

STAT 615

(Baron)

Contingency Tables and chi-square tests

```
DATA C;
INFILE pulse;
INPUT ROW PULSE1 PULSE2 RAN SMOKES SEX HEIGHT WEIGHT ACTIVITY;
```

```
proc freq data=c;
tables (sex smokes)*activity / chisq;
```

```
RUN;
```

TABLE OF SEX BY ACTIVITY

SEX	ACTIVITY				
Frequency	0	1	2	3	Total
Percent					
Row Pct					
Col Pct					
1	1	5	35	16	57
	1.09	5.43	38.04	17.39	61.96
	1.75	8.77	61.40	28.07	
	100.00	55.56	57.38	76.19	
2	0	4	26	5	35
	0.00	4.35	28.26	5.43	38.04
	0.00	11.43	74.29	14.29	
	0.00	44.44	42.62	23.81	
Total	1	9	61	21	92
	1.09	9.78	66.30	22.83	100.00

STATISTICS FOR TABLE OF SEX BY ACTIVITY

Statistic	DF	Value	Prob
Chi-Square	3	3.118	0.374

Sample Size = 92

WARNING: 38% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

$$(r-1)(c-1) = (1)(3)$$

$$n_{1.} = \sum_j n_{1j}$$

$$n_{1.}/n_{..}$$

$$n_{2.}$$

$$n_{2.}/n_{..}$$

$$n_{..}$$

$$p\text{-value} = P_{H_0} \{ \chi^2 > 3.118 \}$$

χ^2 - statistic

TABLE OF SMOKES BY ACTIVITY

SMOKES	ACTIVITY				
Frequency	0	1	2	3	Total
Percent					
Row Pct					
Col Pct					
1	1	3	19	5	28
	1.09	3.26	20.65	5.43	30.43
	3.57	10.71	67.86	17.86	
	100.00	33.33	31.15	23.81	
2	0	6	42	16	64
	0.00	6.52	45.65	17.39	69.57
	0.00	9.38	65.63	25.00	
	0.00	66.67	68.85	76.19	
Total	1	9	61	21	92
	1.09	9.78	66.30	22.83	100.00

The SAS System

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STATISTICS FOR TABLE OF SMOKES BY ACTIVITY

Statistic	DF	Value	Prob
Chi-Square	3	2.771	0.428

Sample Size = 92

WARNING: 38% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

} χ^2 test may be inaccurate.

Therefore, combine the first two columns (on the back)