

Overview

This fourth and final session offers you the opportunity to explore two data sets and use the methods that we have been investigating to design a data graphic.

It provides scope for discussing and justifying a design in light of a particular line of enquiry.

The **HIVE** expression language for describing hierarchical visualization design is introduced.

Design guidelines derived from our exploration of design alternatives are discussed.

Preparation

Unlock the session 4 GUI in **HIDE** to gain access to additional interface functionality.

You will be using the **US ELECTION** data set in this session and also a data set that summarises some of your own digital information.

Activity 1 - Combining Techniques for Effective Information Visualization Design

It's now time to explore the **US ELECTION** data set.

Use your skill and experience to establish a good combination of:

- interesting research question
- effective visualization design

SAVE this design – the instructors may ask to collect some of the images that have been produced.

What did you find out (ideas? hypotheses?) from the **US ELECTION** data set?

What is the design designed to reveal or communicate?

Can you justify the design choices you have made in terms of:

- Hierarchy
- Layout / Order
- Colour
- Type / Text

How would you justify the design? How might it be improved?

Activity 2 - Exploring a New Data Set ...

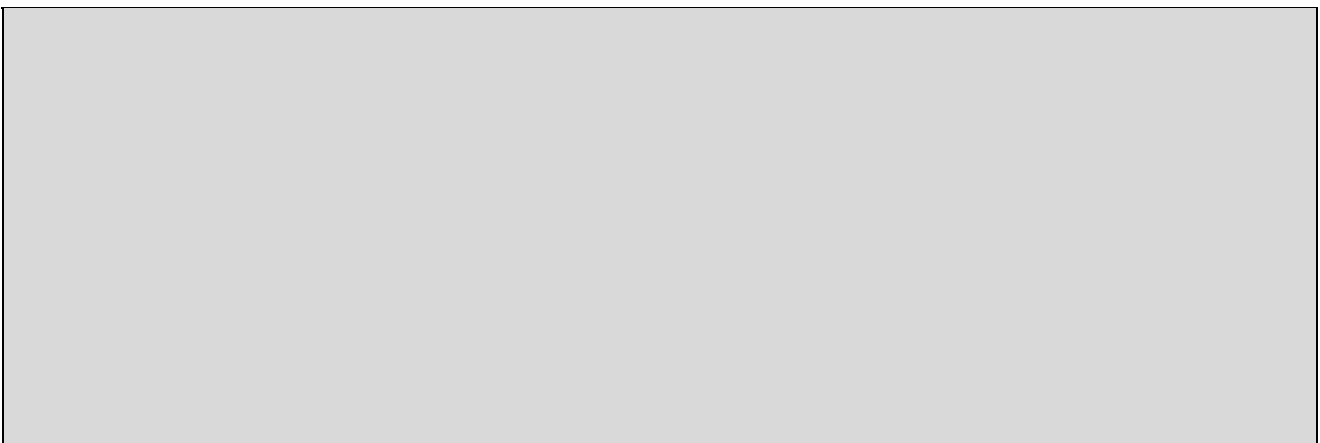
Use the **HiDE** software to create a data set describing part of the hierarchical structure of files stored on your computer.

Explore a little and then generate a relational hierarchical graphic that tells you something about your file space. Use layout, order, size and colour to encode relevant information and ensure that you label effectively with text.

In some circumstances it may be appropriate to experiment with the hierarchy and produce an alternative to that used in storing the files.

What did you find out about your documents and their organisation?

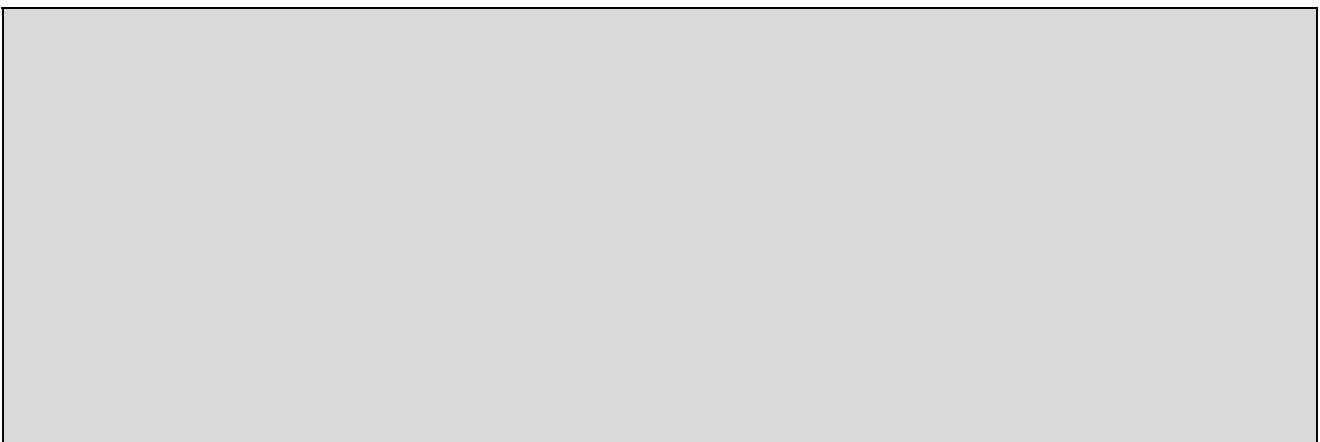
What is the design designed to reveal or communicate?



Can you justify the design choices you have made in terms of:

- Hierarchy
- Layout / Order
- Colour
- Type / Text

How would you justify the design? How might it be improved?



Once again, **SAVE** this design as the instructors will be keen to collect some of the images that have been produced.

Activity 3 - Design Guidelines

Having experimented with the key elements of design associated with a much-used data graphic you may want to reflect upon what you have learned.

Can you suggest any design guidelines that summarise this learning?

Suggest design guidelines here ...

How might these be evaluated?

How might their validity (or otherwise) be established?

Suggestions here ...

The instructors will be keen to hear these suggestions so please let them know your guidelines and discuss your ideas, experiences with information visualization design and what you have learned during the tutorial with them.

4. DESIGN EFFECTS & DATA SET INTERPRETATION

References

Various items of academic literature were utilised in preparing this tutorial. The key references are outlined below, but we would be happy to communicate with participants regarding additional sources.

Harrower, M. & Brewer, C.A., 2003. Colorbrewer.org: an online tool for selecting colour schemes for maps. *The Cartographic Journal*, 40(1), 27-37.

Detail on the ColorBrewer palettes.

Try the ColorBrewer tool at <http://colorbrewer2.org/>

See if you can find schemes that meet particular criteria:

- a *categorical* 3-class scheme that is acceptable for laptops
- a *sequential* 5-class scheme that is print friendly
- a *diverging* 5-class scheme that is 'colour-blind safe' and photocopy friendly.

Heer, J. & Robertson, G., 2007. Animated Transitions in Statistical Data Graphics. *IEEE Transactions on Visualization and Computer Graphics (Proceedings Visualization / Information Visualization 2007)*, 13(6), 1240-1247.

An empirical exploration of the possible benefits of using animated transitions.

Shneiderman, B., 1998. Treemaps for space-constrained visualization of hierarchies. Available at: <http://www.cs.umd.edu/hcil/treemap-history/> [Accessed Oct 5, 2009].

Treemap research at the University of Maryland is comprehensively documented here with links to a whole host of applications and examples.

Slingsby, A., Dykes, J. & Wood, J., 2009. Configuring Hierarchical Layouts to Address Research Questions. *IEEE Transactions on Visualization and Computer Graphics (Proceedings Visualization / Information Visualization 2009)*, 15(6): http://gicentre.org/papers/slingsby_configuring_2009.pdf [Accessed Oct 5, 2009].

A discussion of hierarchical visualization design in which the Hierarchical Visualization Expression language is described.

HiVE will be presented in detail on Thursday 15th October during the 'Multidimensional Data Visualization' session of InfoVis 09

Wood, J. & Dykes, J., 2008. Spatially Ordered Treemaps. *IEEE Transactions on Visualization and Computer Graphics (Proceedings Visualization / Information Visualization 2008)*, 14(6), 1348-1355.

Ordered and spatially ordered treemaps are introduced and evaluated with examples.

You can find out more about giCentre activities and learning opportunities at:

- <http://gicentre.org>