Crosstab (with Chi-Square)

A crosstabulation displays the number of cases in each category defined by two or more grouping variables.

The Chi Square Goodness of Fit test determines if the observed frequencies are different from what we would expect to find (we expect equal numbers in each group within a variable).

Null Hypothesis: There are approximately equal numbers of cases in each group.
Alternate Hypothesis: There are not equal numbers of cases in each group.

```
. tabulate happy freqdum , chi2

      general |     sexfreq dummy
    happiness | less than  more than |     Total
--------------+----------------------+----------
   very happy |       103        207 |       310
 pretty happy |       286        333 |       619
not too happy |        63         68 |       131
--------------+----------------------+----------
        Total |       452        608 |     1,060

          Pearson chi2(2) =  16.0387   Pr = 0.000
```

For example, we see that there are 207 cases reporting “very happy” for general happiness and “more than once per month” for frequency of sex.

The Chi-Square measure tests the hypothesis that the row and column variables in a crosstabulation are independent of one another. While the Chi-Square measure may indicate that there is a relationship between two variables, they do not indicate the strength or direction of the relationship.