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I am an applied psychologist, with a master's degree in mathematical psychology and a PhD in psychometrics. I have worked as a programmer and systems analyst, and taught cognitive psychology at Lancaster University before moving for a Chair at Durham. I direct the SMART centre, where we develop novel interfaces to explore multivariate data, and research their use in realistic contexts, and their 'psychometric difficulty' in the lab. I have been invited to create webpages for the International Association for Statistical Education devoted to data visualization.

**DD4D4D – Displaying Data in 4 Dimensions – for Deconstruction. Studying students working with multivariate data to deconstruct newspaper accounts**

Abstract:

Access to information and misinformation (IAM) has become dramatically easier. We know rather little about the cycle of revising beliefs, theories or actions in the light of IAM.

Here, we explore the processes of reasoning with information and misinformation (RIM). Examples of good RIM include the ability to discover the 'big signals' in a data set, such as the relative importance of different explanatory factors (effect size). RIM requires an ability to evaluate assertions in the light of evidence, and to create new conjectures and theories.

Here, the key research questions is: What 'natural' RIM skills do young people display when engaging with the media? With complex data? The target group in this study was students aged 13-16 years. This corresponds roughly to the 'reading level' in broadsheet newspapers. Students were presented with a mash-up <http://www.dur.ac.uk/smart.centre1/mashup/> comprising interactive multivariate (MV) displays taken from a number of large scale surveys, together with a collection of newspaper articles on the theme of alcohol use and abuse by school-aged children (e.g. "UK hit by booze girls' crimewave"). Students were not given any formal teaching directly related to the tasks. Working in small groups, they created either a letter to the editor, a newspaper article, or a powerpoint display.

Results show that many students can reason with and communicate accurately about MV data. Many students synthesized quantitative evidence from a number of sources, discussing trends over time, and interactions between variables (e.g. alcohol consumption as a function of sex and age and time). They deconstructed and reconstructed media accounts in the light of evidence, effectively.

We can be optimistic about the possible success of DD4D. DD via mash-up offers good opportunities to promote evidence-informed decisions. The talk will show the mash-up, student presentations, and DDs tailored for other contexts.