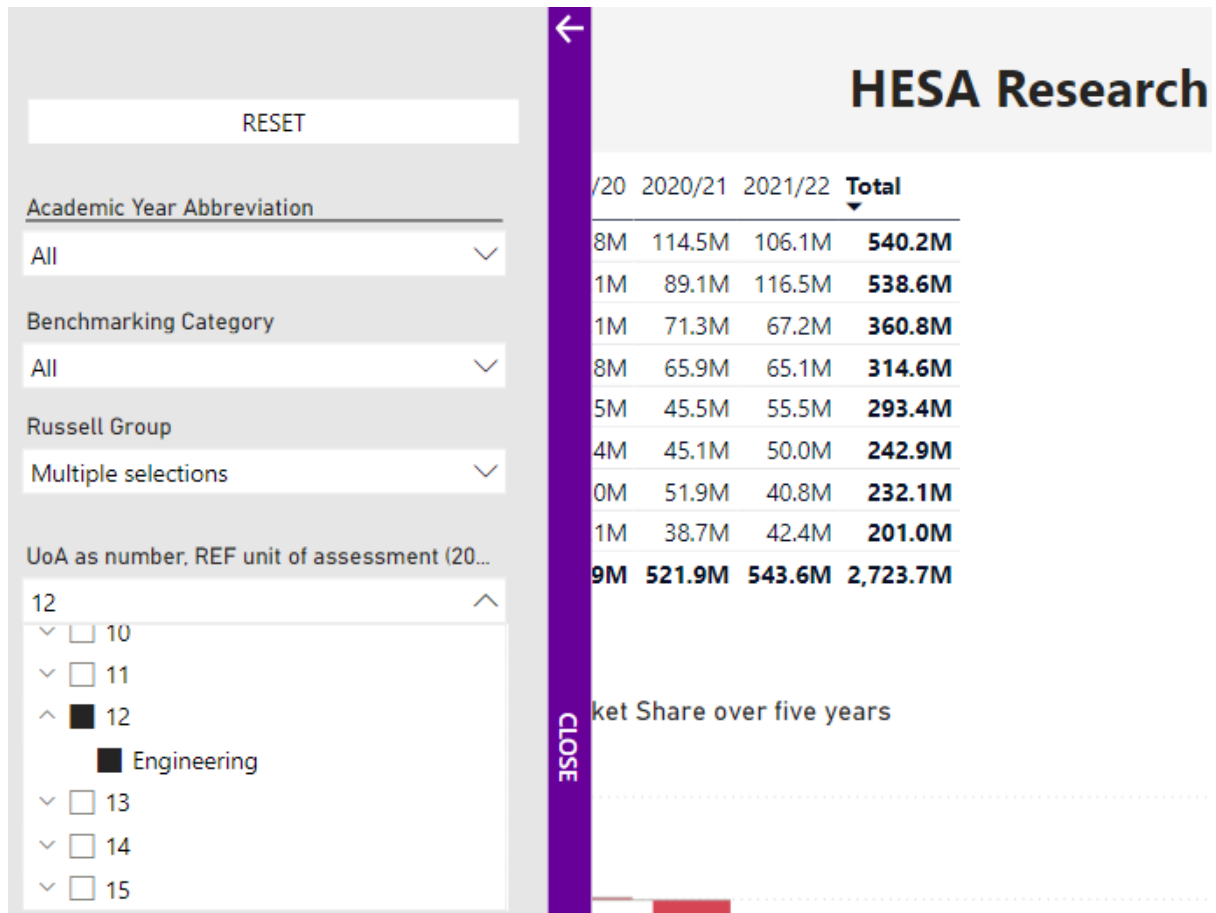
- Close the filter pane
- The page will now show the top 10 institutions by research income for UoA12 only – this includes all Engineering cost centres aggregated into one group.
- You can see from the visuals that Birmingham and Warwick have increased their market share of research income over five years and most other institutions have lost market share. UoM has the fifth highest research income total over five years (this is also true for the most recent year 2021/22).
The right-hand side visual shows broad Source of Funding categories for the top institutions. This shows that UoM's funding is dominated by Research Council category of funding. Warwick and Bristol have much greater reliance on Government funding (this includes EU funding which is categorised as EU Government).

    For a market-share focussed view, you can look at the Research Income Source of Funding page and apply the same filters to UoA12.

To look at research income per FTE trends, go to Research Income per FTE by UoA. You can see the ranks for this measure over time – this has varied from 8th to 11th in the most recent five-year period. The RI per FTE values dropped from 2018/19 to 2020/21 but showed a large increase for 2021/22.

From this page, you can go to additional detail in the pages "Breakdown of research income and staff for a UoA" or "Detailed benchmarking table".
The first of these will give you a view of the different areas of Engineering.

Click on the name of the UoA (Engineering) then right click and select Drill through and Breakdown of research income and staff for a UoA

This will take you to a breakdown of the activity at Manchester reported to this UoA. You can see the breakdown of research income and staff for three years where we have the detailed underpinning data. This shows that the Department of materials has the highest research income per FTE.
The report also shows that some research income is mapped to this UoA without any matching staff – this particularly relates to capital amounts and some activity in Research Institutes and FBMH. These may be linked to independent researchers who are on Research only academic employment functions and therefore are not included in the filtered staff data (based on T&R staff only).

Unit of Assessment Research Income and Staff from Internal Data

Research income and staff FTE by organisational unit and year

Academic Year	2020/21			2021/22		
UoA	Research Income	Staff FTE	RI per FTE	Research Income	Staff FTE	RI per FTE
12						
Faculty of Science and Engineering						
Faculty Office - Science and Engineering						
Faculty of Science and Engineering Faculty Office Dean	15,937	0.4	39,841	431,278		
School of Natural Science						
Department of Materials	23,617,057	71.6	329,625	27,322,783	67.0	407,839
Department of Chemistry	32,414					
Department of Earth and Environmental Sciences	66,449			75,075		
School of Engineering						
Department of Mechanical, Aerospace and Civil Engineering	5,805,087	34.6	167,841	7,229,526	33.2	218,011
Department of Chemical Engineering	6,080,949	42.7	142,469	6,404,797	43.0	148,889
Department of Electrical and Electronic Engineering	8,409,036	64.7	129,996	9,374,470	63.2	148,417
Faculty of Science and Engineering Research Institutes						
BP International Centre for Advanced Materials	157,403			198,542		
National Graphene Institute	7,241					
Central Accounts						
Central Accounts						
Financial statements adjustments	1,685,529			901,876		
Depreciation and Capital Income						
Depreciation				3,339,085		
Faculty of Biology, Medicine and Health						
School of Medical Sciences						
Division of Diabetes, Endocrinology and Gastroenterology	73,128			121,702		

Staff FTE by occupancy type and year

Occupancy Type (Value)	2020/21	2021/22
Academic (Teaching & Research) Lecturer	57.4	49.9
Academic (Teaching & Research) Professor	98.8	95.4
Academic (Teaching & Research) Reader	46.0	49.2
Academic (Teaching & Research) Senior Lecturer	70.2	72.6

On the right-hand side you can click on the branched arrow to see detailed role names for staff included in this UoA.

To filter this for one School or one Level 4 unit only, you can click on its name in the table on the left e.g. Department of Chemical Engineering
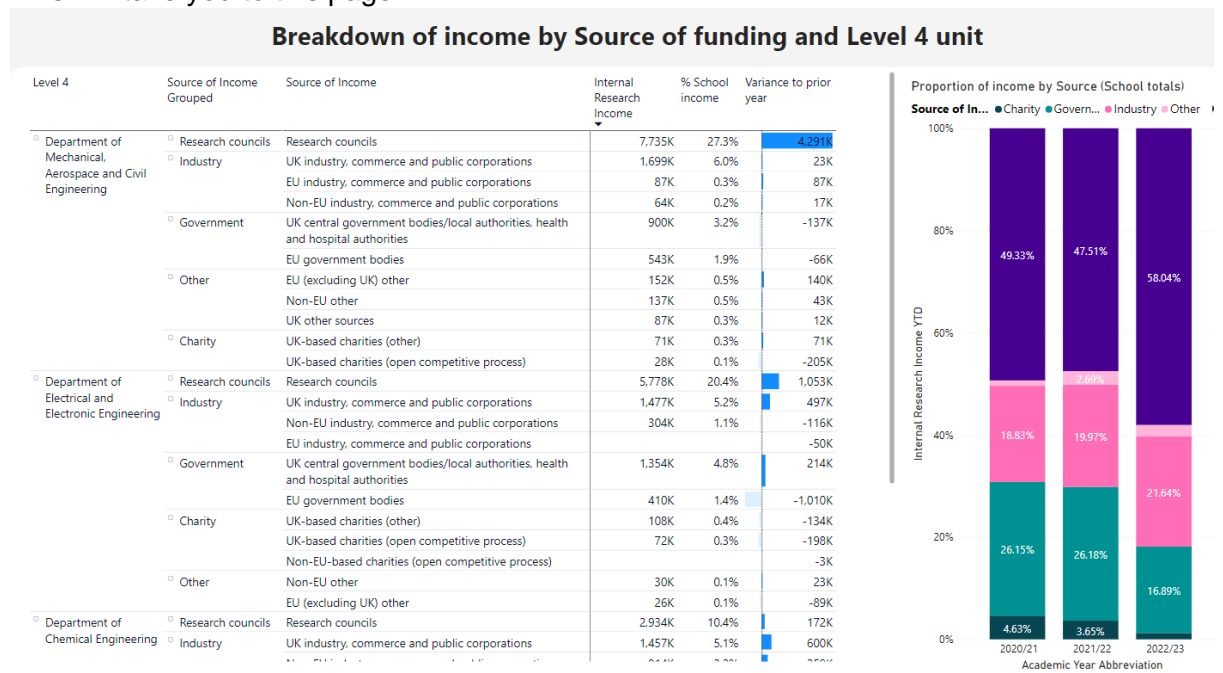

To look at the detail of contributing Schools, go to Internal Research Income (Oracle Finance).
Select UoA12

Click on School of Engineering, right click and select Drill through, Income Detail for selected School.

This will take you to this page

Breakdown of income by Source of funding and Level 4 unit

Level 4	Source of Income Grouped	Source of Income	Internal Research Income	% School income	Variance to prior year
Department of Mechanical, Aerospace and Civil Engineering	Research councils	Research councils	7,735K	27.3%	4,291K
	Industry	UK industry, commerce and public corporations	1,699K	6.0%	23K
		EU industry, commerce and public corporations	87K	0.3%	87K
		Non-EU industry, commerce and public corporations	64K	0.2%	17K
	Government	UK central government bodies/local authorities, health and hospital authorities	900K	3.2%	-137K
		EU government bodies	543K	1.9%	-66K
	Other	EU (excluding UK) other	152K	0.5%	140K
		Non-EU other	137K	0.5%	43K
		UK other sources	87K	0.3%	12K
	Charity	UK-based charities (other)	71K	0.3%	71K
		UK-based charities (open competitive process)	28K	0.1%	-205K
Department of Electrical and Electronic Engineering	Research councils	Research councils	5,778K	20.4%	1,053K
	Industry	UK industry, commerce and public corporations	1,477K	5.2%	497K
		Non-EU industry, commerce and public corporations	304K	1.1%	-116K
		EU industry, commerce and public corporations			-50K
	Government	UK central government bodies/local authorities, health and hospital authorities	1,354K	4.8%	214K
		EU government bodies	410K	1.4%	-1,010K
	Charity	UK-based charities (other)	108K	0.4%	-134K
		UK-based charities (open competitive process)	72K	0.3%	-198K
		Non-EU-based charities (open competitive process)			-3K
	Other	Non-EU other	30K	0.1%	23K
		EU (excluding UK) other	26K	0.1%	-89K
Department of Chemical Engineering	Research councils	Research councils	2,934K	10.4%	172K
	Industry	UK industry, commerce and public corporations	1,457K	5.1%	600K

Proportion of income by Source (School totals)

Source of In... ●Charity ●Govern... ●Industry ●Other

Academic Year Abbreviation	2020/21	2021/22	2022/23
	49.33%	47.51%	58.04%
		2.69%	
	18.83%	19.97%	21.64%
	26.15%	26.18%	16.89%
	4.63%	3.65%	

It gives detail of the different Level 4 units and their research income in the most recent year, and the variance to the prior year. In this example, MACE increased its Research Council income by £4.29M. This has had an impact on the mix of funding for the School on the right hand side which shows 58% of the income is from Research Councils.

Other highlights are the increase in industry funding (from all regions) to Chemical Engineering.

To return to the previous page, click the back arrow
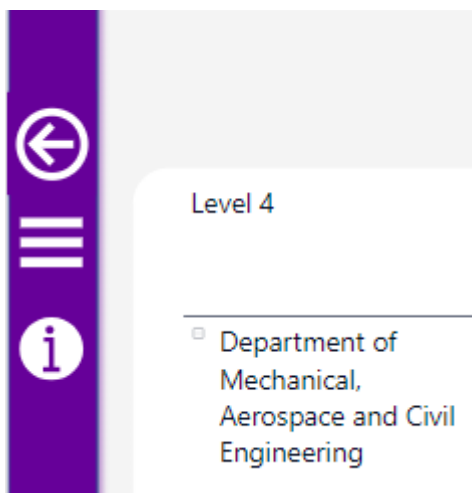
If you have any other use cases you would like us to demonstrate, please contact us at business.intelligence@manchester.ac.uk

## Other Navigation tips in Power BI

Page Navigation

If the pages pane is closed, you can open it using the button the top left-hand side of the heading bar:

Then you can click on the page you wish to view.

To view information about the page, click on the information button on the left-hand side of the screen. This includes notes about what the visuals are showing and any particular issues to be aware of with data definitions.
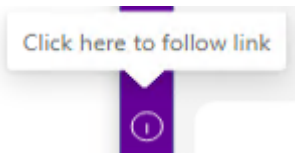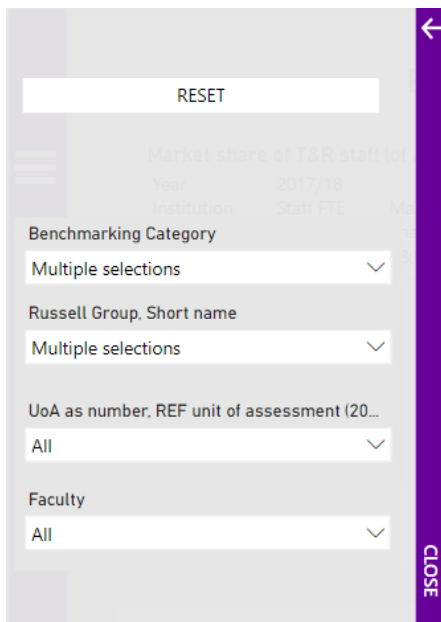

How to use filters

You can bring up the filters pane by clicking on the three bars to the left-hand side of the screen.

Once open, you can use the filters to change the visuals on the page. For some filters, if you want to select multiple choices, you need to hold down the Ctrl button while you click each of the boxes/

To clear the filter, you can unclick the relevant boxes or click on the reset button at the top of the filters pane to reset all filters to the default view

To close the filters pane, click anywhere the purple "close" banner on the right-hand side of the pane.

How to sort visuals and tables

You can change how a visual is sorted by hovering over the visual and clicking on the three dots icon that appears.

Then you can hover over the "sort axis" option to sort ascending or descending on the variables available. In the example below the table is sorted by name of Level 2 (Faculty) but you can change to sort by Internal Research Income

How to drill down

Some pages include further detail if you drill down – you may be alerted to this in a help tooltip above a particular visual / table. Click on the branched arrow to drill down – in this case the graph will show detail of research income change by source of funding group.
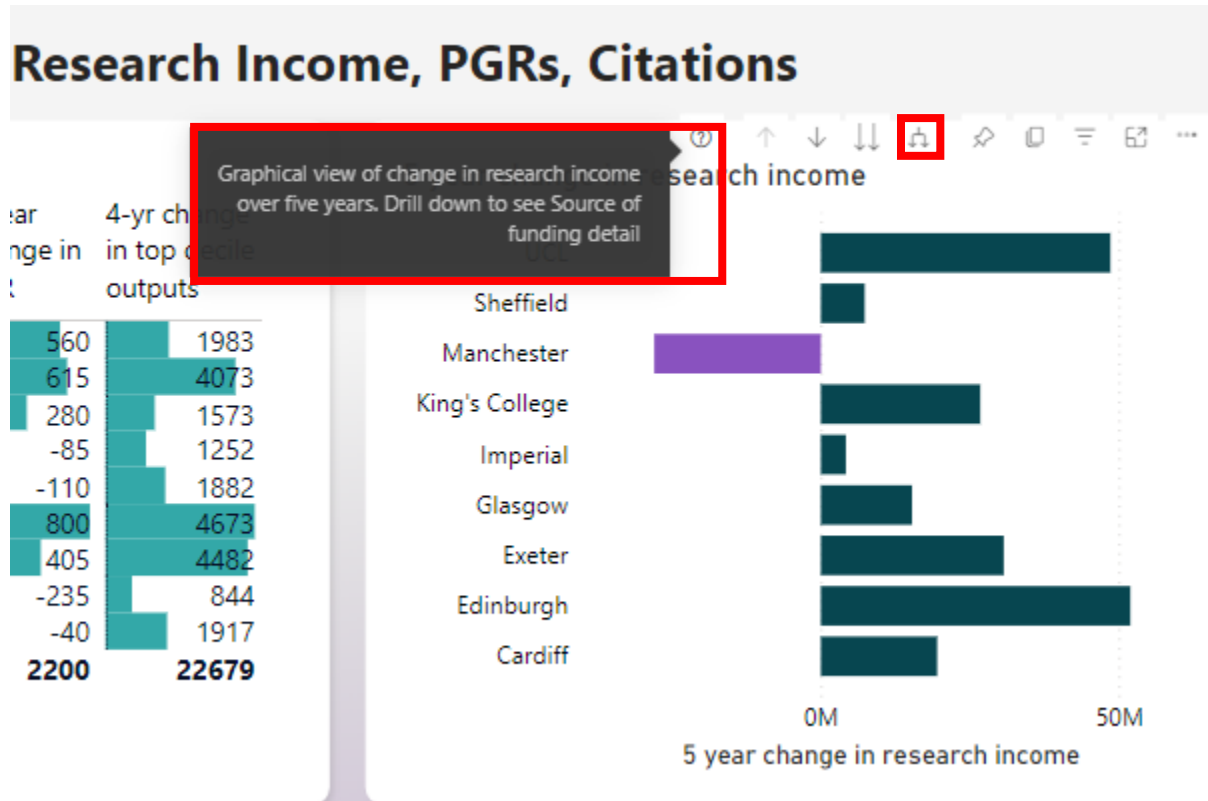
To move back to the summary level above, click the up arrow.

How to drill through
From some of the pages showing Unit of Assessment or School, you can drill through to a more detailed report for that subject. Left click, then right click and select Drill through

From Scorecard Summary by UoA, you can click on the Unit of Assessment number or name to access a detailed table of benchmarking data for all measures.

From **Research Income per staff FTE** or **Research Income per FTE by UoA**, you can click on the UoA to access the detailed benchmarking data or a breakdown of research income and staff for a UoA (for UoM internal data)

From **Internal Research Income** clicking a School name gives Income detail for the selected School – a breakdown of Level 4 income for the most recent year by Source of funding.

From these drill through pages, click the back arrow to return to the previous page

This will open the following page (when you have finished, click the black back arrow icon on the left-hand pane).

Bookmarking

You can bookmark a view in the report to go back to later (which retains the filters and other options selected). To do this, click on the "bookmark" button, then "add a personal bookmark" which is located in the top header.
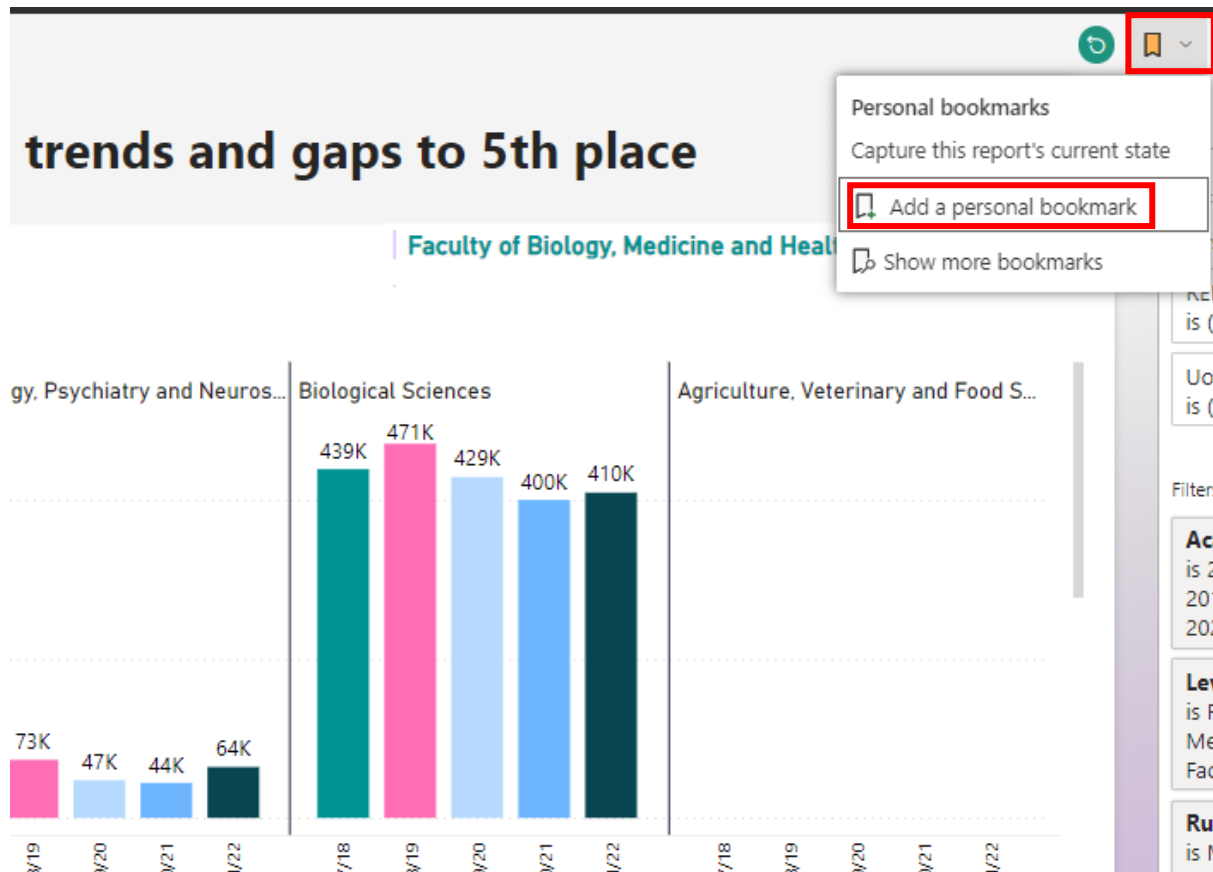

Other Features

You can revert back to the default report view and erase any changes you've made (unless saved as a bookmark) by clicking on the "reset" button on the top header bar.
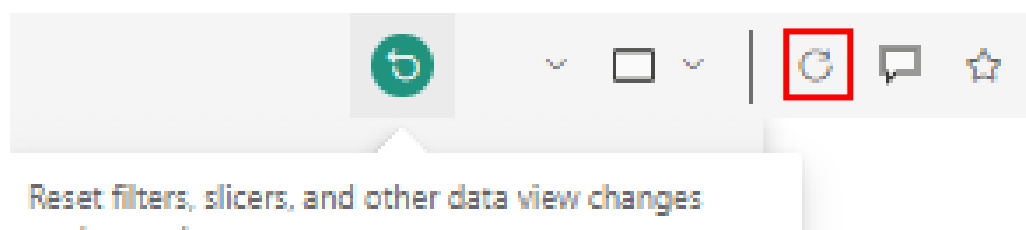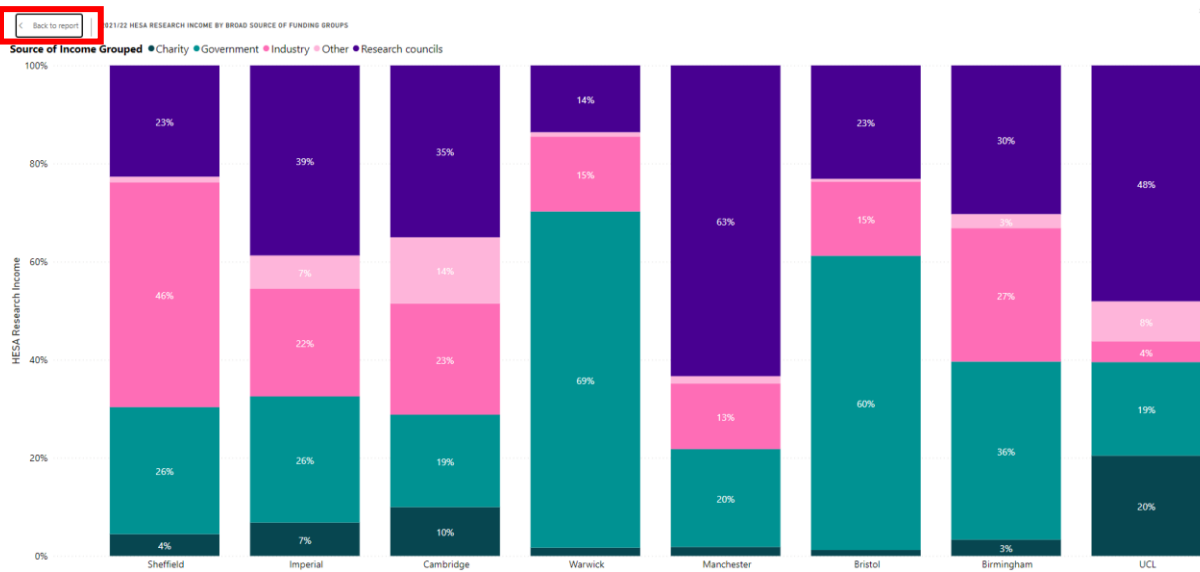

You can emphasise a visual by putting in spotlight mode, accessed by hovering over the visual, clicking on the three dots and clicking the "spotlight".

Or you can view the visual in a larger view by clicking on the "focus mode" button when hovering over the visual.
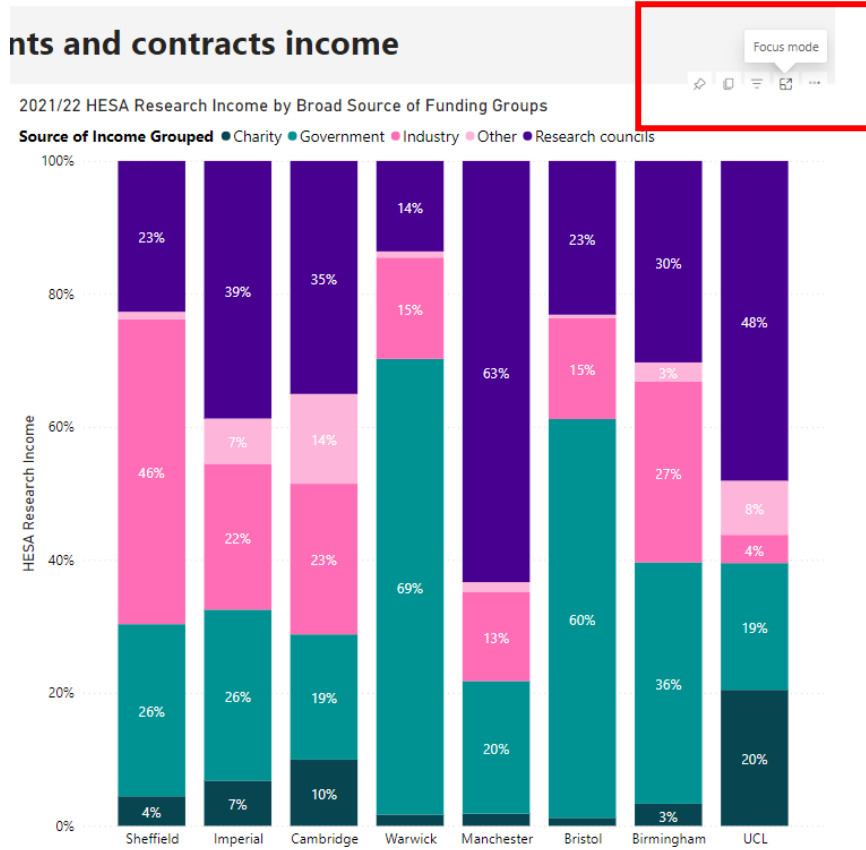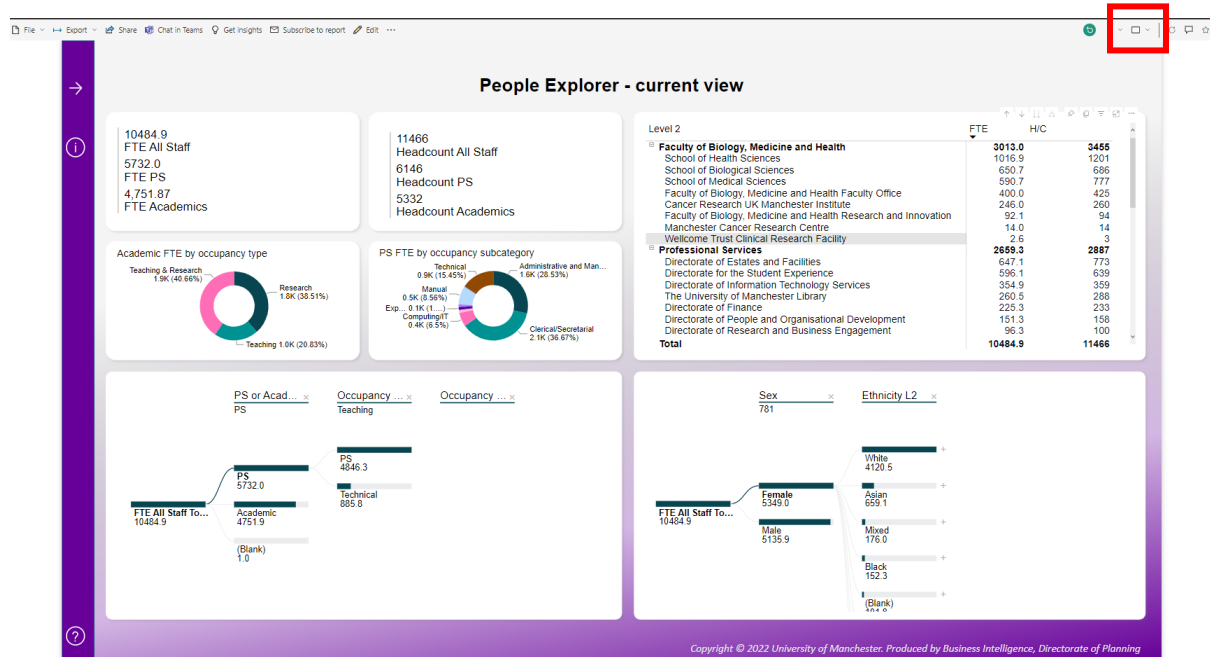

This brings up a much larger view of the visual.

To go back to the report from this view, click on the "back to report" button on the upper left-hand side.
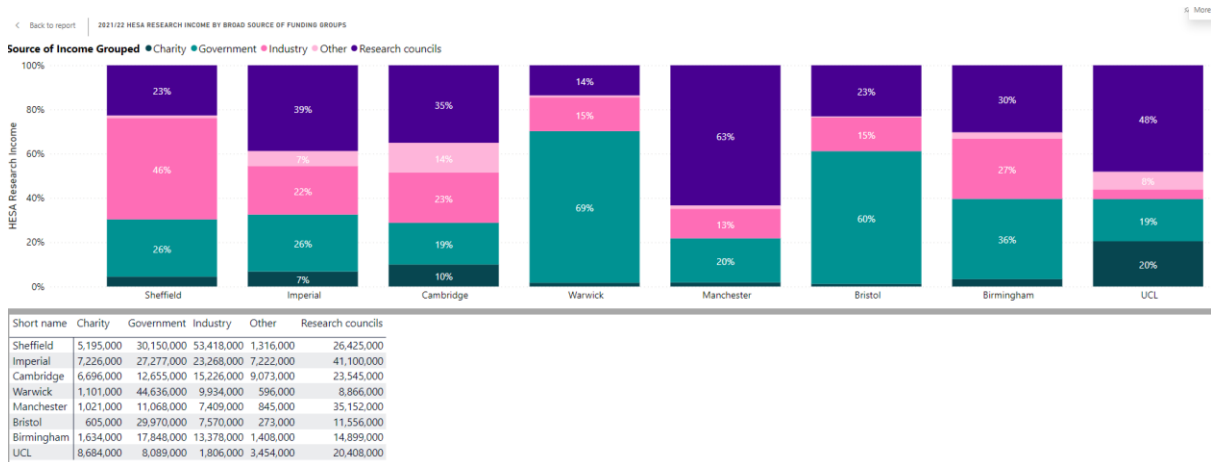
You can view the whole report in a larger view by hovering over the "view" button at the top of the page and selecting from the options.

You can also view the visual in a table format by hovering over the visual, clicking on the three dots, then clicking on "show as table".
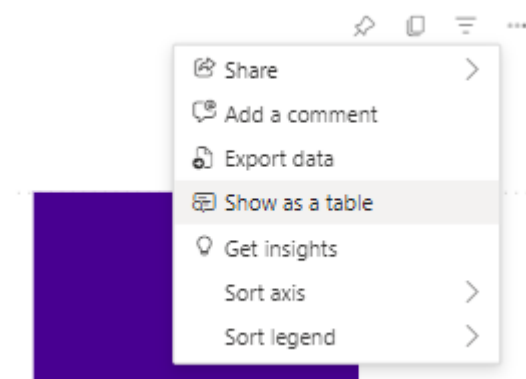
This brings up a view of the visual and a table.

Short name	Charity	Government	Industry	Other	Research councils
Sheffield	5,195,000	30,150,000	53,418,000	1,316,000	26,425,000
Imperial	7,226,000	27,277,000	23,268,000	7,222,000	41,100,000
Cambridge	6,696,000	12,655,000	15,226,000	9,073,000	23,545,000
Warwick	1,101,000	44,636,000	9,934,000	596,000	8,866,000
Manchester	1,021,000	11,068,000	7,409,000	845,000	35,152,000
Bristol	605,000	29,970,000	7,570,000	273,000	11,556,000
Birmingham	1,634,000	17,848,000	13,378,000	1,408,000	14,899,000
UCL	8,684,000	8,089,000	1,806,000	3,454,000	20,408,000

Exporting

You can export the data, or a selection of data, from the report into Excel, PowerPoint, or PDF format.

To export the data from the whole report, click on the "export" button in the top header, and choose which option you would like to export.

You can also export the data from a specific visual into Excel format. To do this, hover over the visual, click on the three dots, then "export data".

Top 8 institutions	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Imperial	106.1M	108.8M	104.8M	114.5M	106.1M	**540.2M**
Sheffield	124.5M	106.5M	102.1M	89.1M	116.5M	**538.6M**
Cambridge	79.5M	74.7M	68.1M	71.3M	67.2M	**360.8M**
Warwick	53.3M	65.5M	64.8M	65.9M	65.1M	**314.6M**
Manchester	62.3M	70.6M	59.5M	45.5M	55.5M	**293.4M**
Bristol	48.1M	50.4M	49.4M	45.1M	50.0M	**242.9M**
Oxford	46.7M	43.6M	49.0M	51.9M	40.8M	**232.1M**
UCL	38.3M	41.4M	40.1M	38.7M	42.4M	**201.0M**
Total	**558.7M**	**561.5M**	**537.9M**	**521.9M**	**543.6M**	**2,723.7M**

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Interacting with visuals

Power BI is designed to be interactive.

Hovering over a visual

- Hovering over a visual with your mouse enables you to view additional data for that part of the visual. For example, if you cannot read the full axis description in a chart, or you want to see the actual value, you can hover over it and a pop out will show you this information.

Clicking on a visual

If you click on some of the category names in a visual, relevant other visuals will filter. For example, on the citation detail page, you can click on a named institution and the table and other chart will show only that institution (e.g. UCL in the below example)