



► CA 100%

Business analytics 2020

Introduction

- ▶ For this assignment you are required to:
 1. Prepare and analyse the data, and present your findings using the Electricity_since_1920.xlsx workbook. (70%)
 2. Write a summary report detailing the work completed. (30%)
- ▶ The skills to be demonstrated will be based on both lectures and labs as well as self directed learning.

The Dataset

- ▶ The data relates to electricity generation and consumption in Britain since 1920
- ▶ It is publically available data:
- ▶ [Historical electricity generation and consumption](#)
- ▶ Electricity statistics examine trends in the UK's electricity sector, covering:
 - ▶ generation
 - ▶ fuel used for generation
 - ▶ consumption
 - ▶ power station capacity
 - ▶ Major Power Producers (MPPs) and other generators.

The dataset

- ▶ 6 sheets
- ▶ 100 rows on each
- ▶ 10-20 columns on each sheet
- ▶ Additional information available on <https://www.gov.uk/government/collections/electricity-statistics>

Codebook

[Electricity_MPPs_and_other_generators.pdf](#)

34 page document detailing the data sources, surveys, and methods for all data contained in the xls file.

It includes explanations for electricity supply and demand.

General Requirements



Use of Historical Electricity generation and consumption data



Data preparation and analysis, descriptive statistics, trends, relationships and graphical presentation of the findings on a dashboard using Excel.



Summary report



All your own work.



Assessment objective?

- ▶ What do you want to discover from this dataset?
- ▶ What questions would you like to try to answer?
- ▶ Will you use the full dataset?
- ▶ Will you select a period of time to analyse?
- ▶ Will you focus on generation or consumption or both?
- ▶ Will you focus on sustainable energy?

Data Understanding & Data Preparation

- ▶ The data may require cleaning prior to being analysed.
 - ▶ You must first familiarise yourself with the dataset, There may be missing values, unusable data, inconsistent values, and inconsistent formats.
 - ▶ Consider the question(s) you want the data to answer?
 - ▶ Understand the data and then choose the data which is suitable for research question.
 - ▶ You may choose a subset of the data on which to perform your analysis.
 - ▶ you may create new data from the existing data.
 - ▶ You may choose to add to the dataset.

Data Analysis

- ▶ The analysis should provide a high level overview of the data (including summary statistics).
- ▶ The analysis should then focus on answering your research questions.
- ▶ The analysis should produce detailed presentation of the data in visual form (charts, box plots, scatter etc) appropriate to your research question(s).
- ▶ The analysis may also make use of built in tools in Excel such as Pivot Tables, Goal Seek, Data Tables, Scenario Manager, and/or Simulation.
- ▶ This data preparation and analysis is to be your own work and reported in the final document.



USING A DASHBOARD VISUAL PRESENTATION OF YOUR FINDINGS SHOULD BE INCLUDED IN THE EXCEL WORKBOOK YOU SUBMIT.



THE REPORT SHOULD ALSO CONTAIN THE MOST INTERESTING AND IMPORTANT VISUALIZATIONS.



THESE MAY BE IN THE FORM OF CHARTS, HISTOGRAMS, BOXPLOTS, LINE GRAPHS, PIE CHARTS ETC.

Data Presentation

Report

- ▶ The report must detail the data analytics process undertaken.
- ▶ The report should include details on:
 - ▶ Identification of research question(s)
 - ▶ data preparation (ensuring good quality data)
 - ▶ data discovery (familiarisation with the dataset, descriptive statistics, charts etc)
 - ▶ Exploration and analysis of data
 - ▶ Presentation of the findings using appropriate graphical means
- ▶ The report should answer your research question(s) with supporting evidence presented.
- ▶ The report should include research on appropriate data mining methods for use on this data set within the context of your research question.

Grading Spectrum


Data Preparation	Data Analysis	Data Presentation	Report
Basic cleaning	Basic analysis conducted	Simple charts and descriptive statistics	Outline of work conducted
Complete data discovery and data prep suitable for research question(s)	Complete analysis using method taught	Well thought out use of various appropriate charts	Detailed report
Additional transformations and data created	Additional data used, advanced analysis with some new methods	Clear, complete and appropriate presentation using new methods	Complete, well written report with rationale for approach
Data discovery and data prep to very high standard, with	Advanced analysis demonstrating self directed learning, identification of	Advanced presentation of findings	As above and research on data mining methods

Marking Scheme

- ▶ <40% (Fail): Poor data prep and analysis conducted. Very few analysis techniques have been implemented. The data preparation is limited, and no new data created. Poor identification of research question(s). Weak Summary report.
- ▶ 40 - 50%: Summary report contains adequate details on work completed. Sufficient data prep and analysis conducted to present for the research question(s) chosen. Students have implemented some of the analysis requested.
- ▶ 50-69%: Summary report well written with details on each stage of the process. Very good data prep and analysis conducted and documented with appropriate graphical presentation of the work (using some new methods).
- ▶ 70% or more: Summary report very well written with additional material included and research conducted. Students have demonstrated all the above to a high level of proficiency (e.g., visual and technical quality). In addition the student has demonstrated independent learning by adding some data and techniques that have not been covered during the classes or labs

Project : Originality

The project must be your own work and I will verify the originality of the work against the Web + other student submissions.



If you do re-use techniques sourced externally, I expect

You to understand these techniques

Specifically include a reference to the source of the technique (failure to attribute is considered plagiarism)

Project Originality

- ▶ **Academic Integrity**

- ▶ The School of Science at Waterford Institute of Technology is committed to maintaining the highest standards of academic integrity. Academic misconduct, including but not limited to cheating may result in a mark of zero for the assignment as well as disciplinary action. Plagiarism or cheating may impact your grant if you receive one. Additional sanctions may be imposed depending on the case. You are responsible for adhering to all regulations regarding academic integrity. When in doubt about whether something is plagiarism, please see guidelines on the WIT website and ask in class or by email at least 24 hours before a deadline.



Assessment Deadline

- ▶ **Important note about assessments and time management**
- ▶ Part of the assessment for any module involves a degree of time management. Some students choose to skip particular assessments in the hope that they will do enough to pass overall, or because they are under the illusion that sitting the module again at a later date will be easier. I would caution you against either of these options as it simply means that you will have to repeat or carry a module into the next year, giving you a lot of extra work to do. Try to tackle each assignment one at a time, engage with your lecturer to receive help with your work, ensure that you read your feedback carefully and regard each assignment as an opportunity to improve. Please note that late submissions receive a penalty of 5% per day (e.g. if you received 65% in your assignment but it was a day late, you would lose 3.25%, bringing your mark to 61.75%. This matters even more if you are on the borderline of a pass/fail mark, e.g. If you received 40% for the assignment, but it was submitted a day late, you would be given a mark of 38%, thereby failing the assignment). If you wish to seek an extension for an assignment, you must do so in sufficient time (i.e. not on the day of submission, and not when the submission date has passed) and must provide a valid reason for seeking the extension.
- ▶ **Assessment Feedback**
- ▶ During the CA lab classes each week there is an opportunity for you to chat with me about your assignment and get some feedback on the work you are doing. Please use this opportunity to do this.

Project One: Submission

