

ECO 2200 Quiz 1

1. The information below is on 5 individuals. The variable x denotes the number of donuts consumed per week; y represents weight in pounds. Find the correlation coefficient between x and y .

Obs. No.	x	y	$(x - \bar{x})$	$(y - \bar{y})$	$(x - \bar{x})^2$	$(y - \bar{y})^2$
1	5	75				
2	20	125				
3	10	160				
4	15	240				
5	0	200				
Total:	$\sum_{i=1}^5 x_i$	$\sum_{i=1}^5 y_i$	$\sum_{i=1}^5 (x_i - \bar{x})$	$\sum_{i=1}^5 (y_i - \bar{y})$	$\sum_{i=1}^5 (x_i - \bar{x})^2$	$\sum_{i=1}^5 (y_i - \bar{y})^2$

$\left(\frac{x - \bar{x}}{s_x}\right)$	$\left(\frac{y - \bar{y}}{s_y}\right)$	$\left(\frac{x - \bar{x}}{s_x}\right)\left(\frac{y - \bar{y}}{s_y}\right)$
$\sum_{i=1}^5 \left(\frac{x_i - \bar{x}}{s_x}\right)$	$\sum_{i=1}^5 \left(\frac{y_i - \bar{y}}{s_y}\right)$	$\sum_{i=1}^5 \left(\frac{x_i - \bar{x}}{s_x}\right)\left(\frac{y_i - \bar{y}}{s_y}\right)$

2. Suppose, in a future job, you are asked to calculate a correlation coefficient between a product's sales and advertising expenditure. If you find a correlation coefficient close to zero, would you recommend examining a scatter plot of the data?

3. Can you provide an example of 2 variables x and y where the variables are correlated but one does not cause the other?