

The 1998 GSS states, "There are always some people whose ideas are considered bad or dangerous by other people. For instance, somebody who is against all churches and religion...If such a person wanted to make a speech in myour (city/town/community) against churches and religion, should he/she be allowed to speak or not?" Among the male GSS respondents, 631 said they would allow the speech and 154 would not allow it. Among the female respondents, 762 would allow and 303 would not allow the speech. What are the conditional odds in favor of allowing an atheist to speak, and what is the odds ratio?

| | | | |
|--|-------------|---------------|----------------------|
| # of columns | 2 | | |
| # of rows | 2 | | |
| Significance level | 0.05 | | |
| Observed result | | | |
| | Male | Female | Total |
| Allow | 631 | 762 | 1393 |
| Not allow | 154 | 303 | 457 |
| Total | 785 | 1065 | 1850 |
| Expected value | | | |
| | Male | Female | Total |
| Allow | 591.1 | 801.9 | 1393 |
| Not allow | 193.9 | 263.1 | 457 |
| Total | 785 | 1065 | 1850 |
| Observed result - Expected value | | | |
| | Male | Female | |
| Allow | 39.9 | -39.9 | |
| Not allow | -39.9 | 39.9 | |
| (Observed result - Expected value)² | | | |
| | Male | Female | |
| Allow | 1593.30 | 1593.30 | |
| Not allow | 1593.30 | 1593.30 | |
| (Observed result - Expected value)² / Expected value | | | |
| | Male | Female | Total |
| Allow | 2.70 | 1.99 | 4.7 |
| Not allow | 8.22 | 6.06 | 14.3 |
| | | | 19.0 |
| H₀: Independence | | | x² |

***H*_a: Dependence**

$$df = 1$$

$$X^2 = 19.0$$

$$P\text{-value} = 0.00001 < 0.05$$

Therefore, **Ho can be rejected and there is relationship.**

Odd ratio