

Warmup 1/7/2013

Do a χ^2 -test using this data.

Note: This is the observed table (f_o).

H_0 : There is no relation b/w Intell level & CS

H_a : There is a relation b/w Intell level & CS

The following table is a result of a major investigation considering the two factors of intelligence level and cigarette smoking.

$df = (row - 1) \times (column - 1)$ f_o

$df = 4$

	Intelligence level				
	low	average	high	very high	
Non smoker	279	386	96	2	763
Medium level smoker	123	201	58	5	387
Heavy smoker	100	147	64	2	313
f_e	502	734	227		1463

	Low	Average	High	Very High
Non-smoker	261.81	382.80	118.39	
Medium level Smoker	132.79	194.16	60.05	
Heavy Smoker	107.40	157.63	48.57	

We reject the Null $\chi^2_{calc} = 13.16278 > \chi^2_{crit} = 9.488$

There seems to be relationship between Intelligence level and Cigarette Smoking

fo	fe	fo-fe	(fo-fe) ²	$\frac{[(fo-fe)^2]}{fe}$
279	261.81	17.2	295.84	1.13
386	382.80	3.2	10.24	0.02675
98	118.4	-20.4	416.16	3.5149
123	132.8	-9.8	96.04	0.723
201	194.2	6.8	46.24	0.238
63	60	3	9	0.15
100	107.40	-7.4	54.76	0.5099
147	157.03	-10.03	100.601	0.6406
66	48.6	17.4	302.76	6.23

$$\chi^2_{\text{calc}} = 13.16278$$

