

CHI SQUARE

To generate a table of frequencies and perform a chi square test, specify the two categorical variables to include in the analysis (here, calc and sex). The third line requests the chi square statistic, and the fourth line tells SPSS what information to include in each cell of the table (here, the observed frequencies plus row and column percentages to aid in interpretation).

```
crosstabs
  /tables = calc by sex
  /stats chisq
  /cells count row col .
```

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Calculus * Sex 1=m 2=f	105	99.1%	1	.9%	106	100.0%

The first part of the output (above) shows how many cases were included in the analysis.

The second part of the output (below) contains the table of frequencies. Rows and columns headings contain variable and value labels. Within each cell, the observed frequency appears first, followed by the row and column percentage. For example, 26 men reported taking calculus, which is 29.5% of all those reporting having taken calculus and 92.9% of all men in the sample.

Calculus * Sex 1=m 2=f Crosstabulation

			Sex 1=m 2=f		Total
			male	female	
Calculus	no	Count	2	15	17
		% within Calculus	11.8%	88.2%	100.0%
		% within Sex 1=m 2=f	7.1%	19.5%	16.2%
	yes	Count	26	62	88
		% within Calculus	29.5%	70.5%	100.0%
		% within Sex 1=m 2=f	92.9%	80.5%	83.8%
Total		Count	28	77	105
		% within Calculus	26.7%	73.3%	100.0%
		% within Sex 1=m 2=f	100.0%	100.0%	100.0%

The third and final part of the output provides the chi square test. Normally, you would report the Pearson Chi Square, with its df and p value (labeled "Asymp. Sig. (2-sided)"): $X^2(1) = 2.30, p = .129$, revealing no reliable association between sex and having taken calculus.

Whenever the expected frequency of one or more cells is less than 5, Fisher's Exact Test should probably be reported instead of chi square. These results appear in the fourth line of the table, with the (two-tailed) p value labeled "Exact Sig. (2-sided)".

If there is a reliable association between variables, you need to examine the pattern of frequencies (aided by row and column percentages) to determine the nature of the relationships. Had the p value been lower, indicating a reliable association, a reasonable interpretation in this case would have been that men were more likely to report having taken calculus (92.9%) than were women (80.5%).

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.303 ^b	1	.129		
Continuity Correction ^a	1.484	1	.223		
Likelihood Ratio	2.641	1	.104		
Fisher's Exact Test				.229	.108
Linear-by-Linear Association	2.281	1	.131		
N of Valid Cases	105				

a. Computed only for a 2x2 table

b. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.53.