Department for Work & Pensions

DWP use of Data Science to improve the way we disseminate statistics

Tom Davies and Mark Burley – DWP, Client Statistics
GSS Conference
November 2017

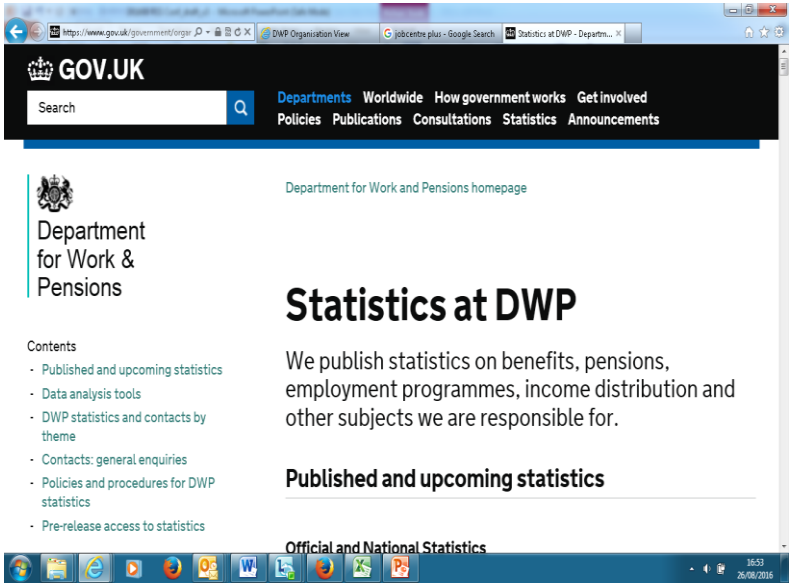
Aims and Contents

Aims: To explain how we understood our different users' needs and have developed different ways of releasing statistics; in particular interactive stats visualisations.

Contents:

- Understanding our users.
- DWP Stats – different approaches to releasing stats:
- New publication template; Stat Xplore tool; interactive stats visualisations.
- Developing our visualisations
- Challenges
- Next steps

DWP statistics



One of the largest producers of Official Statistics

Our data sources are mostly administrative data designed for operational purposes

Who are our different users?

- The ONS has carried out extensive research into its online users. They identified these broad user-types, each with a different set of requirements:

- Inquiring citizen – “I want simply worded high level summaries”

- Information Forager – “I need just enough data to help me make informed decisions”

- Expert user – “I want to create my own data and have it in a format that suits me”

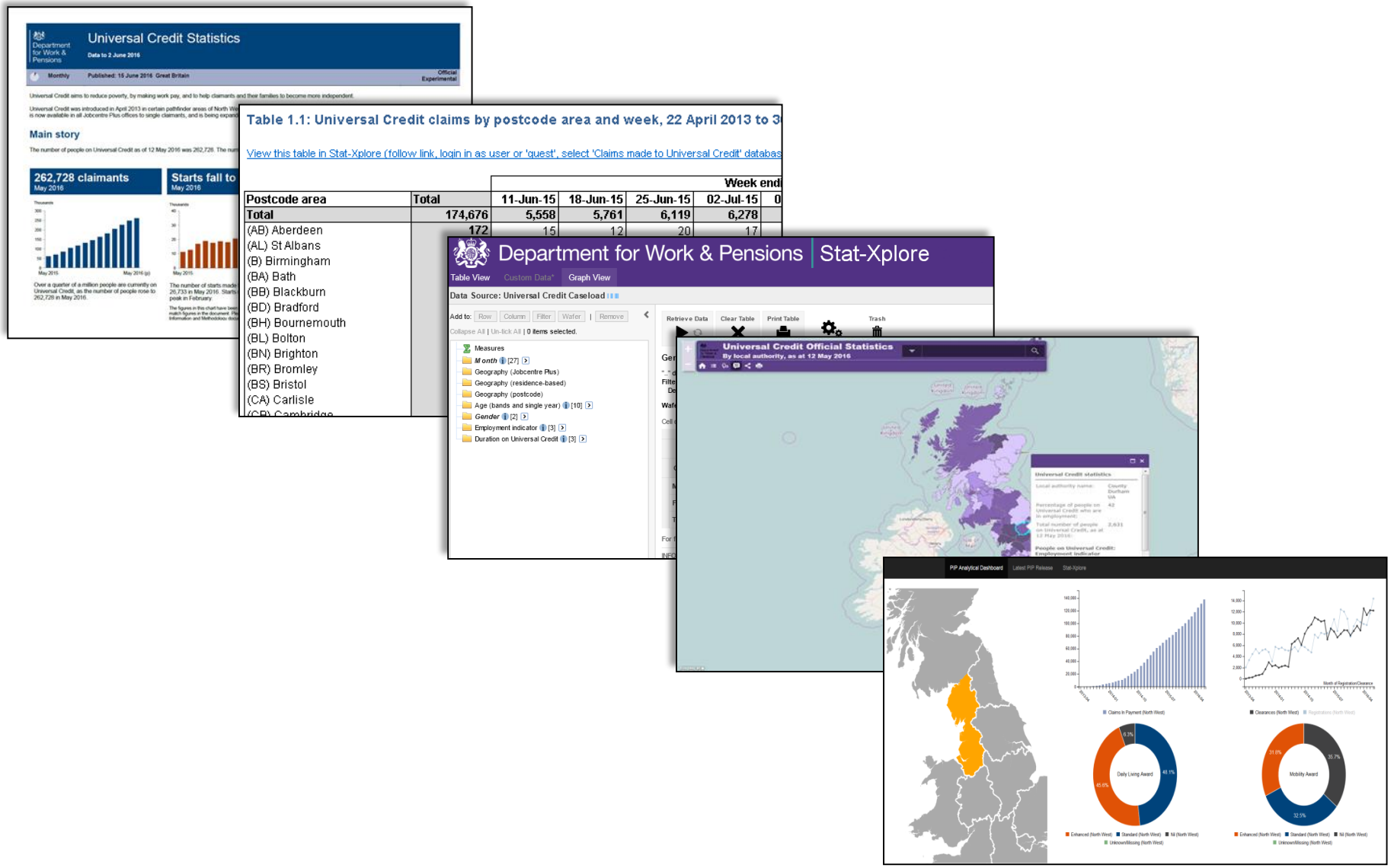
How do we understand our users?

- Series of user-testing sessions - how well do DWP statistics meet the needs of our users.
- 12 volunteers - complete a number of ‘information retrieval’ tasks using our statistics pages on gov.uk.
- Used specialist equipment to record participants’ on-screen actions and facial responses.
- Encouraged to think out loud - understand why they were doing things in a particular way.

User engagement – practical example: results

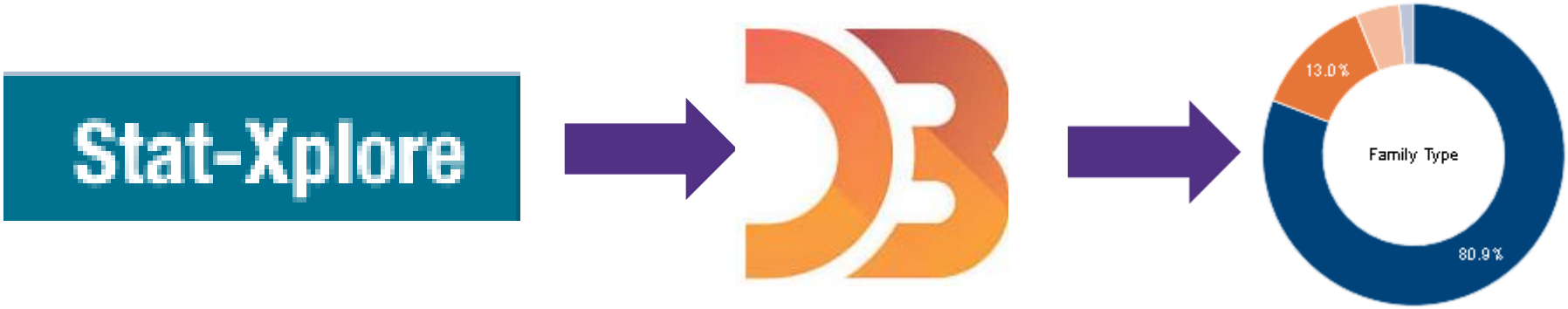
- It took an average of 8.5 clicks to find requested information. If they had followed shortest path – fewer than 4 clicks.
- **Outcome**: Used the evidence to identify and prioritise improvements to our statistics.
- E.g. a new theme-based approach for finding statistics, to replace A-Z search

DWP statistics – a layered approach



How did we create our interactive visualisations?

- Developed a standard template similar to the static version using HTML and CSS.
- Initially data was hard coded in JSON format and manipulated using a combination of D3, C3 and JQuery
- D3 is an open source Javascript library which binds objects to data e.g. charts and maps
- C3 is a D3 based chart library
- Dashboards now starting to use Stat-Xplore API

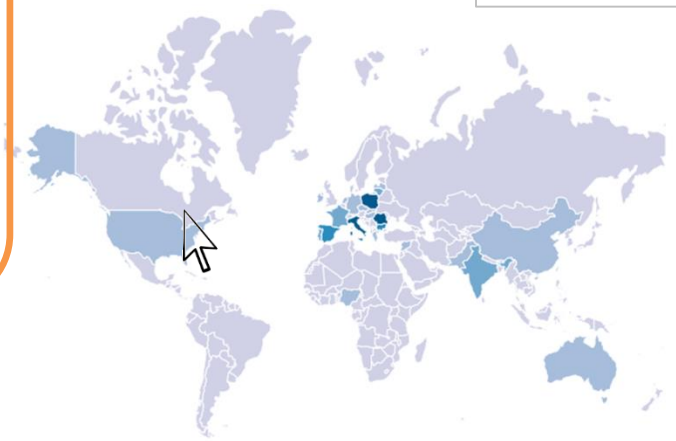


Interactive web visualisations

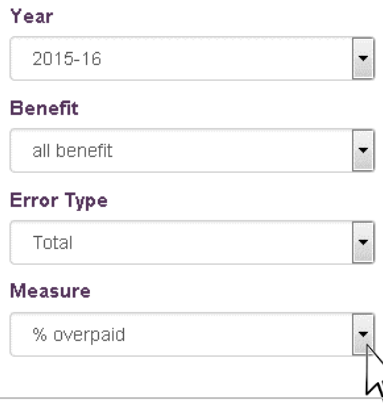
A new way to explore DWP statistics:

- High-level summaries
- Point and click for detail
- Interactive charts and text
- Mobile responsive

Interactive maps

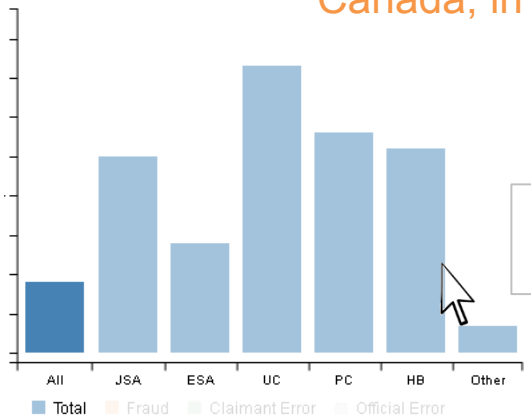


Responsive text and stats

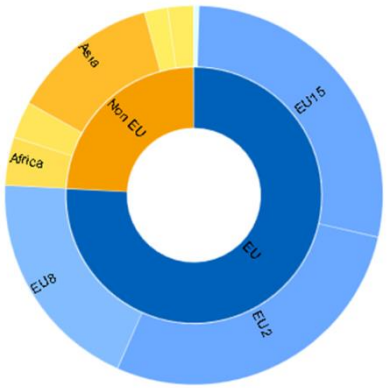


Dropdown data selections

"There were 5,048 NINo registrations from Canada, in 2016"

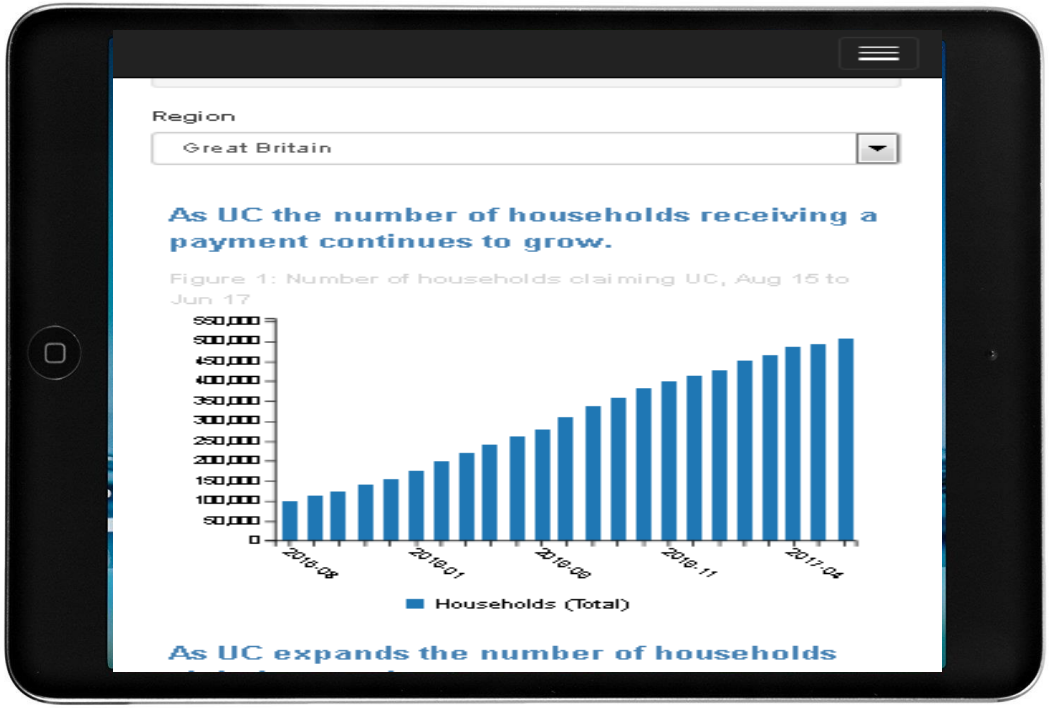


Click charts for more detail



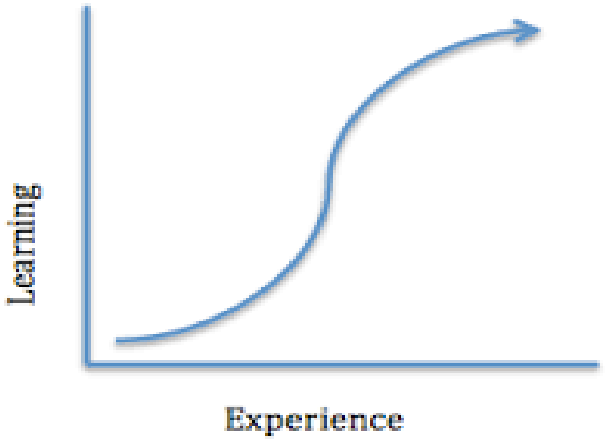
How did we make our dashboards accessible?

- Accessible on a variety of different devices
- Developed using Bootstrap
- Format developed to conform to accessibility requirements



What challenges did we face?

- Steep learning curve to pick up new coding languages
- Dashboards currently hosted on Heroku due to restrictions on other platforms
- Currently working with Data Engineers to ensure dashboards meet GDS/GOV.UK standards



Next steps in transformation

- Develop more interactive stats visualisations, and look to develop our first fully interactive stats release.
- Continue user testing and surveys to continually improve experience for users.
- Test “automated statistics publication” tools and techniques.
- Use of Google Analytics and Stat Xplore logs to monitor usage of stats so resources are focused on valued statistics.