THE CONS AND PROS OF USING SPREADSHEET SOFTWARE IN AN APPLIED STATISTICS COURSE

John McKenzie Jr and William H. Rybolt, Babson College, USA

Today's spreadsheet software is far different from VisiCalc, the first such software in its ability to perform statistical analyses. With their functions, charts, tables, and macros, programs such as Excel, QuattroPro, and Lotus 1-2-3 all enable businessmen, engineers, and social scientists to handle elementary statistical tasks. In addition, with the use of add-ins, users may even use spreadsheets for more advanced analyses.

It is not surprising that spreadsheets are increasingly being used in applied statistics courses to perform computations from means to two-way ANOVAs. They are also being employed to illustrate statistical concepts such as the Central Limit Theorem and best- fitting linear fits by capitalizing on the software's ability to link data and output instantaneously.

There are three frequently mentioned advantages to the use of a spreadsheet instead of a more traditional statistical package such as Minitab, SPSS, or SAS. These are the instant link function mentioned above, the introduction and/or reinforcement of software that the student will use once they leave the classroom and the cost savings since most schools already have purchased a spreadsheet package.

Less frequently discussed and publicized are some of the problems associated with the use of spreadsheets in applied statistics courses. Among these disadvantages are the following: limited capabilities (e.g., no treatment of missing values), easily identifiable and not so easily identifiable bugs (e.g., most spreadsheet packages do not use the most appropriate algorithms for their computations), poor defaults (e.g., Excel currently does not produce a residuals versus fitted plot), inconvenient interface options (e.g., the need to order regressions variables before an analysis can be performed), extremely poor documentation (e.g., unacceptable statistical explanations for parallel textbooks), and lack of vendor support of statistical features (e.g., Microsoft).

In this presentation we will present our appraisals of the strengths and weaknesses of the use of spreadsheets in applied statistics courses. We will focus on the most popular spreadsheet packages in 1998. (In 1996, this is Excel 5/7.) We will also discuss the most effective way to deliver such software into the classroom (e.g., applets, networked

computers, laptops, etc.) The evolution of the strengths and weakness of such packages since 1985 will be summarised.