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EDG 500

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## Chapter 16

Chi-Square Test

Frequencies

Candidate			
	Observed N	Expected N	Residual
Jane Smith	11	10.0	1.0
John Doe	9	10.0	-1.0
Total	20		

Test Statistics	
Candidate	
Chi-Square	.200 <sup>a</sup>
df	1
Asymp. Sig.	.655

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.0.

Figure 16.8. Raw SPSS Statistics output for the data in Table 16.1.

## Chapter 16 Exercise

Chi-Square Test

Frequencies

Colors			
	Observed N	Expected N	Residual
Tan	5	6.7	-1.7
Blue	12	6.7	5.3
Brown	3	6.7	-3.7
Total	20		

### Test Statistics

Colors	
Chi-Square	6.700 <sup>a</sup>
df	2
Asymp. Sig.	.035

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 6.7.

Figure 16.9. Raw SPSS Statistics output for the data on table 16.2.

- The observed value  $n$  for Tan is 5.
- The observed value  $n$  for Blue is 12.
- The observed value  $n$  for Brown is 3.
- The value of chi-square is 6.700.
- The associated probability is .035.
- The probability is .035 which is less than .05 but greater than .01. The observed values are significantly different.
- Color blue ( $n= 12$ ) was the preferred color over the colors Tan ( $n= 5$ ) and Brown ( $n= 3$ ), the difference was statistically significant at the .05 level ( $\chi^2 = 6.700, df = 2$ ).

## Chapter 17

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Vote	24	100.0%	0	0.0%	24	100.0%

**Gender \* Vote Crosstabulation**

			Vote		Total
			Yes	No	
Gender	Male	Count	8	4	12
		% within Gender	66.7%	33.3%	100.0%
	Female	Count	5	7	12
		% within Gender	41.7%	58.3%	100.0%
Total		Count	13	11	24
		% within Gender	54.2%	45.8%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.510 <sup>a</sup>	1	.219		
Continuity Correction <sup>b</sup>	.671	1	.413		
Likelihood Ratio	1.527	1	.217		
Fisher's Exact Test				.414	.207
Linear-by-Linear Association	1.448	1	.229		
N of Valid Cases	24				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.50.

b. Computed only for a 2x2 table

Figure 17.11. SPSS Statistics output for chi-square test of independence.

**Chapter 17 Exercise**

**Case Processing Summary**

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Experience * Approval	20	100.0%	0	0.0%	20	100.0%

**Experience \* Approval Crosstabulation**

			Approval		Total
			Approve	Disapprove	
Experience	Experienced	Count	7	3	10
		% within Experience	70.0%	30.0%	100.0%
	Inexperienced	Count	3	7	10
		% within Experience	30.0%	70.0%	100.0%
Total		Count	10	10	20
		% within Experience	50.0%	50.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.200 <sup>a</sup>	1	.074		
Continuity Correction <sup>b</sup>	1.800	1	.180		
Likelihood Ratio	3.291	1	.070		
Fisher's Exact Test				.179	.089
Linear-by-Linear Association	3.040	1	.081		
N of Valid Cases	20				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.00.

b. Computed only for a 2x2 table

Figure 17.12. SPSS Statistics out for chi-square test of independence between experience and approval.

- a. Experienced teacher approved 7 (70.0%).
- b. Inexperienced teachers approved 3 (30.0%).
- c. The value of chi-square is 3.200.
- d. The associated probability is .074.
- e. The results are not statistically significant at .05 level. Because .074 is greater than .05.
- f. Experienced teachers were more likely to approve a new mathematics curriculum while inexperienced teachers were likely to disapprove. The relationship between teaching experience and approval of curriculum is not statistically significant at the .05 level ( $\chi^2 = 3.200, df = 1$ ), thus experience and approval are independent of each other.