

Warmup 1/7/2013

Do a χ^2 -test using this data.

Note: This is the observed table (f_o).

H_o : Smoking & Intel level is indep.
 H_a : Smoking & Intell level is dependant

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

	Intelligence level				Total
	low	average	high	very high	
Non smoker	279	386	96	98	763
Medium level smoker	123	201	58	63	387
Heavy smoker	100	147	64	60	313
	502	734	227	227	1463

	Low	Average	High & VH	Very High
Non-smoker	261.81	382.86	118.39	
Medium level Smoker	132.79	194.16	60.05	
Heavy Smoker	261.81	157.03	48.57	

$\chi^2_{calc} = 12.99 > \chi^2_{crit} = 9.488$
 we reject the H_o &
 Smoking & Intell level is related

f_o	f_e	$f_o - f_e$	$(f_o - f_e)^2$	$\frac{(f_o - f_e)^2}{f_e}$
279	261.8	17.2	295.84	1.13
386	382.8	3.2	10.24	0.027
98	118.4	-20.4	416.16	3.515
123	132.8	-9.8	96.04	0.723
201	197.2	3.8	14.44	0.073
63	60	3	9	0.15
100	107.4	-7.4	54.76	0.5099
147	157.	-10	100	0.637
66	48.6	17.4	302.76	6.23
				<u>12.99</u>