Samantha Inneo

I pledge my honor that I have abided by the Stevens Honor System - Samantha Inneo

$n = 180$ people

2)

Version	# people	Would buy	Wouldn't buy	
First	65	25	40	65
Second	30	20	10	30
Third	85	54	31	85
		99	81	

1) Random Variables: version viewed - outcomes: (First, Second, Third)
decision to buy - outcomes: (would buy, wouldn't buy)

3) Expected Values = $E_{RC} = \frac{n_R(n_C)}{n}$

$E_{12} = \frac{65(99)}{180} = 35.75$ $\quad E_{13} = \frac{65(81)}{180} = 29.25$

$E_{22} = \frac{30(99)}{180} = 16.50$ $\quad E_{23} = \frac{30(81)}{180} = 13.5$

$E_{23} = \frac{85(99)}{180} = 46.75$ $\quad E_{33} = \frac{85(81)}{180} = 38.25$

Version	# people	Expected Would buy	Expected wouldn't buy
First	65	35.75	29.25
Second	30	16.50	13.50
Third	85	46.75	38.25

4) $\chi^2 = \Sigma \frac{(O_i - E_i)^2}{E_i}$

$\frac{(25-35.75)^2}{35.75} + \frac{(20-16.50)^2}{16.50} + \frac{(54-46.75)^2}{46.75} +$

$\frac{(40-29.25)^2}{29.25} + \frac{(10-13.50)^2}{13.50} + \frac{(31-38.25)^2}{38.25}$

$3.233 + .742 + 1.124 + 3.951 + .907 + 1.374 = \boxed{11.331}$

5) $H_0: \mu_{First} = \mu_{Second} = \mu_{Third}$, all equally likely to buy

$H_a: \mu_{First} \neq \mu_{Second} \neq \mu_{Third}$, one version makes viewers mor likely to buy

Chi-squared Distribution

Degree of freedom: $(r-1)(c-1) = (3-1)(2-1) = 2$

6) 1- pchisq (11.331, 2) $\quad p = .00346$

7) $0 < \alpha < 1$ $\quad .003 <$ significant alpha, so we reject that they are all equally likely to buy.

8) Based off the data given, the three versions have different effectiveness on buying, so we reject our hypothesis.

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