AP Statistics

Chi-Square Test for Homogeneity.

**The chi-square test for Homogeneity tests if there is a difference in distribution for some categorical variable among two or more populations or treatments. In general terms**

**Ho: The is no difference in the distribution of a categorical variable for several populations or treatments**

**Ha: There is a difference in the distribution of a categorical variable for several populations or treatments.**

*OUR QUESTION: Are the distributions of the categorical variable (language interested in) distributed the same among the two populations, males and females? (I surveyed my underclassman)*

Observed Values:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | Totals |
| Spanish | 43 | 52 |  |
| French | 24 | 37 |  |
| German | 26 | 35 |  |
| Totals |  |  |  |

Expected Values:

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | Totals |
| Spanish |  |  |  |
| French |  |  |  |
| German |  |  |  |
| Totals |  |  |  |

To find expected values: 

Ho: Distribution of language interest is the same among the two genders.

Ha: Distribution of language interest is not the same among the two genders.

USE **RIL** for your assumptions/conditions

R: Random I: Independence L: Large sample size, all expected counts > 5

The chi-square statistic is exactly the same as for the GOF: 