

# Mann-Whitney U Test

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AKA:

- Wilcoxon Rank Sum test

## 1 Practical uses

- Non-parametric counterpart to the T-Test for independent samples

## 2 Definition

- An analog of the parametric Student's t-test<sup>1</sup>
- Compares the means between two independent groups with the assumption that the data is not in a normal distribution<sup>1</sup>.

- Useful for numerical/continuous variables<sup>1</sup>.

#### **Example**

For example, 2 different groups' age or height (continuous variables), in a study with non-normally distributed data<sup>1</sup>

## **3 Variables**

### **3.1 Independent variables**

Nominal/ordinal variable with 2 expressions

#### **Common Examples**

E.g. Meds: Drug & Placebo

### **3.2 Dependent variables**

Metric/ordinal variable

#### **Common Examples**

E.G.: Salary, wellbeing, weight

## **4 Processing**

Rank sum

## **5 Requirements**

- Only 2 independent random samples
- At least ordinally scaled characteristics

## **6 Benefits**

- Does not need to be normally distributed

## 7 Hypothesis

- **Null hypothesis:** There is no difference (in terms of central tendency) between the two groups in the population.
  - **Alternative hypothesis:** There is a difference (with respect to the central tendency) between the two groups in the population
1. Sundjaja JH, Shrestha R, Krishan K. McNemar And Mann-Whitney U Tests. In: *Stat-Pearls*. StatPearls Publishing; 2023. Accessed October 3, 2023. <http://www.ncbi.nlm.nih.gov/books/NBK560699/>