**CHI SQUARED**

***WHY WOULD YOU CHOSE THIS TEST?:***

When there is categorical data or frequency data as we are therefore not taking measurements

***HOW?:***

1. Work out the observed results (the results given to you in the table) and the expected results (the mean or use the table below):

|  |  |  |
| --- | --- | --- |
|  | variable |  |
| A | B |
| variable | C |  | Results found in experiment | Row total |
| D |  |  | Row total |
|  | Column total | Column total | GRAND TOTAL |

EXPECTED RESULTS = row total x column total

 Grand total

example you’d do 🡪 ‘column total for A’ x ‘row total for C’ ÷ ‘grand total’. Then you’d do the same for column A but row D and so on

1. Calculate chi squared:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Observed | Expected | Observed - expected | (observed – expected)2 | (observed – expected)2 expected |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  CHI SQUARED =  |  COLUMN TOTAL |

1. Calculate the degrees of freedom = (number of rows – 1) x (number of columns – 1) {also can be how many categories you have – 1}
2. Use the degrees of freedom to calculate the critical value (use to table given)

***CONCLUSIONS:***

* If the calculated value of χ2 is **less than** the critical value = **accept** the null hypothesis

A greater than 5% probability (>0.05) that the difference between expected and observed results occurred by chance

Less than or equal to a 95% probability (≤0.95) that the difference between expected and observed results did not occur by chance.

* If the calculated value of χ2 is **greater than** the critical value = **reject** null hypothesis

A less than or equal to 5% (≤0.05) probability that there is a statistically significant difference between the expected and observed results

A greater than 95% probability (>0.95) that the difference between the expected and observed results did not occur by chance