

## Supplemental Chi Square from Lab 05

The example data file is from a 2010 Ph. D. dissertation in Education by Barbara Ann Baisley at George Mason University titled *After School Care Arrangements and Student Academic Performance and Misbehavior in Middle School*. This dataset contains only 12 different categories, a two way table of the variable FAILURE (having failed a class prior to the grades covered by the study, grades 6 – 8) and the CareType (type of after-school care available to the student). Levels of care are: care by a relative, a nonrelative, a care center, a parent cared for self or some combination of these listed as “multiple sources”. This dataset consists of observations on 4366 students by can be summarized as the frequency of occurrence in 12 combinations of these categories. The SAS output of the data is given below.

Obs	CareType	Failures	Students
1	Relative Care	Yes	54
2	Non-Relative	Yes	5
3	Center Care	Yes	53
4	Self Care	Yes	124
5	Parent Care	Yes	176
6	Multiple Care	Yes	68
7	Relative Care	No	366
8	Non-Relative	No	76
9	Center Care	No	393
10	Self Care	No	897
11	Parent Care	No	1824
12	Multiple Care	No	330

Student failures and after school care type  
 Effect of perception of the Failures of CareType choice  
 Two-way frequencies of CareType and Failures

The FREQ Procedure

Table of CareType by Failures

CareType	Failures		Total
	Yes	No	
Frequency			
Expected			
Cell Chi-Square			
Relative Care	54 46.175 1.3261	366 373.83 0.1638	420
Non-Relative	5 8.9052 1.7125	76 72.095 0.2115	81
Center Care	53 49.033 0.3209	393 396.97 0.0396	446
Self Care	124 112.25 1.2301	897 908.75 0.1519	1021
Parent Care	176 219.88 8.7572	1824 1780.1 1.0817	2000
Multiple Care	68 43.756 13.433	330 354.24 1.6592	398
Total	480	3886	4366

Statistics for Table of CareType by Failures

Statistic	DF	Value	Prob
Chi-Square	5	30.0871	<.0001
Likelihood Ratio Chi-Square	5	29.0107	<.0001
Mantel-Haenszel Chi-Square	1	0.2903	0.5900
Phi Coefficient		0.0830	
Contingency Coefficient		0.0827	
Cramer's V		0.0830	

Sample Size = 4366

We have data from a questionnaire on Laptop purchases. The dataset is from a Ph. D. Dissertation, Capella University, December 2006 by Rachel V. McClary titled “An Evaluation of Consumer Buying Criteria and Its Impact on the Purchase of Commoditized Laptops”. The data set was downloaded on 30Sept2008  
<http://www.drjimmirabella.com/dissertations/Dissertation-RachelMcClary.pdf>

The study covered a number of variables that might influence a decision to purchase a particular BRAND of Laptop computer such as education, computer expertise gender and the IMPORTANCE of the particular brand to the purchaser. We will analyze the latter variable, importance.

Obs	Importance	Brand	Respondents
1	NotAtAll	Apple	2
2	NotAtAll	Compaq	7
3	NotAtAll	Dell	16
4	NotAtAll	HP	15
5	NotAtAll	Toshiba	10
6	Minimally	Apple	1
7	Minimally	Compaq	5
8	Minimally	Dell	12
9	Minimally	HP	6
10	Minimally	Toshiba	11
11	Somewhat	Apple	1
12	Somewhat	Compaq	11
13	Somewhat	Dell	34
14	Somewhat	HP	21
15	Somewhat	Toshiba	14
16	Important	Apple	17
17	Important	Compaq	20
18	Important	Dell	80
19	Important	HP	45
20	Important	Toshiba	19
21	Most	Apple	27
22	Most	Compaq	10
23	Most	Dell	74
24	Most	HP	30
25	Most	Toshiba	16

Laptop purchase example  
 Effect of perception of the importance of brand choice  
 Two-way frequencies of Brand and Importance

The FREQ Procedure

Table of Brand by Importance

Brand	Importance					Total
	NotAtAll	Minimally	Somewhat	Important	Most	
Apple	2 4.7619 1.6019	1 3.3333 1.6333	1 7.7143 5.8439	17 17.238 0.0033	27 14.952 9.7072	48
Compaq	7 5.2579 0.5772	5 3.6806 0.473	11 8.5179 0.7233	20 19.034 0.0491	10 16.51 2.5669	53
Dell	16 21.429 1.3752	12 15 0.6	34 34.714 0.0147	80 77.571 0.076	74 67.286 0.67	216
HP	15 11.607 0.9918	6 8.125 0.5558	21 18.804 0.2566	45 42.018 0.2117	30 36.446 1.1402	117
Toshiba	10 6.9444 1.3444	11 4.8611 7.7525	14 11.25 0.6722	19 25.139 1.4991	16 21.806 1.5457	70
Total	50	35	81	181	157	504

Statistics for Table of Brand by Importance

Statistic	DF	Value	Prob
Chi-Square	16	41.8850	0.0004
Likelihood Ratio Chi-Square	16	43.0402	0.0003
Mantel-Haenszel Chi-Square	1	15.1592	<.0001
Phi Coefficient		0.2883	
Contingency Coefficient		0.2770	
Cramer's V		0.1441	

Sample Size = 504

Laptop purchase example  
Effect of perception of the importance of brand choice  
Two-way frequencies of Brand and Importance

The FREQ Procedure

Brand	Frequency	Cumulative Frequency
Apple	48	48
Compaq	53	101
Dell	216	317
HP	117	434
Toshiba	70	504

Chi-Square Test  
for Equal Proportions

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Chi-Square 193.9960  
DF 4  
Pr > ChiSq <.0001

Sample Size = 504