

Pension Valuation Dashboard

GAD provides actuarial advice on all the main UK public service pension schemes, which affects around 15 million people in total. This involves a substantial amount of data, and work, for our staff. By standardising processes and developing efficient pipelines, we can focus on insights rather than number crunching.

As part of the government's [National Data Strategy](#) and [National AI Strategy](#) there is an ambition for departments to support data-driven policy decisions and realise the potential of powerful AI techniques.

Our work in developing efficient pipelines supports this ambition by enabling our actuaries to gain insights from the data more quickly. In addition, the use of interactive dashboards helps us visualise and understand the meaning behind the results and ultimately help us share the main messages with our clients.

Pension Valuation Dashboard

When undertaking a valuation, our actuaries need to understand the answers to key questions including:

- How have the pension liability and contributions changed since the previous review and what the key drivers are?
- What the employer contribution rate will be over the next implementation period?
- Whether member benefits and/or member contributions need to be altered?

As part of the tool GAD has developed, a data pipeline is created in the Python programming language. It's used to answer these questions efficiently and in a standardised way across the pension schemes we value.

After a user selects a scheme, the tool delivers the results on an interactive dashboard. It then separately provides a comprehensive audit trail of the calculations.

Pipeline benefits

Across government there are many models, often Excel based, and processes which exist that perform similar functions and require substantial amounts of time to update and maintain.

GAD is benefiting from developing pipelines that enable different models to be combined and streamlined. Please contact us if you are facing similar challenges.

- single centralised code file means only one model needs to be updated if the calculation methodologies require updating, rather than multiple

models

- faster processing speed
- ability to utilise larger volumes of data
- better consistency in calculation processing and output formats across schemes (so it is easier and more efficient for the people involved and more robust against errors)
- clearer documentation of calculations for users
- greater level of automation leading to reduced risk of errors
- more intuitive experience for users
- users cannot accidentally alter the underlying calculation code while using the dashboard

Developing our data science capability

Over the last couple of years GAD has been improving its data science capabilities through recruitment, training and through the practical experience gained when using data science techniques. These techniques complement traditional actuarial approaches on many client projections, including this one. For example, we:

- use GitHub for version control and audit processes
- follow coding best practice, such as using functions to calculate each dashboard block so it can be reused consistently multiple times
- have improved our consistency of processing across schemes which has increased efficiency of linking/chaining models together. This means it's easier to automate picking up outputs from one model and feeding them in as inputs to another model.

Please contact GAD if you would like to discuss your how you can utilise data science techniques in your work and help government achieve its strategic ambition in this area.