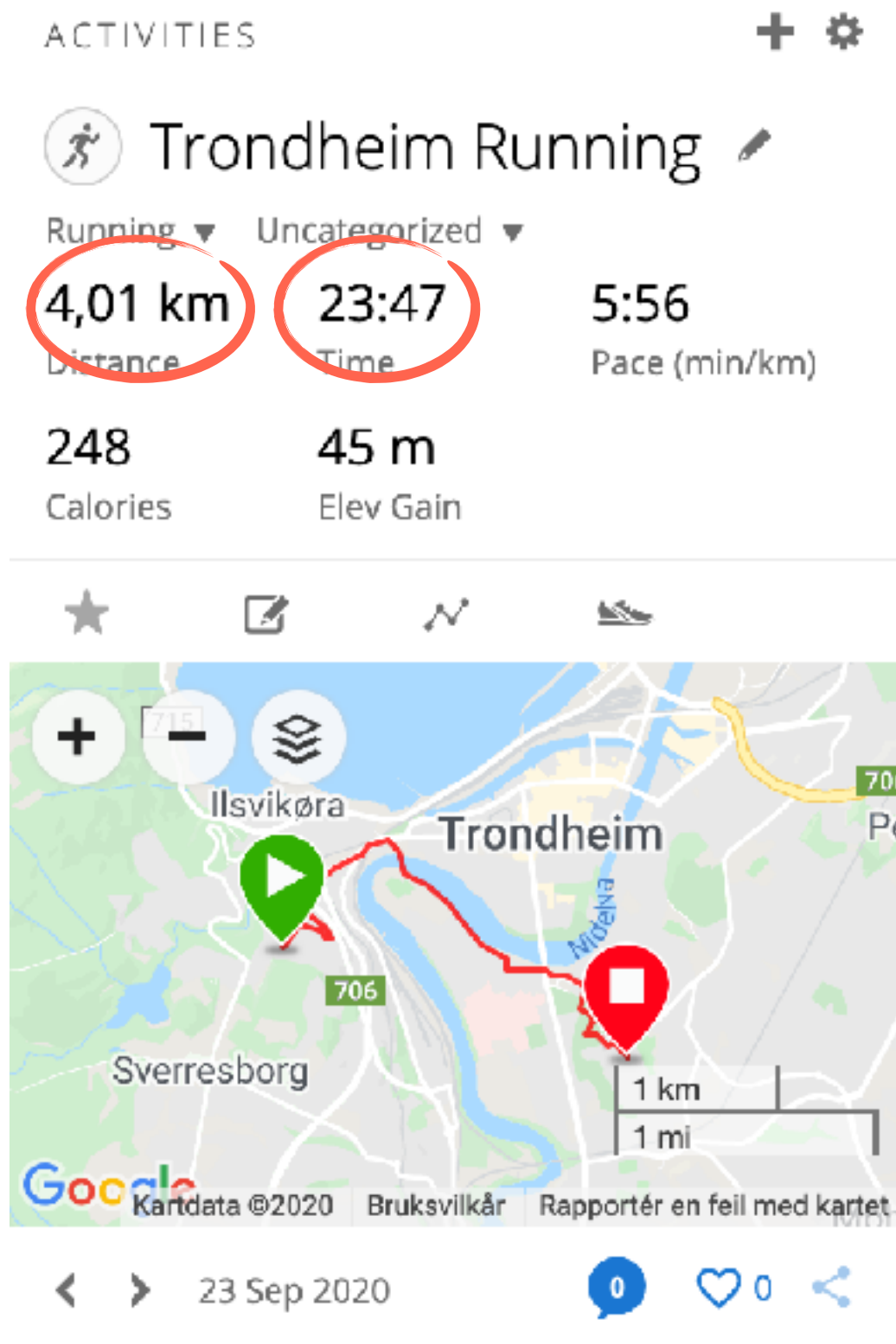


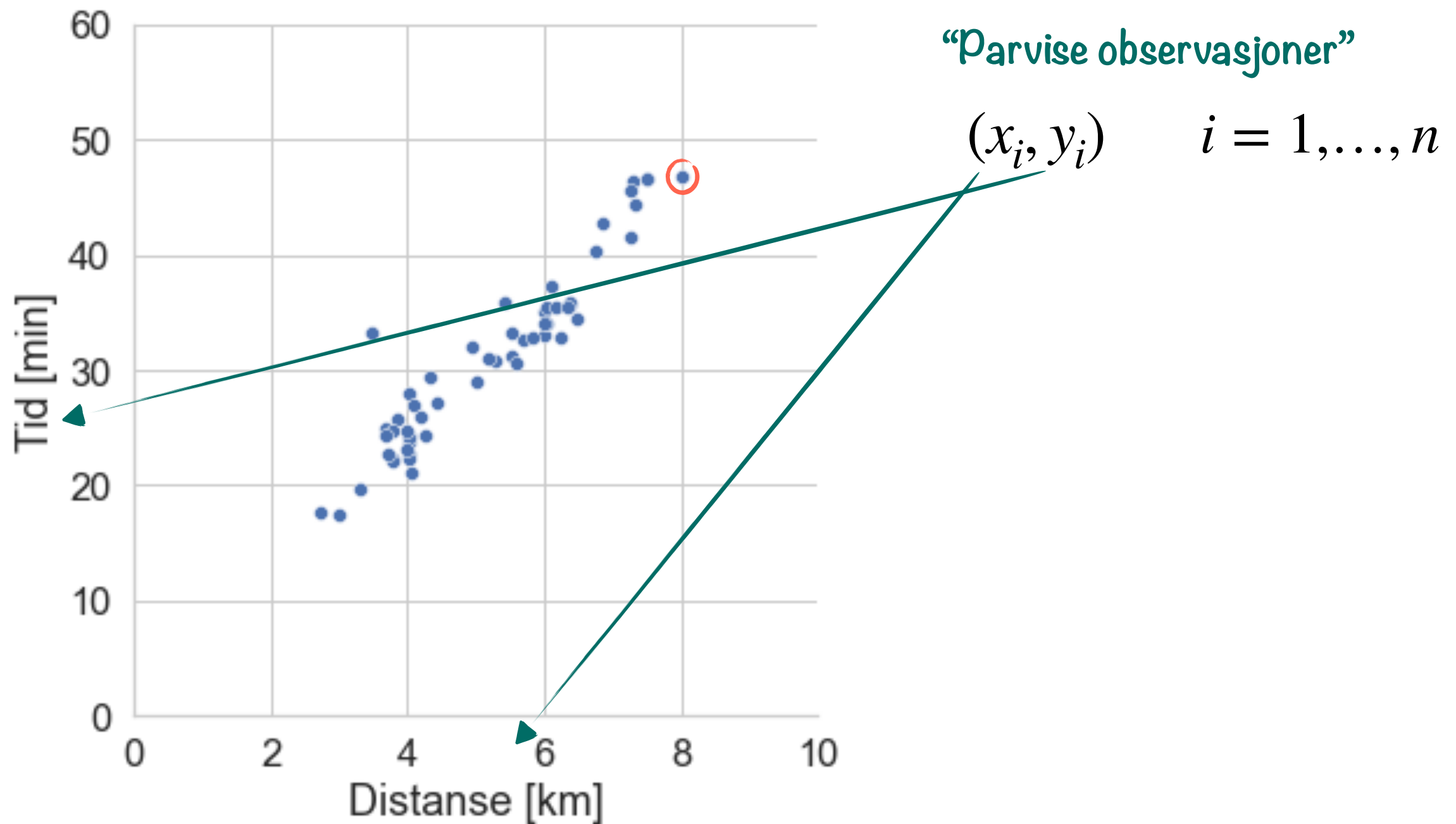
Beskrivende statistikk: Minste kvadratsums metode og korrelasjonskoeffisienten

**Thea Bjørnland
Institutt for matematiske fag
NTNU**

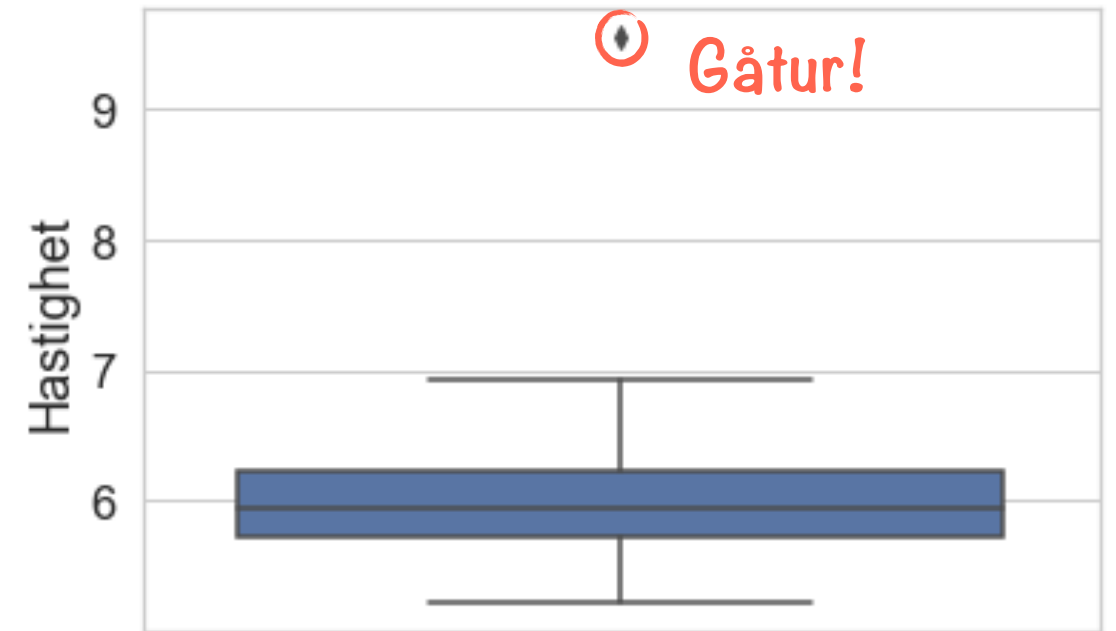
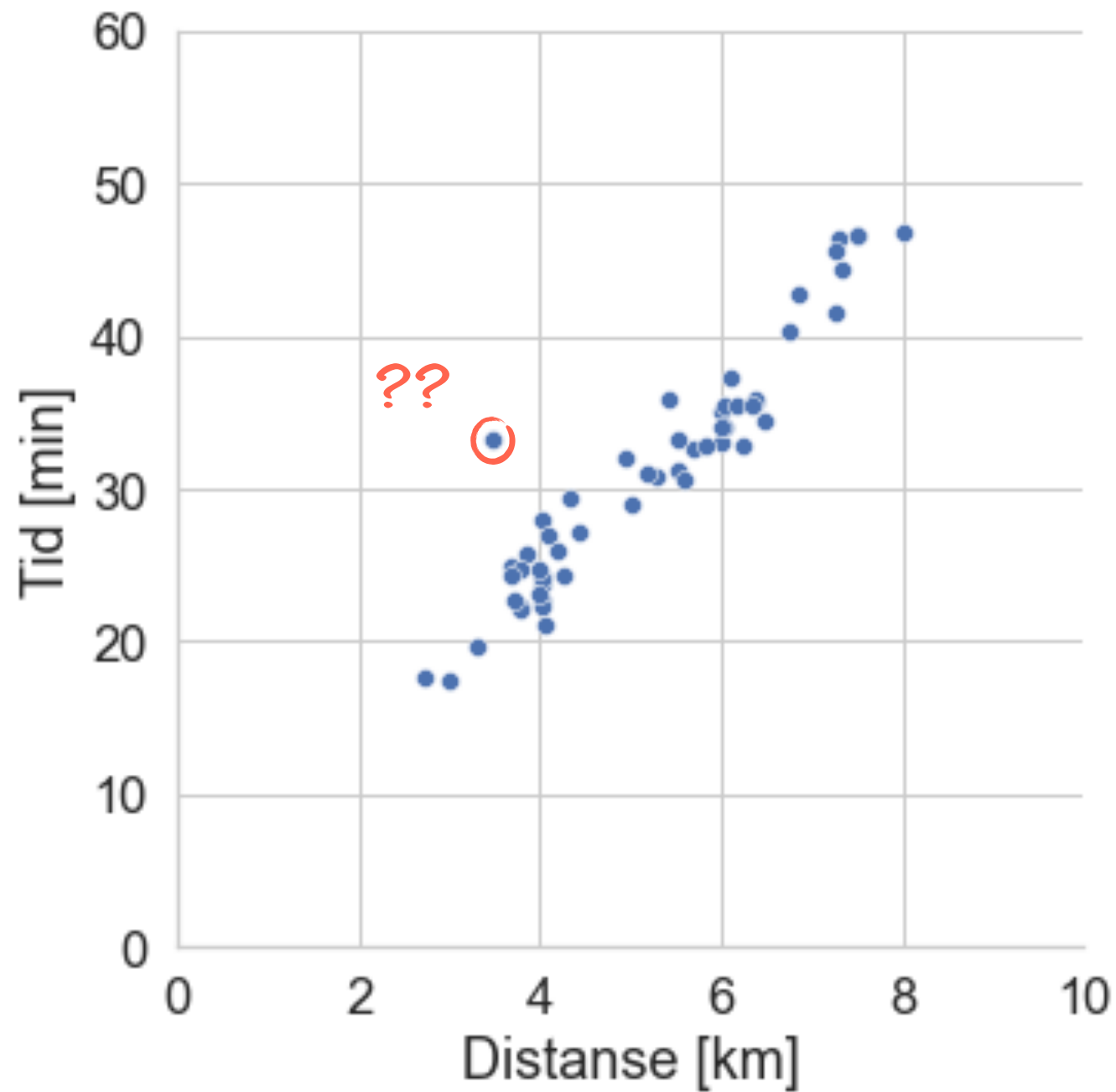
Eksempel: Treningsdata



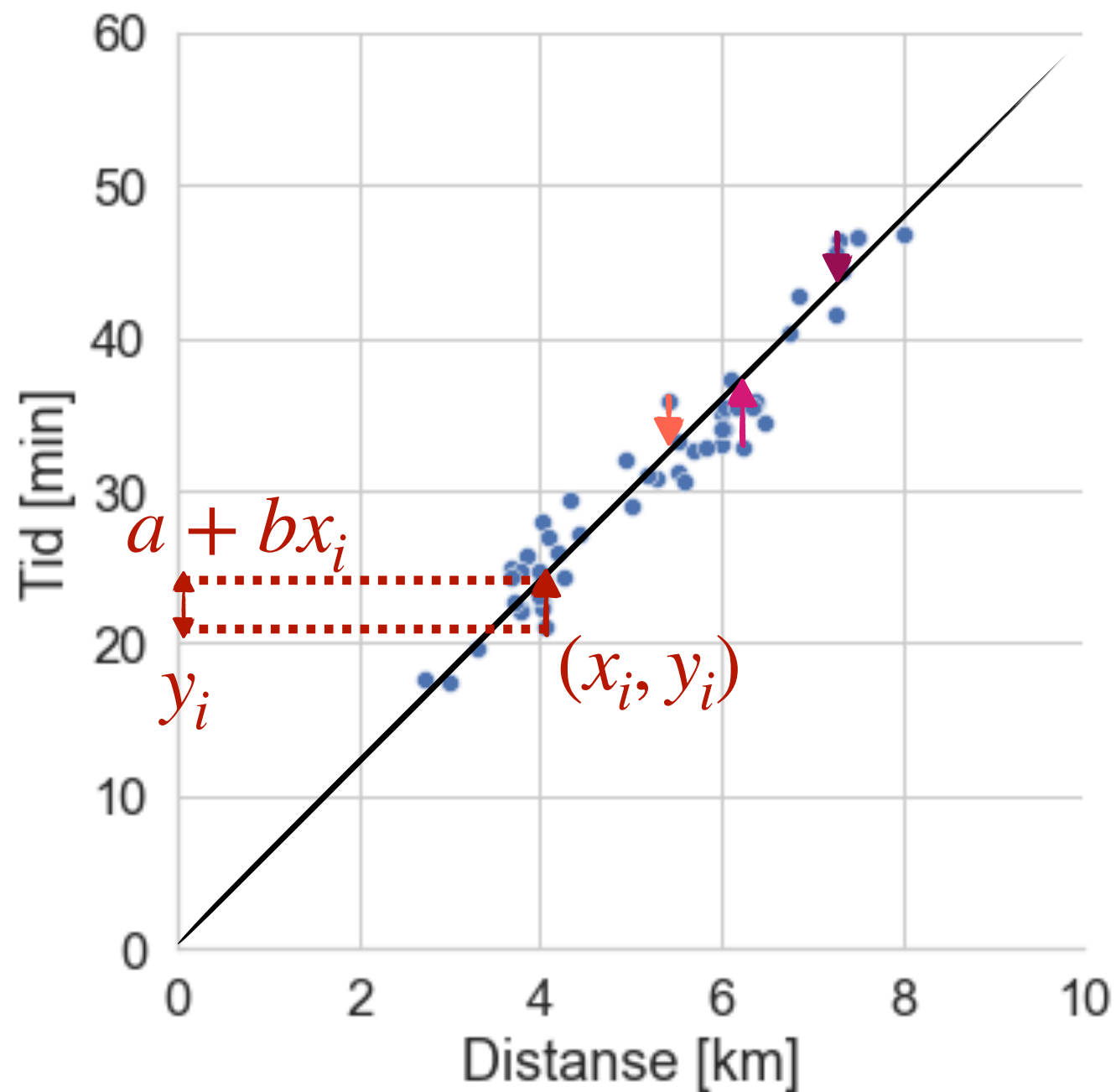
Kryssplott av parvise observasjoner



Uteligger i datasettet?

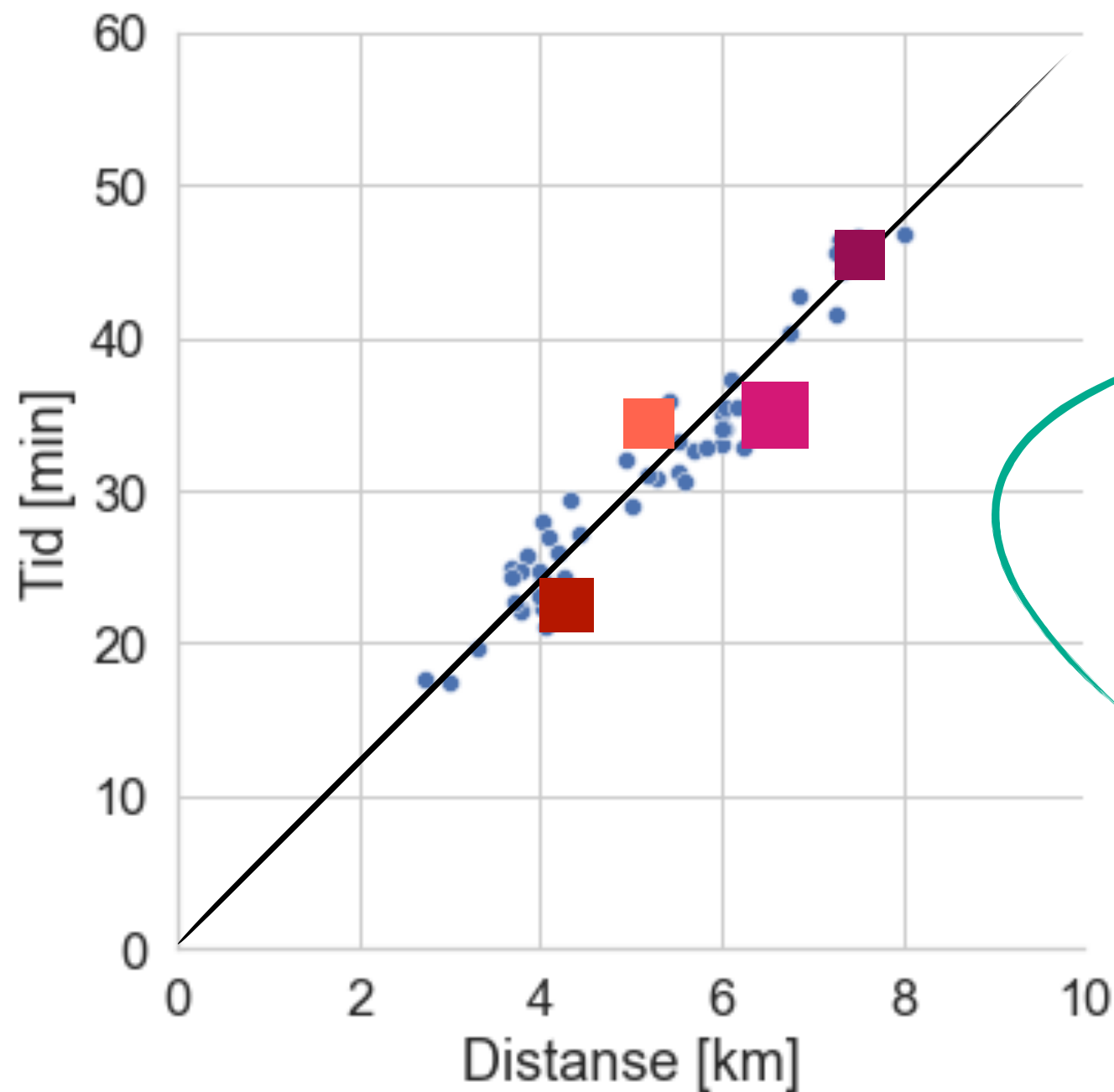


Minste kvadratsums rette linje



$$y = a + bx$$

Minste kvadratsums rette linje



$$y = a + bx$$

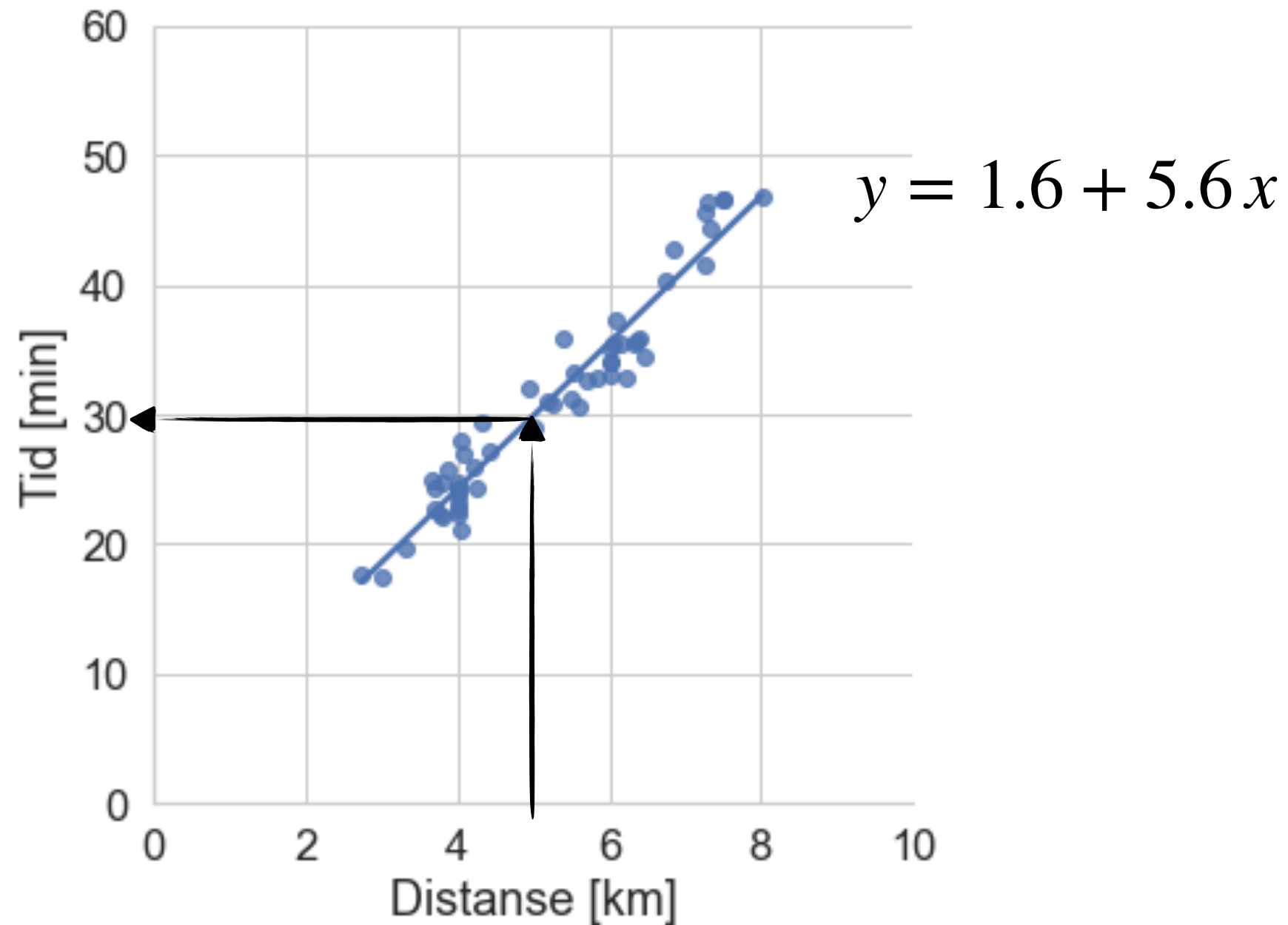
Finn a og b som minimerer:

$$\sum_{i=1}^n (y_i - (a + bx_i))^2$$

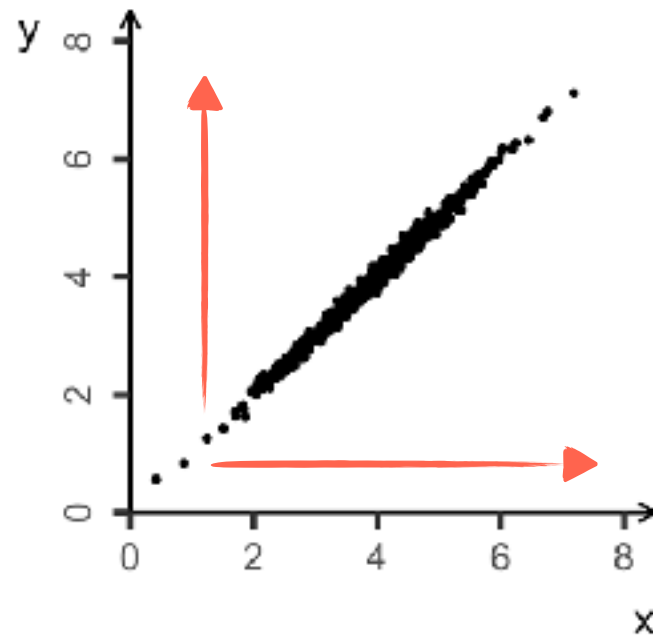
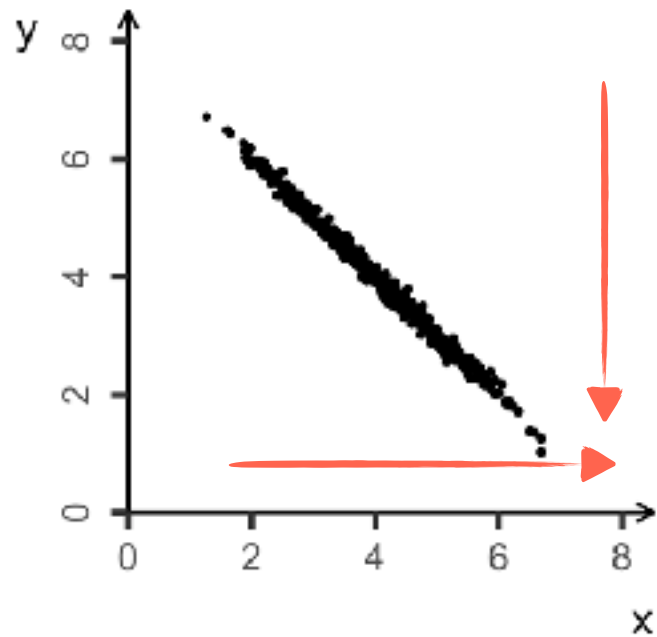
$$b = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

$$a = \bar{y} - b\bar{x}$$

Minste kvadratsums rette linje

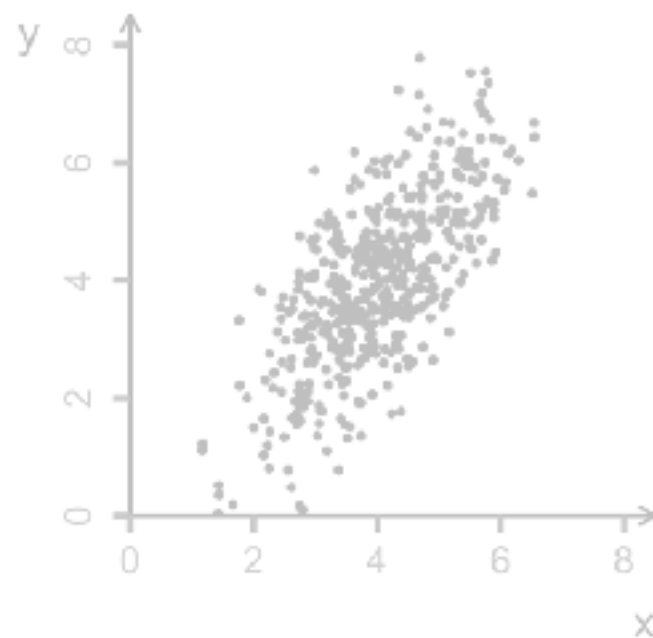
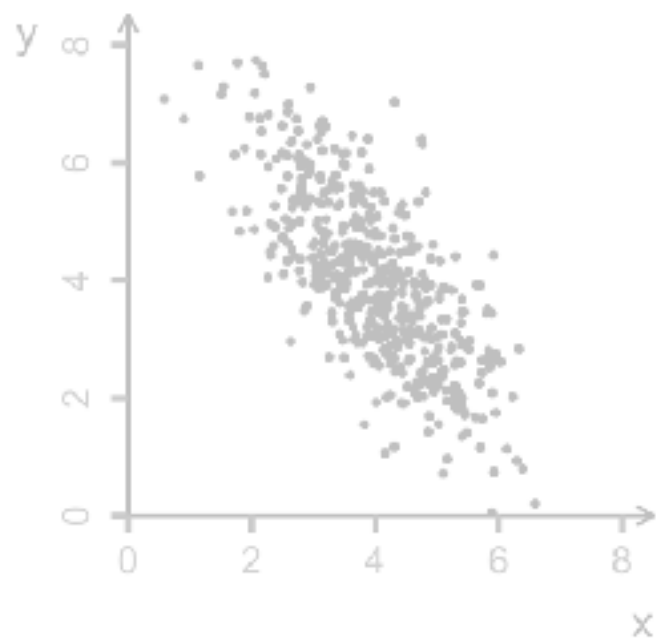


Korrelasjonskoeffisienten

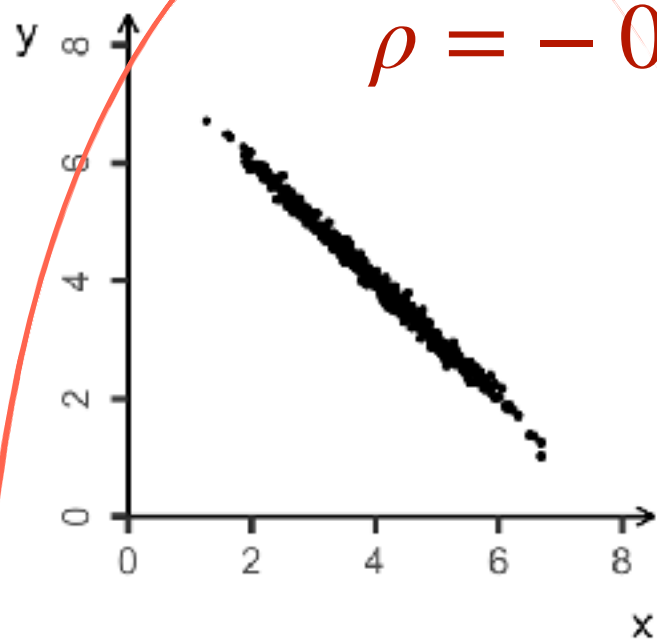


“Graden av
lineær sammenheng
mellom x og y”

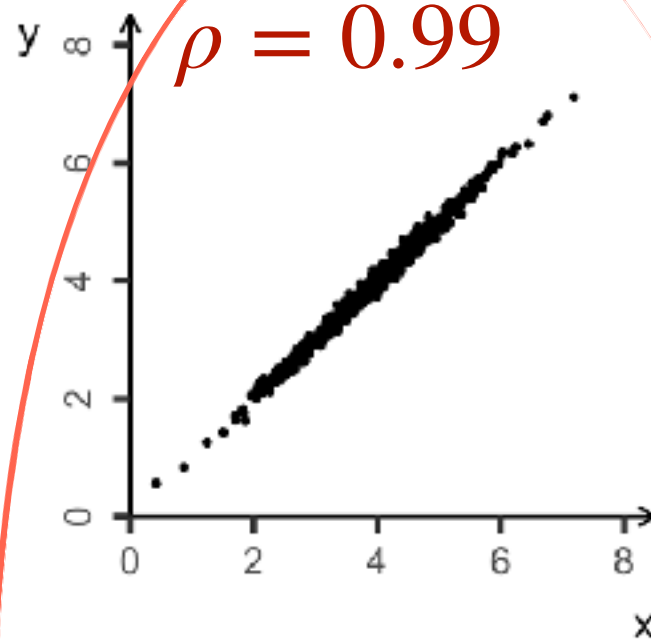
ρ



Korrelasjonskoeffisienten



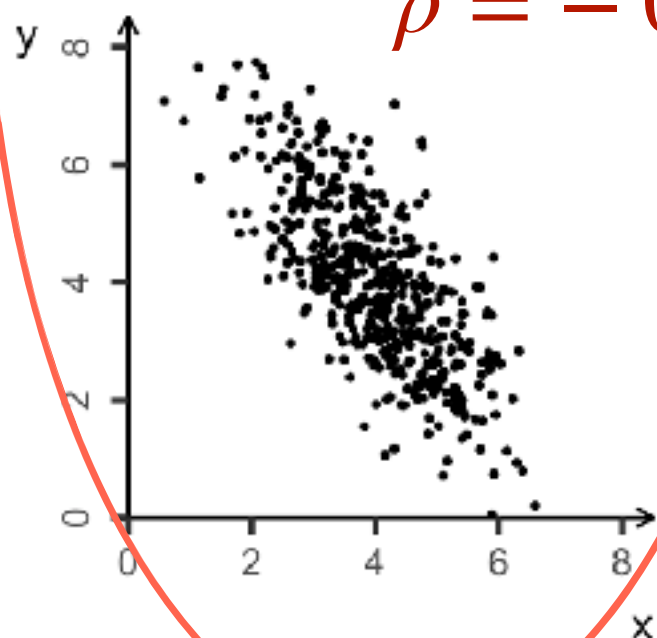
$$\rho = -0.99$$



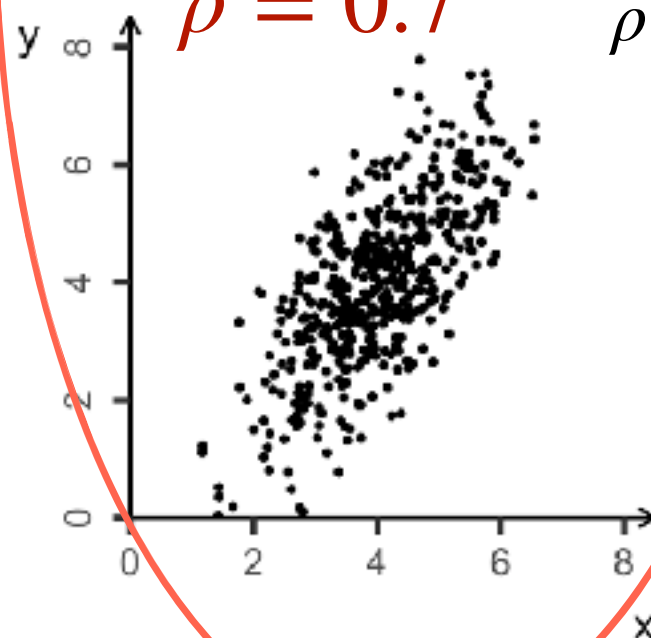
$$\rho = 0.99$$

“Graden av
lineær sammenheng
mellom x og y”

$$-1 \leq \rho \leq 1$$



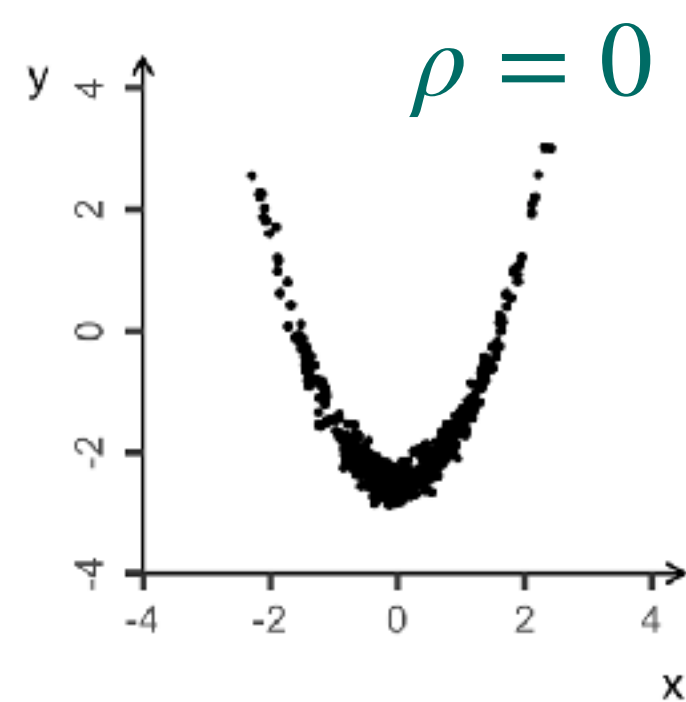
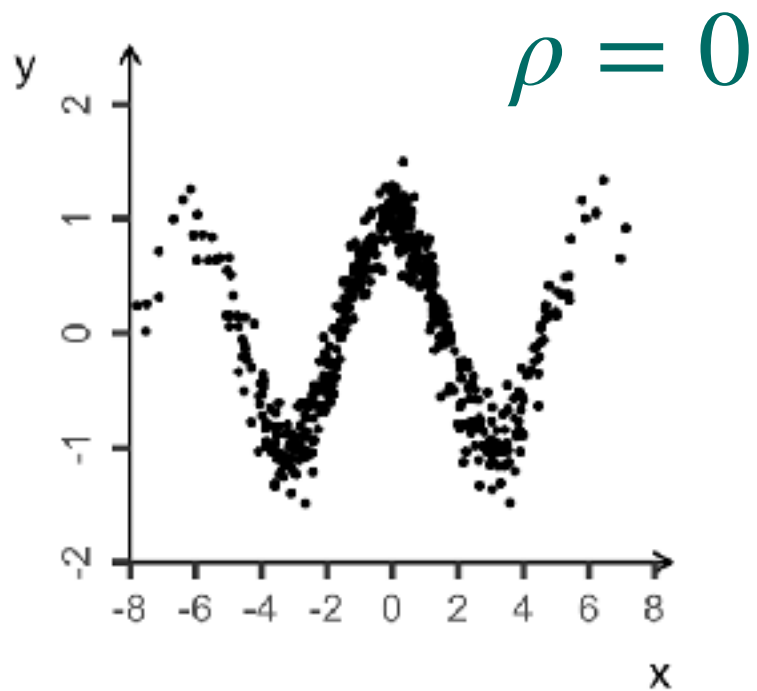
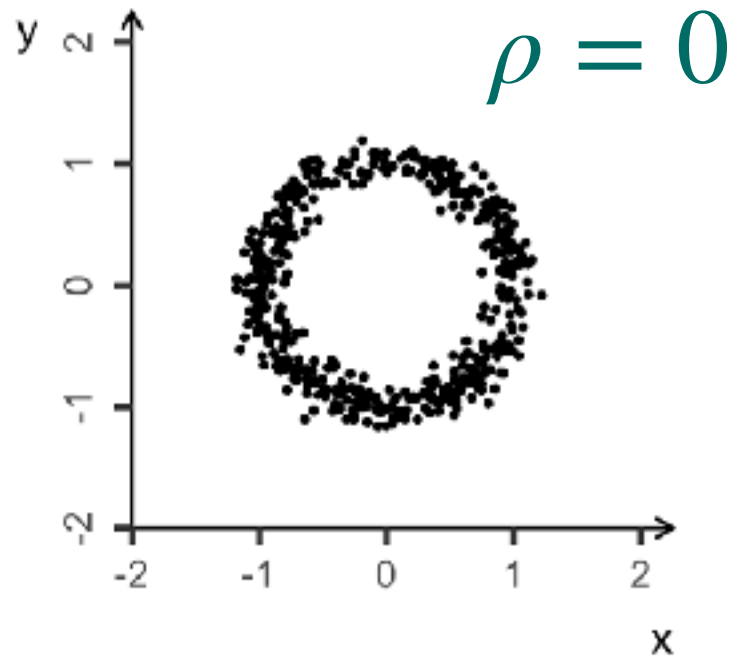
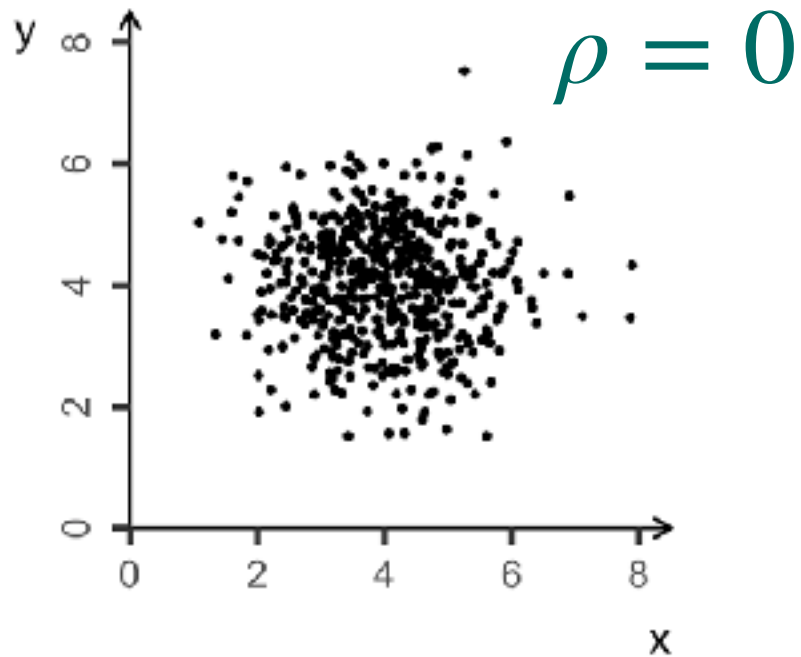
$$\rho = -0.7$$



$$\rho = 0.7$$

$$\rho = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2} \sqrt{\sum_{i=1}^n (y_i - \bar{y})^2}}$$

Korrelasjonskoeffisienten



Korrelasjonskoeffisienten

