Instructions for carrying out statistical procedures and tests using SPSS

These instructions are closely linked to the author's book:

Essential Statistics for the Pharmaceutical Sciences
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For all references to chapters or tables, see the above book.

Using SPSS to perform a Mann-Whitney test

Using SPSS to perform a Mann-Whitney test

Example: Table 17.1 Production of a toxic metabolite (µg) from an analgesic drug in smokers and non-smokers

All the measurements of metabolite are entered as numeric data into SPSS in a single column named 'Metabolite'. We only need to enter the actual quantities of metabolite produced; We do not have to work out the rankings – that is all part of the Mann-Whitney procedure. A second numeric column (Named 'Group') contains codes (1 or 2) for the two groups.

To improve the clarity of the output, it is worth adding Value labels to the Group variable (See One way analysis of variance.) Use labels 1=Smoke, 2=Non-smoke.

The test is run from the menus:

Analyze / Nonparametric tests / 2 Independent Samples …

Move 'Metabolite' into the 'Test variable List' box and 'Group' into the 'Grouping Variable' box. Click the 'Define Groups …' button and enter '1' and '2' into the two boxes.

The output will be:

Ranks

	Group	N	Mean Rank	Sum of Ranks
Smoke	Smoke	20	24.40	488.00
	Non-smoke	20	16.60	332.00
	Total	40		

Test Statistics(b)

	Metabolite
Mann-Whitney U	122.000
Wilcoxon W	332.000
Z	-2.110
Asymp. Sig. (2-tailed)	.035
Exact Sig. [2*(1-tailed Sig.)]	.035(a)

a Not corrected for ties.
b Grouping Variable: Group

The first box shows the mean ranks for the two groups and the smokers have the higher value, so they appear to produce more of the metabolite. (See Section 17.2.3 for details).

The second box includes a P value (Beside 'Asymp. Sig. (2-tailed)') of 0.035, so the difference is statistically significant.

See Chapter 17 for explanation and discussion.