Review of *StatBasics: Introduction to Statistics*

Multi-user Version 2, Sandy MacRae

Liz Gibson
Royal Statistical Society Centre for Statistical Education
Nottingham Trent University
elizabeth.gibson@ntu.ac.uk

*Introduction to Statistics* from *StatBasics* is a CD-Rom based learning tool designed for first year undergraduates who need to improve their basic statistical understanding. It would also be well suited to AS and A2 level students and some sections would be useful for GCSE. The material is viewed using Macromedia Flash player; see the introduction screen in Fig 1.

The tool provides a course which comprises eight chapters of material covering: methods of data collection; summarising data; visualising data; correlation and association; standard scores and the normal curve; statistical inference; statistical tests and necessary skills. The sections are colour coded using a vibrant palette of colours and are easy to access from the main menu; see the contents page in Fig 2.

**Getting started**

*StatBasics* can be run locally or through a network. For the purposes of this review it was run from the hard drive of a local machine. It is easy to load and navigate through the sections.

**Structure**

Each of the eight chapters is colour coded and broken into several sections as illustrated by the introduction screen to ‘chapter 2: summarizing data’.
(See Fig 3 - Note from this screen that American English is used in the course; this contrasts with the Scottish audio commentary!) This screen can be used to navigate to a specific section or the test questions. The bullet points illustrate progress through the material – filling up as sections are completed.

**Approach**

Topics are introduced in an accessible manner, illustrating concepts in easily digestible sections with relevant (and often humorous) examples. Students can use an audio commentary to supplement the on-screen text if they wish and can repeat demonstrations as often as is necessary. The course material is interspersed with questions to check understanding and many of the demonstrations are interactive.

Introduction to Statistics is a tool aimed at any student requiring a basic understanding of statistics. In order to engage this broad audience, concepts are introduced with as little numerical/statistical distraction as possible. Once the themes have been identified, illustrated and interacted with, the detail is fleshed out. This is done effectively throughout the package. The glossary and index are useful tools which provide students with autonomy as they are working through the course.

**Content**

**Methods of Data Collection**
- Why collect data?
- Types of variable
- Problems in data collection
- Sampling: problems and methods
- Measurement
- Test questions

**Summarizing data**
- Why summarize data?
- Typical scores
- Measures of spread
- Test questions

**Visualizing data**
- Why visualize data?
- Stem-and-leaf diagrams
- Graphs of distributions
- Test questions
- Graphs of relationships
- Information required in graphs
- Test questions

**Correlation and Association**
- What is correlation?
- Two types of correlation coefficient
- Interpreting correlation

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- Test questions

Standard scores and the Normal Curve
- The normal distribution
- Standard scores
- Test questions

Statistical Inference
- Why do we need statistical tests?
- Probability and chance
- Three requirements for confidence
- Statistical significance
- Directional tests
- Test questions

Necessary Skills
- Interpreting statistical formulae
- Using statistical tables
- Test questions

Pros and cons
The software provides an accessible view of statistics which arguably covers all required elements of an introductory course. It is a resource that would supplement more traditional methods effectively. Although many of the examples it uses are good, it would be interesting to see more of an emphasis on real data and real applications of statistics.

The package is well presented, easy to navigate and the colour coding helps with tracking progress. The use of Flash player is slightly frustrating, as it can seem a little unresponsive at times, and the lengthy introduction and exit titles are rather repetitive. It is best viewed with on a screen set to 800 by 600 resolutions. Whilst ‘necessary skills’ are included in the material, their location in the final chapter appears strange. The demonstrations in this section would be particularly useful for non-mathematics students, providing a useful demonstration of how statistical formulae work amongst other very necessary skills.

The use of audio commentary is professional – a real voice which complements the written text well. This can be turned on when required and can be useful for adding insight. It is necessary, however, to click the audio commentary on immediately on each slide – to keep the commentary synchronised with the progress of the visuals.

The test questions at the end of each section provide guidance for students as their understanding develops. There is a help button which reveals a hint to the question. The software allows students to have additional attempts at questions until they get them all correct, but does not locate the error(s) explicitly.

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Conclusion
StatBasics: Introduction to Statistics is a useful tool in supplementing more traditional teaching methods for learning statistics. It could help develop a broad understanding of how concepts work and alter with different sets of data. For students, it provides an attractive, interactive and supported learning environment which could be used as a reference ‘text’ throughout a course. For tutors, it provides some useful demonstration materials for use in front of a class or group as well as a way of managing and monitoring the individual learning needs of a large group of students. Used alongside real data and real application, this package would enhance many introductions to the use of statistics.