PAO1. 2019, PARTIAL 3

(3)

$E = \frac{\text{ROW} \times \text{COLUMN}}{N}$

	H		S		
MAN	13	(10)	7	(10)	20
WOM	7	(10)	13	(10)	20
	20		20		40

(1) χ^2 because:
- Two nominal variables (18)
- $E > 5$ in all the cells
- Independent groups

$$\chi^2 = \frac{(O-E)^2}{N} = \frac{(13-10)^2}{10} + \frac{(7-10)^2}{10} + \frac{(7-10)^2}{10} + \frac{(13-10)^2}{10} = \frac{9}{10} + \frac{9}{10} + \frac{9}{10} + \frac{9}{10} = 3.6$$

(4) $df = (\text{rows}-1)\cdot(\text{columns}-1) = (2-1)\cdot(2-1) = 1$

$\chi^2_t = 3.84$

(5) χ^2_{emp} $\quad$ χ^2_t

$3.6 < 3.84$ — (H0) There are not differences between groups

(8) $N = 15$ (number of points in the scatter plot)

$$t = \frac{|r_{xy}|}{\sqrt{\frac{1-r_{xy}^2}{N-2}}} = \frac{|0.991|}{\sqrt{\frac{1-0.991^2}{15-2}}} = \frac{0.991}{\sqrt{\frac{1-0.98}{13}}} = \frac{0.991}{\sqrt{0.001}} = \frac{0.991}{0.03} = 33.03$$

(0.02)

t_{emp} $\quad$ t_t

$33.03 < 2.16$ — ~~H0~~ It's significant

$t_t = t(\alpha, N-2) = t(0.05, 13) = 2.16$

(9) $1 - R^2 = 1 - 0.98 = 0.02 \rightarrow 2\%$

(10) sig.
$R^2 = 0.98$ high } The effect probably exists