**Chi-Square Test for Association in Minitab 17**

Null Hypothesis: There is no association between row factor and column factor.

Alternate Hypothesis: There is an association between row factor and column factor.

Enter the data in a “table format”. Include descriptive labels for the columns and rows.

Pull down menu:

Stat / Tables / Chi-Square Test for Association

Select summarized data in a two-way table.

Enter data as shown below.



*Row* Worker

*Column* Plan Number

*p-value* less than alpha

Decision: Reject Ho.

Therefore, we conclude Worker and Plan Number are associated.

Therefore, we conclude Worker and Plan Number are not independent.

***Minitab Input 1***

 **Plan1 Plan2 Plan3**

**Salary 160 140 40**

**Hourly 40 60 60**

**Chi-Square Test for Association: C1, Worksheet columns**

Rows: C1 Columns: Worksheet columns

 Plan1 Plan2 Plan3 All

Salary 160 140 40 340

 136 136 68

Hourly 40 60 60 160

 64 64 32

All 200 200 100 500

Cell Contents: Count

 Expected count

Pearson Chi-Square = 49.632, DF = 2, P-Value = 0.000

Likelihood Ratio Chi-Square = 47.760, DF = 2, P-Value = 0.000

We use the Pearson Chi-Square for Chi-Square calculated.

Our decision, based on a p-value less than alpha, is: Reject HO.

Our conclusion is that there is an association between Plan and Worker Type.

***Minitab Input 2***

**Salaried worker hourly worker plan**

**160 40 p#1**

**140 60 p#2**

 **40 60 p#3**

**Chi-Square Test for Association: plan, Worksheet columns**

Rows: plan Columns: Worksheet columns

 Salaried worker hourly worker All

p#1 160 40 200

 136 64

p#2 140 60 200

 136 64

p#3 40 60 100

 68 32

All 340 160 500

Cell Contents: Count

 Expected count

Pearson Chi-Square = 49.632, DF = 2, P-Value = 0.000

Likelihood Ratio Chi-Square = 47.760, DF = 2, P-Value = 0.000

We use the Pearson Chi-Square for Chi-Square calculated.

Our decision, based on a p-value less than alpha, is: Reject HO.

Our conclusion is that Plan and Worker Type are associated.