

[Analysis of Experience Dashboard](#)

GAD provides actuarial advice on all the main UK public service pension schemes, which affects around 15 million people.

The development of our Analysis and Experience dashboard has provided us with a greater understanding of the underlying movements in pension scheme data. This helps us set and validate assumptions and improves the robustness of our work.

The development of these tools helps us support the ambition of the Government's [National Data Strategy](#) and [National AI Strategy](#) which encourages departments to enable data-driven policy decisions and realise the potential of powerful AI techniques.

Analysis of Experience dashboard

The Analysis of Experience dashboard is an interactive tool. It allows the user to compare the actual experience of membership progression for a pension scheme against expectations.

As with any model, once the assumptions have been set and the results produced, exterior factors then change, and assumptions need updating.

The Analysis of Experience dashboard is an interactive, flexible, and accessible tool. It enables actuaries to visualise emerging experience from a range of perspectives.

Among its features are dropdown menus and range sliders. Buttons allow users flexibility to adjust the calculations and outputs on the dashboard using validated input values

It also

- loads the inputs (from external files) that are relevant to the selected scheme
- performs a standard set of calculations on the input data
- prints output tables and interactive charts to the dashboard itself and external files
- provides an audit trail of data and model versions used
- provides the ability to save the input combination used so that it can be reloaded with ease at a later date

When might dashboards be useful for you?

Interactive dashboards have enabled GAD users to comprehend the meaning of data and to identify trends quickly and effectively. Contact us if you are interested in developing dashboards to better understand data in your organisation.

Dashboard benefits

Among the benefits are interactive charts which can be used to explore the data further and gain greater insights and understanding of its features. Other benefits also include:

- greater interactivity of the tool (compared to previous Excel model) makes it easier for users to test out different proposed assumptions
- access to a wider range of in-built statistical tests and visualisations that Python and R has available
- performs calculations for the various experience items (such as pensioner mortality, withdrawal, age retirement etc) within a single model/code
- single centralised code file means that only one model needs to be updated if the calculation methodologies require updating (rather than needing to update separate Excel spreadsheets for each scheme as in previous valuations)
- better consistency in calculation processing and output formats across schemes (so easier and more efficient for the people involved – more robust against errors)
- 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

GAD has been improving its data science capabilities through recruitment and training. We have also used data science techniques to complement traditional actuarial approaches on many client projections, including this one.

As an example, we have developed our knowledge of the 'Dash' package in Python for creating the dashboard which enable us to:

- setup the entire dashboard using only Python code – other frameworks can require the use of other languages
- utilise the Plotly package which provides interactive features

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