



THE UNIVERSITY *of* EDINBURGH

**Dr Galina  
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**Using real data in teaching statistics:  
a case study of the coursework for  
masters students**



- Background info about the University, School and myself
- Master of Science (MSc) Programme in Marketing & Business Analysis
- Business Statistics Course
- Coursework description
- Student experience and feedback
- Lessons learned.



- MA, MSc, PhD.
- Senior Lecturer/Associate Professor in Management Science, member of Credit Research Centre.
- Published in reputable journals, including Journal of the Operational Research Society, European Journal of Operational Research.
- Funded by the Economic and Social Research Council, Abbey Santander Research Fund, Royal Society of Edinburgh, University of Edinburgh Business School Venture Fund, University of Edinburgh Challenge Investment Fund.
- Teaches Business Statistics and Credit Risk Management.
- Supervises a number of MSc and PhD projects in credit risk, marketing analytics and data analysis area.
- Former Director of MSc in Marketing & Business Analysis.



- UoE founded in 1583 c 35,000 students
- First business degree - BSc in Commerce - started in 1919
- UG, MBA, MSc with international mix of students from all over the world
- MSc in Marketing/Marketing & Business Analysis started in 2010
- Small class, 30-35 students for M&BA
- A combination of qualitative and quantitative skills
- Some quantitative background required at the application, but not an advanced one
- Graduates get jobs as marketing managers and consultants.



# Basic Programme Details

## Programme Aims

... to provide students with a critical appreciation of marketing and business analysis through a comprehensive range of academically grounded courses

- Intensive programme (with block teaching in Semester 1)
- Emphasis on integrating theory and practice
- Supplementary guest lectures/seminars and workshops



# Basic Programme Structure – MSc Marketing & Business Analysis

## Semester 1

Principles of Marketing Management
Marketing Decision Analysis
Marketing Research
<b>Business Statistics</b>

**60 credits**

## Semester 2

<i>Option course (marketing)</i>
<i>Option course (marketing)</i>
<i>Option course (business analysis)</i>
<i>Option course (business analysis)</i>

**60 credits**

## Summer

Dissertation
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**60 credits**



# Basic Programme Structure – MSc Marketing & Business Analysis

## Semester 2

<i>Option course (marketing)</i>
<i>Option course (marketing)</i>
<i>Option course (business analysis)</i>
<i>Option course (business analysis)</i>

- Marketing Communications
- Understanding Brands
- Marketing & Society
- Marketing Applications
- Marketing of Services
- International Marketing Strategy
- Marketing in a Digital World
  
- Data Mining
- Credit Risk Management
- Methods and Tools for Business Analytics
- Project Management in Business Analysis



- **Revision course**
  
- **Course Outline**
  - **Descriptive and summary statistics**
  - **Probability, sampling**
  - **Statistical inference**
  - **Hypothesis testing**
  - **Correlation and regression**
  - ***Non-parametric methods***
  
- **15 lectures, 5 computer labs, self-study exercises**
  
- **Assessment**
  - **Assignment/ coursework (30%)**
  - **Exam (70%)**



# Coursework rationale

- Gives an opportunity to apply theoretical knowledge and practise data analysis
- Yet cannot be too complicated because of the level of the course – I believe the basic concepts still have to be taught and understood
- The datasets that are used in computer labs range from 30 to 400 observations, and are typical teaching datasets, i.e. no missing values, outliers, etc.
- Other courses in Statistics either use an essay on data collection or mid-term examination, as an interim assessment.



# Project description

- Analysing secondary data of students' choice, e.g. [UK Data](#)

## [Service](#)

- 1) Description of a dataset, the source it has been obtained from. If the dataset has been used in a previous research, a short description of this research.
- 2) Descriptive and summary statistics of at least 4 variables, preferably of different measurement levels (nominal, ordinal, interval, ratio).
- 3) One hypothesis test for one variable.
- 4) One example of analysis of relationship between 2 or more variables (association/correlation/regression).
- 5) Description of further analysis that could be done using this dataset.
- 6) Limitations of the dataset.



# Issues

- The majority of students perceive it as difficult and are terrified at the beginning
- The majority haven't done any data analysis before
- So it is their first encounter with large and messy data, missing values, outliers, implausible values
- A strong desire to throw everything into software without much thinking
- Motivated to get a good mark, but not necessarily learn
- Categorical data and appropriate techniques.



# Likert scale – ordinal or interval?

Respondent specifies a level of agreement or disagreement with statements that express a favourable or unfavourable attitude towards the concept under study

**e.g. Interviewing vampires**

***Blue (Aristocratic) Blood as compared to Common Blood...***

	Strongly disagree	Disagree	No strong feeling	Agree	Strongly agree
<b><i>...has stronger hit</i></b>	1	2	3	4	5
<b><i>...has stronger flavour of tradition</i></b>	1	2	3	4	5
<b><i>...has more attractive colour</i></b>	1	2	3	4	5





# Feedback and lessons learned

- Sense of achievement - “It was tough, but we did it and we learned a lot”
- ‘Best Course’ award
- Prepares students for Semester 2 courses and dissertation
- Individual v Group work, benefits to both
- Would like to encourage more learning from each other in a group setting
- Tried to set it up as a project for a business client – not much success (but there are successful examples of this in other more advanced courses)
- Need to balance motivation and learning.



# Thank you!

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