

**Seminar on Innovations in Official Statistics  
United Nations Statistics Division, New York**

**20 February 2009**

**Innovation in Data Dissemination – the ONS (UK) Data Visualisation  
Centre**

**1. Introduction**

1.1. The Office for National Statistics (UK) created a dedicated, permanent Data Visualisation Centre (DVC) within its Census and Social Methodology Directorate in 2007. This paper provides an introduction to the DVC, outlining the reasons for its creation, progress to date and future plans.

**2. Background**

2.1. During the period 2003-2007, ONS made great progress in the development of web-based visualisation tools for statistical outputs. These included interactive, animated population pyramids <sup>[1]</sup>, interactive maps and a variety of interactive tools such as the Personal Inflation Calculator <sup>[2]</sup>.

2.2. Feedback from these projects was overwhelmingly positive and demand for further innovative products increased. Given that the existing work had relied on the best endeavours of individuals (mainly within the corporate geography team), a proposal was made to formally create a dedicated Data Visualisation team to more carefully manage the development of data visualisation services. We believe this may well be a precedent among NSIs, where data visualisation is often only treated on a 'project' basis.

2.3. A key early decision to be made was where to locate the new DVC – conceivably it could form a part of IT or communication teams. Eventually it was decided to locate the new team in ONS' methodology

directorate. The reasoning here acknowledges that *effective data presentation is an integral part of the survey cycle* – and reflects the way ONS' methodology team is organised, with small, expert teams responsible for varying aspects of that survey cycle providing considered support across the organisation.

2.4. The new team was created in September 2007, with a remit to include:

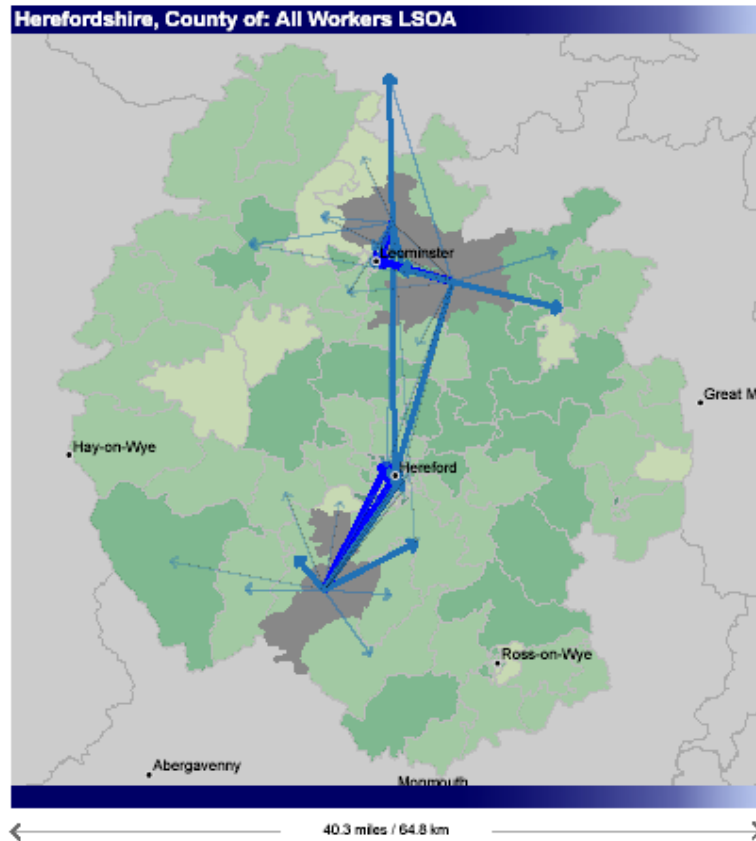
- 2.4.1. A recognised source of advice, standards and training for visualisation and data presentation across ONS.
- 2.4.2. Co-ordinate custom data visualisation developments for the Web – and to explore its applications for internal analysis and QA.
- 2.4.3. Promote the effective use of visualisation techniques across ONS and provide a means of communicating best-practice.
- 2.4.4. Evaluation of tools and technologies for effective data presentation.

2.5. A key challenge in establishing the centre has been to 'plug-in' to existing corporate initiatives while retaining the spirit of innovation by which the earlier work was typified.

### **3. Progress to date**

- 3.1. Since creation, a number of data visualisation projects have been delivered, the most prominent being CommuterView<sup>[3]</sup>, which was a finalist in the 2008 national Wales Innovation Awards<sup>[4]</sup>.
- 3.2. CommuterView tackles the problem of how to visualise origin and destination data by providing a map-based interface to the data, which has traditionally been presented using verbose table matrices.
- 3.3. Available free-of-charge on a single DVD, CommuterView provides user-controlled flow-mapping of Census commuting data (Figure 1). Symbology provides visual representation of the volume of commuting flows together with pseudo-direction and distance (based on the centroids of containing areas).

**Figure 1 – CommuterView, showing commuting patterns in Herefordshire, England:**



3.4. Other work has included advising a number of business teams within ONS on data presentation issues and providing input on a number of key corporate projects, most importantly our website re-engineering.

3.5. We have also carried out an evaluation of formats to be used on our future interactive graphics. Having used Scalable Vector Graphics (SVG) extensively in previous projects, it is now more likely that we will use the Adobe Flash/Flex environment for future bespoke projects. (this is largely a result of the necessity to produce content that will be viewable on the vast majority of our user's computer systems) We also remain interested in evaluating more generic 'off-the-shelf' software for more generic visualisation applications.

#### **4. Future plans**

4.1. Effective data presentation is a multi-disciplinary activity, requiring (carto)graphic, design, IT and statistical skills, together with an

understanding of perceptual science. The team's recruitment strategy aims to recognise this and deliver a true multi-disciplinary team whose collective value is greater than the sum of the individual parts.

- 4.2. In most visualisation projects to date, collection, extraction and formatting of data has been a key problem, requiring significant resource to allow effective visualisations to be created (we estimate that around 90% of the CommuterView project's total staff resource was involved in organising the data effectively).
- 4.3. With this in mind, we have fully supported the idea of ONS providing a web Application Programming Interface (API) – ultimately, this could be used to allow external developers to access ONS data directly, as well as provide easy access to aggregated data sources for internal projects, such as those worked on by DVC.
- 4.4. Development of an API is currently underway and will definitely have an impact on the future development of DVC services.

## **5. Conclusion**

- 5.1. The creation of the Data Visualisation Centre has had an immediate impact on the outputs of ONS and demonstrated the potential for further innovation in this area, most obviously demonstrated in the innovative CommuterView product. Moreover, we believe that we are also embedding corporate responsibility for effective data presentation in its most obvious location – within the statistical survey cycle.

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## References

- [1] [http://www.statistics.gov.uk/populationestimates/svg\\_pyramid/default.htm](http://www.statistics.gov.uk/populationestimates/svg_pyramid/default.htm)
  
- [2] see <http://news.bbc.co.uk/1/hi/business/7610430.stm> and <http://www.statistics.gov.uk/pic/>
  
- [3] <http://www.neighbourhood.statistics.gov.uk/dissemination/Info.do?page=analysisandguidance/analysisarticles/CommuterView.htm>
  
- [4] <http://www.walesqualitycentre.org.uk/innovationaward.htm>