

SPSS 13.0 HELP SHEET: Mann-Whitney U test

CONTENTS

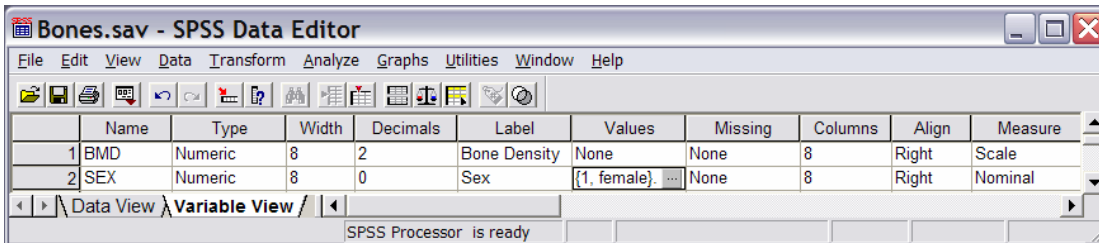
1. How to enter data to do a Mann-Whitney U test.
2. How to do a Mann-Whitney U test.

1. How to enter data to do a Mann-Whitney U test.

For general advice on data entry see the “How to enter data into SPSS” help sheet.

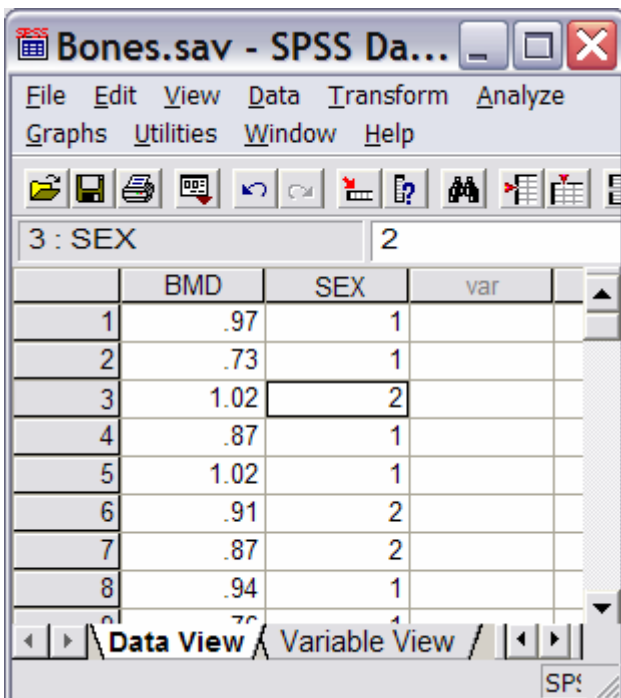
Mann-Whitney U tests are used on unrelated data: Data for the dependent variable goes in one column and data for the independent variable goes in another. In this example, the dependent variable is *BMD* and the independent variable is *SEX*. *BMD* is bone-density measurement measured in grams per square centimetre of the neck of the femur which is a scale level of measurement). *SEX* is measured at the nominal level: either 1 (value label = female) or 2 (value label = male).

Variable View:



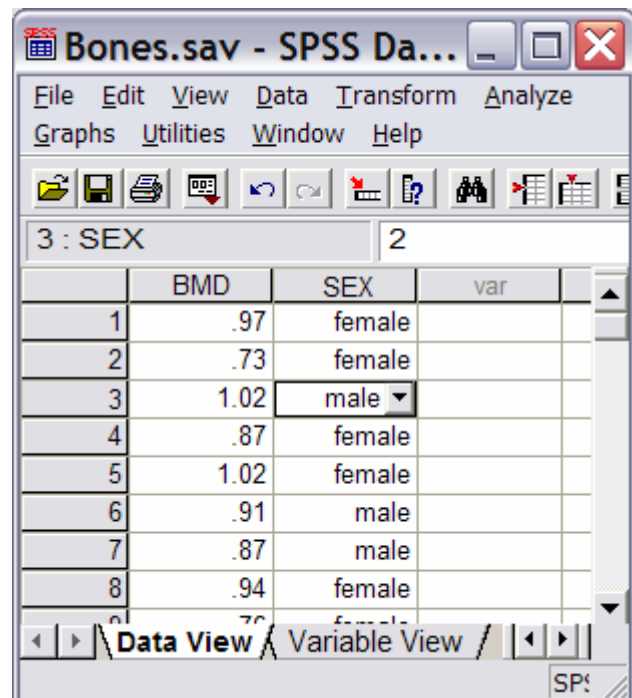
| | Name | Type | Width | Decimals | Label | Values | Missing | Columns | Align | Measure |
|---|------|---------|-------|----------|--------------|------------------|---------|---------|-------|---------|
| 1 | BMD | Numeric | 8 | 2 | Bone Density | None | None | 8 | Right | Scale |
| 2 | SEX | Numeric | 8 | 0 | Sex | {1, female}, ... | None | 8 | Right | Nominal |

Data View (View – Value Labels off)



| | BMD | SEX | var |
|---|------|-----|-----|
| 1 | .97 | 1 | |
| 2 | .73 | 1 | |
| 3 | 1.02 | 2 | |
| 4 | .87 | 1 | |
| 5 | 1.02 | 1 | |
| 6 | .91 | 2 | |
| 7 | .87 | 2 | |
| 8 | .94 | 1 | |

Data View (View – Value Labels on)



| | BMD | SEX | var |
|---|------|--------|-----|
| 1 | .97 | female | |
| 2 | .73 | female | |
| 3 | 1.02 | male | |
| 4 | .87 | female | |
| 5 | 1.02 | female | |
| 6 | .91 | male | |
| 7 | .87 | male | |
| 8 | .94 | female | |

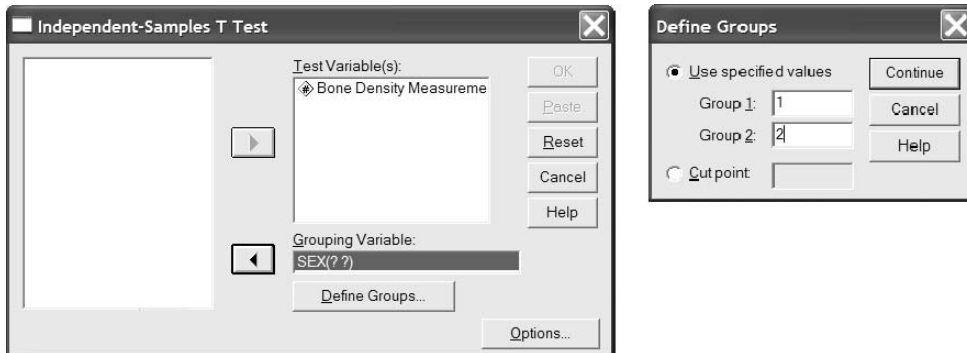
2. How to do a Mann-Whitney U test...

To get SPSS to conduct a Mann-Whitney U test :

Open your data file.

Select: Analyze – Nonparametric Tests – 2 Independent Samples...

This will bring up the Two-Independent-Samples Tests window (below, left):



Select the variable that you want to analyse, and send it to the **Test Variable List** box (in the example above this is *Bone Density Measurement*). Select the independent variable, and send it to the **Grouping Variable** box (in the example above this is *Sex*).

Press the **Define Groups** button to bring up the Define Groups window (above right).

Under **Group 1** type the number code for the first sample (in the example above this is 1).

Under **Group 2** type the number code for the first sample (in the example above this is 2).

Click Continue and then OK.

The key elements of the output are:

| Ranks | | | | |
|--|--------|----|-----------|--------------|
| | Sex | N | Mean Rank | Sum of Ranks |
| Bone Density Measurement (g/square cm) | female | 20 | 16.52 | 330.50 |
| | male | 20 | 24.48 | 489.50 |
| | Total | 40 | | |

| Test Statistics ^b | |
|--------------------------------|--|
| | Bone Density Measurement (g/square cm) |
| Mann-Whitney U | 120.500 |
| Wilcoxon W | 330.500 |
| Z | -2.151 |
| Asymp. Sig. (2-tailed) | .032 |
| Exact Sig. [2*(1-tailed Sig.)] | .030 ^a |

a. Not corrected for ties.

b. Grouping Variable: Sex