

Crosstab of 2 by 3 table

| | <HS | HS | College | RM |
|-------------|---|--|--|---------|
| Recycle | 75 ($\frac{186 \times 163}{338} = 89.7$) | 50 ($\frac{186 \times 85}{338} = 46.8$) | 61 ($\frac{186 \times 90}{338} = 49.5$) | 186 |
| Not recycle | 88 ($\frac{152 \times 163}{338} = 73.3$) | 35 ($\frac{152 \times 85}{338} = 38.2$) | 29 ($\frac{152 \times 90}{338} = 40.5$) | 152 |
| CM | 163 | 85 | 90 | N = 338 |

- 1) Null hypothesis: education has nothing to do with recycling
- 2) Computing the expected frequency

$$F_E = \frac{RM \times CM}{N}$$

- 3) Computing chi-square

$$\chi^2 = \sum \frac{(F_O - F_E)^2}{F_E}$$

$$\chi^2 = \frac{(75 - 89.7)^2}{89.7} + \frac{(50 - 46.8)^2}{46.8} + \frac{(61 - 49.5)^2}{49.5} + \frac{(88 - 73.3)^2}{73.3} + \frac{(35 - 38.2)^2}{38.2} + \frac{(29 - 40.5)^2}{40.5} = 11.8$$

- 4) Computing the df

$$df = (R - 1)(C - 1)$$

$$df = (3 - 1)(2 - 1) = 2$$

5) Determine the p value

$P < .01$

6) Decision regarding the null hypothesis, type of error committed

Reject the null hypothesis, committing type I error

Size of hometown and id with school

| | large | Small | RM |
|------|-----------|------------|--------|
| High | 8 (10) | 12 (10) | 20 |
| low | 7 (5) | 3 (5) | 10 |
| CM | 15 | 15 | N = 30 |

- 1) Null hypothesis: hometown size has nothing to do with school identification
- 2) Computing the expected frequency

$$F_E = \frac{RM \times CM}{N}$$

- 3) Computing chi-square

$$\chi^2 = \sum \frac{(F_O - F_E)^2}{F_E}$$

$$\chi^2 = 2.4$$

- 4) Computing the df

$$df = (R - 1)(C - 1)$$

$$df = (2 - 1)(2 - 1) = 1$$

5) Determine the p value

$P > .05$

6) Decision regarding the null hypothesis, type of error committed

Do not reject the null hypothesis, committing type II error