Choosing Between SAS, Stata, and SPSS

Institutional researchers tend to have varying needs for data analysis, and people who become institutional researchers also tend to have varying levels of statistical education or training. Fortunately, the market for statistical software is strong enough to support at least three major products by different vendors. In a recent software review by Acock, we get an understanding of how three major products (SAS, Stata, and SPSS) differ, and these observations should help institutional researchers (or their offices) select the appropriate statistical program. Acock’s observations include the following, among others:

1. “SPSS is all you need if you can minimize complex data management and if you are not going to do cutting edge statistical analysis. If you only open a statistical program twice a month, SPSS has clear advantages because it is so much like the familiar Excel spreadsheet.” [p.1095]

2. “SAS is a likely choice for a person who manages complex data sets on a continuous basis. These people will use SAS several hours a day, and the steep learning curve and complex command structure are a small price to pay for the extraordinary power. The challenging documentation gives them new ideas on things they can do.” [p.1095]

3. “Stata is your choice if you want to do cutting edge research but do not have the data management needs that require SAS. Stata is ideal for people who are developing or modifying statistical procedures…” [p.1095]

4. “SAS is especially strong in analysis of variance (ANOVA), the general linear model, and their extensions. Indeed, there are few statistical or graphic tasks that you cannot do in SAS, but often you find that SAS is a long way down the list on ease of use…There is little danger that most researchers will outgrow the evolving capabilities of SAS…” [pp. 1093-4]

5. “SPSS…is reasonably strong on ANOVA-related procedures. Looking to the future, it is fair to say that it will be the weakest of the three packages in the scope of statistical procedures it offers…An advantage of SPSS over SAS is that SPSS largely abandoned its mainframe version and revised its syntax to be consistent with a single user…Although all three have a menu-driven option, the point and click menus in SPSS are the easiest to learn…Like SAS, SPSS’s vision has moved away from an academic research focus…SPSS seems to invest more of its development in marketing-oriented graphics that no academic journal would publish than it invests in developing new procedures for data analysis…” [p.1094]

6. “Statistical analysis using Stata is relatively weak on ANOVA and only adequate on factor analysis but extraordinary on regression analysis, complex survey designs, limited dependent variables, epidemiological methods, survival analysis, panel designs, time series, and diagnostics…Although Stata has the smallest development team, all their efforts are focused on the statistical needs of scholars. Looking to the future, Stata may have the strongest collection of advanced statistical procedures…Stata has a command structure that is simple and consistent…The consistency of Stata is impressive…User-developed procedures can be installed over the Internet without leaving Stata…This expandability of Stata is its special strength…The documentation for Stata is excellent,
and the ability to download data sets that are used in the examples in the documentation is very helpful…[p.1094]

Few researchers would decide to acquire a primary statistical package solely on the basis of an overview; they would really want to have some “hands-on” experience with the products as well. But this article should help researchers evaluate some basic qualities of these products before they decide upon a “test drive” of one or more of them. Alan C. Acock (Oregon State University) has more details in his article (“SAS, Stata, SPSS: A Comparison”) in the peer-reviewed *Journal of Marriage and Family* (the November 2005 issue or Vol.67, pp. 1093-1095).

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