

# Advanced Data Analytics: Coursework

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- The goal of this coursework is to give you experience of the whole lifecycle of carrying out a full visual analytics project.
  - To follow a sound visual analytics process
  - To develop a visualisation that displays important features of a dataset
  - To write a clear report on your findings.
- The outputs from this work should be
  1. a Tableau dashboard and associate worksheets (as a packaged workbook;
  2. a written report

- The task you are asked to carry out for the coursework is to design, construct, and evaluate an exploratory analysis of a complex dataset using both information visualisation and data projection.
- The data you should work with is taken from the 2011 census in England and Wales. You may find Tableau's Data Interpreter useful, and you may also need to edit some files to create usable datasets.
- There are more than 1600 tables in total: clearly this is far too many to create an interesting report. You should focus on a limited number of tables (probably around three or four) that allow you to explore a particular aspect of socio-economic life in England and Wales: for example, health and links to nationality or occupation. ~~You must use the table KS601EW (economic activity by local authority) in your analysis. Y~~
- You must also provide at least two data projections using different algorithms.

## Report structure

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- Abstract. A brief description of the key points in the report.
  - Introduction. The background of the problem.
  - Data Preparation and Abstraction. Describe the data manipulation necessary to create a dataset for analysis and the principal data types and semantics that you have analysed.
  - Task Definition. A description of the tasks using Munzner's task taxonomy for which you have created the visualisations.
  - Visualisation Justification. Define the visualization techniques you use and provide a justification for your choices. You should refer to the principles of info vis, relevant aspects of human perception and cognition, and the scientific literature where appropriate. You should also explain why you have chosen the data projection methods that you have used.
  - Conclusion. What you have learned about the socio-economic problem that was the basis of the visualization. What you have learned about information visualisation from doing the coursework.
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- Problem understanding: how well you have explained the goals of the tasks, taking account of end-user requirements. (10 marks)
- Data preparation and task analysis: care taken over extracting and manipulating the data; insights gained through the task analysis. (15 marks)
- Data visualisation: appropriateness of visualization and modelling approaches; systematic use of statistical and visualisation methods; justification of visualization approach used. (50 marks)
- Conclusions: what the user should learn from your analysis and what you have learned about larger-scale data visualisation. (15 marks)
- Presentation: fluency and coherence of the written text; quality of images and graphics used. (10 marks)

## Feedback on last year's work

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- Dropdown in Tableau to allow user to set size of display.
  - Use Munzner's task taxonomy in the report.
  - Ensure that questions you set out to ask are answered by the visualisation and in the report.
  - Having the option of switching between absolute values and proportions is often a useful feature. This is particularly helpful when comparing regions with different populations.
  - Include some discussion of the type of user the visualization is intended for.
  - Take note of data anomalies (e.g. missing values) in report. In particular, quantify the number of missing values etc.
  - It is helpful to include references in the report to provide context.
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