

```
In [1]: import scipy.stats as stats
import statsmodels.api as sm
import numpy as np
import pandas as pd
import warnings
warnings.filterwarnings("ignore")
from PIL import ImageGrab
import matplotlib.pyplot as plt
import seaborn as sn
```

```
In [2]: buyer = pd.read_csv('BuyerRatio.csv', index_col = 0)
buyer
```

```
Out[2]:
```

	East	West	North	South
Observed Values				
Males	50	142	131	70
Females	435	1523	1356	750

```
In [3]: table = [[50,142,131,70],
                 [435,1523,1356,750]]
```

```
In [4]: stat, p, dof, exp = stats.chi2_contingency(buyer)
print(stat, "\n", p, "\n", dof, "\n", exp)
```

```
1.595945538661058
0.6603094907091882
3
[[ 42.76531299  146.81287862  131.11756787   72.30424052]
 [ 442.23468701 1518.18712138 1355.88243213  747.69575948]]
```

```
In [5]: stats.chi2_contingency(table)
```

```
Out[5]: (1.595945538661058,
0.6603094907091882,
3,
array([[ 42.76531299,  146.81287862,  131.11756787,   72.30424052],
        [ 442.23468701, 1518.18712138, 1355.88243213,  747.69575948]]))
```

```
In [6]: observed = np.array([50, 142, 131, 70, 435, 1523, 1356, 750])
expected = np.array([42.76531299,  146.81287862,  131.11756787,  72.30424052, 442.2
```

```
In [7]: statistics, p_value = stats.chisquare(observed, expected, ddof = 3)
print("Statistics = ", statistics, "\n", 'P_Value = ', p_value)
```

```
Statistics =  1.5959455390914483
P_Value =  0.8095206646905712
```

```
In [8]: alpha = 0.05
print('Significnace=0.3f, p=0.3f' % (alpha, p_value))
if p_value <= alpha:
    print('We reject Null Hypothesis there is a significance difference between TA
else:
    print('We fail to reject Null hypothesis')
```

```
Significnace=0.050, p=0.810
We fail to reject Null hypothesis
```

```
In [ ]:
```