

Statistical education: tertiary level

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- Statistics as a service subject:
Statistics subjects taught in Business, Science, IT, Engineering, Humanities, Nursing etc
- Statistics as a subject within a mathematics degree

Emphasis increasingly on practical applications – lab work using statistical packages to analyse real data sets.

Some interesting historical and general interest data sets – e.g. Titanic, First Fleet

Sets relevant to specific subject areas – e.g. data on satiety index for certain foods for students of Human Nutrition

First Fleet

Titanic data set contains the following pieces of information for each passenger: survival; whether the passenger was a man, woman or child; whether the passenger was a member of the crew, in first class, in second class or in third class.

74.4% of women, 51.4% of children and 20.3% of men survived.

Assignment question:

We know the custom was that women and children were allowed first into the lifeboats. This would suggest that the survival rates for women and children should have been the same. Use tables produced from your investigation of the data set to discuss whether this was the case, and if not why there was a difference.

What were the main features affecting a person's survival on the Titanic?

Graduate attributes: teaching as learning
Leigh Wood , Narelle Smith
IJMEST

Reports research into skills required by mathematics graduates in the workplace.

In-depth interviews of 18 graduates who were within 5 years of graduation with majors in mathematical sciences.

A common undertaking in workplace was teaching:

- presenting seminars and discussing new ideas with colleagues
- instructing team members
- talking with colleagues
- negotiating and selling ideas to clients
- explaining ideas

Teaching was both oral and written
(whiteboards, reports)

Need to modify discourse for audience

Roger (working in remote sensing for geological surveys):

Well, fortunately ...both of the bosses were PhDs in maths themselves so they understood. So you could just leave everything in the mathematical form...If we had to give reports to the non-mathematical people, then we would ...teach by example, almost, with lots of pictures to show the comparison. And mostly examples with pictures,... as few equations as possible for the general people

To prepare for the workplace students need to be able to explain their work to a range of audiences.

Assessment items can reflect this.

Written presentation of new ideas designed for colleagues in the workplace

Linear Algebra assignment question

Wavelets are used in image processing and other areas. Imagine you are a tutor teaching our class about wavelets. In about 4 pages, design a handout to teach this topic to the class. Consider your fellow students as the audience for this handout.

**Writing for management or clients:
Statistics assignment question**

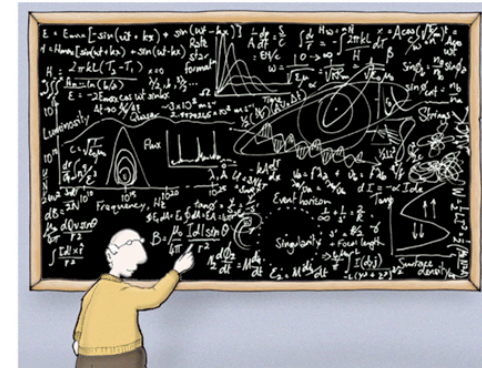
For this assignment you are asked to imagine that you are the only statistician working for StudyWell, a firm marketing study guides for high school students. The firm has commissioned some market research in NSW and Queensland to estimate what proportion of final year students in each of these states will purchase the StudyWell brand of study guide.

The market research company has given a quote based on a sample size of 200 students for each of NSW and Queensland, with a margin of error of 7%.

The manager of StudyWell asks you to explain what this means, and how the figure of 200 for each state has been reached. In particular, he can't understand why the sample size is the same for the two states when the population size of NSW is much greater than that of Queensland; and he wants to know what "margin of error" means.

Other assignment questions cover oral presentations and formal report writing with emphasis on structure beginning with executive summary.

Write a memo explaining to your manager these concepts in non-technical language that is appropriate for a non-statistician. Consider using examples to assist your explanation.



STATISTICS MADE EASY

Images from:

<http://uwstopia.nl/files/2006/11/statistics.jpg>

http://www.hgs.k12.va.us/Bruce_Norton_folder/statistics_made_easy.gif