Dimensions

Jenny Wooldridge,
Senior Analyst in the
analysis and evaluation
team at the National
Physical Laboratory
Strategy Directorate

"Dimensions has improved the ability of the National Physical Laboratory to do research evaluation and analysis by a factor of 10"

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Part of **DIGITAL**science

An A&I database on steroids

Jenny Wooldridge, Senior Analyst in the analysis and evaluation team at the UK-based National Physical Laboratory (NPL) describes how powerful Dimensions is at helping NPL conduct vital research and strategic analyses.

As the UK's National Measurement Institute, NPL develops and maintains the national primary measurement standards. NPL subscribed to Dimensions in May 2018 following a positive experience using Digital Science's Altmetric Explorer.

Jenny describes Dimensions as an "A&I database on steroids" that has improved the ability of NPL to do research evaluation and analysis by a factor of 10. In addition, she says the organization was drawn to Dimensions' highly attractive price point.

NPL matches internal research data to the GRID IDs in Dimensions - GRID is Digital Science's open data set of institutional identifiers and provides a framework to associate metadata with disambiguated institutions in Dimensions. Jenny says: *"That means we get all the organizational research metadata that comes with those GRID IDs"*.

While scientists at NPL use Dimensions as a research discovery tool, Jenny and her colleagues within the analysis team use the Dimensions web app and API for the following tasks:

- To gather data on the researchers and research outputs at NPL. Before Dimensions was introduced, NPL was under-reporting the research outputs with which it was affiliated by ca. 20%.

- To gather data for evaluation reports on the outputs of the lab; NPL must report these to the UK government every three years as part of the value for money spending reviews.

- To gather data for internal reporting and to deliver business advice to NPL management and employees.

- To share data with other participants from their grant-funded projects. Jenny says Dimensions also supplies vital data for a large user survey and econometric study, providing a "control variable for these major studies where we know we have collaborated with an institution or a company."

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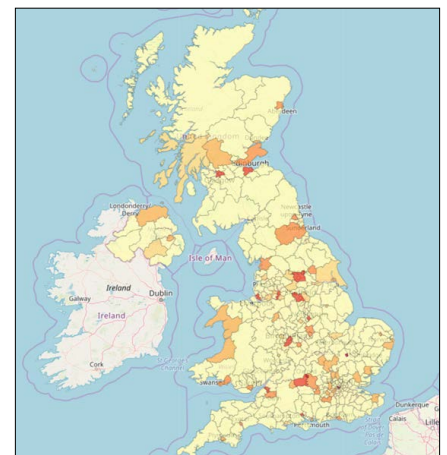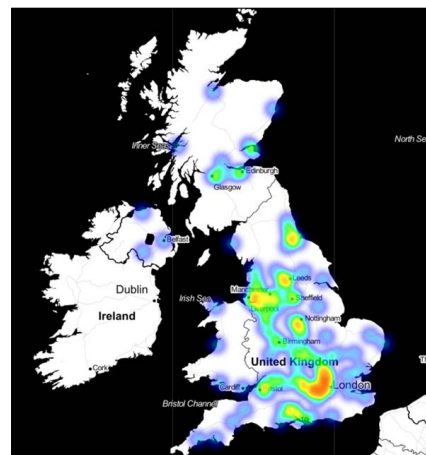
Left: Heatmap

Right: Choropleth map

Using the Dimensions API to do strategic analysis

Jenny and the analysis team wanted to map regional research activity in the UK, in particular, the specialisms of research towns/regions. The goal was to provide the NPL executive team with numerical tables and visuals to help them develop their regional strategy. This strategy would inform who NPL should be collaborating with and potentially where they should set up regional offices.

The team began by typing keywords relevant to NPL science areas into the title and abstract search in the Dimensions API and filtered on UK publications of the last 10 years.

Then, using GRID, the publications were grouped by towns and relevant geocode regions. These were then ranked by publication output and location quotients (LQ) were calculated for each of them. The LQ highlighted a town/region specializing in a particular research topic when compared to the average output of all publications from that town/region.

Using the GRID IDs for the organizations affiliated with the publications, the team then collected the geoname ID for each town and its latitude and longitude coordinates. The Folium package in Python was used to create the following heatmap view.

The team also created a lookup from the town/city geocode to the ONS local authority unit. The ONS has GeoJSON files for various geometries. From this, they produced the choropleth map highlighting clusters of research specialisms across the UK.

These maps were helpful during presentations to explain the key findings, which could be studied in more depth using the numerical tables prepared by Jenny and the team.

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