

## Chi Square Test for Independence

In a test for independence, we are looking for a relationship or association between two variables. We cannot, however, necessarily claim there is any direct causal relationship.

Let's try an example and go through the steps....

In a nationwide telephone poll of 1000 random adults representing Democrats, Republicans, and Independents, respondents were asked two questions: their party affiliation and if their confidence in the system had been shaken by the savings and loan crisis. Test the null hypothesis that shaken confidence in the banking system is independent of party affiliation at the 10% level.

	Yes	No	No opinion
Democrats	175	220	55
Republicans	150	165	35
Independents	75	105	20

Example 2:

To determine whether men with a combination of childhood abuse and a certain abnormal gene are more likely to commit violent crimes, a study is run on a simple random sample of 575 males in the 25 to 35 age group. The data are summarized in the following table:

	Not abused, normal gene	Abused, normal gene	Not abused, abnormal gene	Abused, abnormal gene
Criminal behavior	48	21	32	26
Normal behavior	201	79	118	50

Is there evidence of a relationship between the four categories and behavior? Test at the 5% level.



