AP Statistics

Goodness of fit example: Solutions.

Ho: The Cobb county households mirror the US households when with respect to type of households

Ha: Cobb county households do not mirror US households with respect to type of households.

Alpha: .05

Create expected counts using percentages.

|  |  |  |
| --- | --- | --- |
| TYPE | COBB EXPECTED | COBB OBSERVED |
| Married w/ child. | 112.06 | 132 |
| Married no child | 124.99 | 82 |
| Single parent | 38.79 | 63 |
| One person | 107.75 | 86 |
| Other | 47.41 | 68 |

CYA (check your assumptions)

* Random sample
* Large enough sample size: (all expected counts are at least five)
* Independence: 10x condition if no replacement.

Notice that there is no mention of normal. The chi-square test is not normal, it is skewed right. The larger the df the less skewed it becomes.

Also, test is only one tailed. ALWAYS.

The critical value we will use for alpha of .05 comes from the table (with df=4) is 9.49

Our chi-square statistic: 

So..... 

Since 46.77 is larger (much larger) than 9.49 we have evidence at the 5% level to reject the null hypothesis. It looks like Cobb County does not mirror US trends when it comes to types of households.

To get p-value on any calculator. 

(syntax is (lowerbound, upperbound, df)

So since p-value is less than alpha there is sufficient evidence to reject the null hypothesis.

There is a “magic button” on most (not all) calculators.