When we want to compare means from three or more populations, between subjects one-way ANOVA would appropriate. In this situation, there is one dependent variable, and one independent variable that is measured at three or more levels.

Here is an example: A medical researcher wants to determine whether there is a difference in the mean length of time it takes three types of pain relievers to provide relief from headache pain. Several headache sufferers are randomly selected and given one of three medications. Each headache sufferer records the time (in minutes) it takes the medication to begin working. The results are shown in the following table. At alpha=0.01, can you conclude that the mean times are different?

|  |  |  |
| --- | --- | --- |
| Medication 1 | Medication 2 | Medication 3 |
| 12 | 16 | 14 |
| 15 | 14 | 17 |
| 17 | 21 | 20 |
| 12 | 15 | 15 |
|  | 19 |  |
| M1=14 | M2=17 | M3=16.5 |
| 6 | 8.5 | 7 |
|  |  |  |