Engaging Business Management Students in Statistics Using Technology and Open Data


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Abstract

Business management students often perceive that they struggle with statistical theory and application, commonly referred to as statistics anxiety. For many students their last encounter with statistics was at GCSE level. Moreover, some students fail to see the relevance of statistics to their future career.

This poster outlines some of the technological and data examples that were used in a second year undergraduate BSc Business Management module in ‘data and statistics’, which was delivered to a cohort of almost 200 students in 2017. The examples presented here were used in lectures and tutorials. Overall, students responded well to the use of these technologies, and we plan to incorporate these into subsequent classes.

Aims

We drew on technology aiming to:
1. Introduce students to industry relevant tools and techniques.
2. Highlight the relevance of statistics in business through the use of innovative examples.
3. Engage students and encourage creativity and self learning through the use of relevant Northern Ireland Open Data.
4. Encourage student engagement in a large class size using Google Forms.

1. Industry Relevant Tools

The traditional approach is to use a dedicated statistical software package (e.g. SPSS, STATA), but we propose that Excel is more relevant for management students. We taught using core Excel and the data analysis ToolPak.

- Data Manipulation (pivot tables, filtering etc.)
- Data Visualisation
- Descriptive Statistics
- Regression Analysis

2. Class Examples

Data and Statistics

Week 1: Data and Statistics in Business

We used innovative examples to explain the relevance of statistics to business, such as the tableau facility location dashboard.

3. Tutorial Exercises Using Open Data

Facility location is a problem which faces nearly all businesses at some point. For tutorial exercises students were asked to use open data to decide on the best location for a facility (e.g. hotel, supermarket) in Northern Ireland.

Data Acquisition: Area Level Multiple Deprivation Measures, economically active residents, employment by industry, crime, demography (census), others. Data from www.opendata.ni.org.

Analysis: descriptive statistics and visualisation, correlation analysis.

Decision making: where to locate the facility. Students were also presented with a tableau dashboard solution to demonstrate a geospatial approach.

4. Engaging Students Using Google Forms

We used google forms to gain student feedback and to administer short quizzes. Students used their mobile phones to complete these during the lectures. The aggregated responses are displayed in real time on the overhead projector.

To set up a Google Form, register for a Google account and go to: www.google.com/forms

Conclusions

Students enjoyed the data visualization and exploration, but found the more complex statistics challenging.

Students gained experience working with real world industry relevant data and problems.

Students liked the use of cutting edge and innovative examples, but sometimes didn’t make the linkage between the data and statistics aspect and the business product.

Open data can be used for tutorial exercises, but requires significant preprocessing and linkage.

Google forms helped to increase engagement in a large class.

Students gained industry relevant data and statistics and software skills.