

Reptisjon veke 9

Fordeling til ekstremvariable

$$V = \max(X_1, \dots, X_n)$$

$$F_V(x) = P(\max(X_1, \dots, X_n) \leq x) = P\left(\bigcap_{i=1}^n X_i \leq x\right) = F_X(x)^n$$

$$U = \min(X_1, \dots, X_n)$$

$$F_U(x) = P(\min(X_1, \dots, X_n) \leq x) = 1 - P\left(\bigcap_{i=1}^n X_i \geq x\right) = 1 - (1 - F_X(x))^n$$

Y'_i = den i -te største

$$P(Y'_i \leq y) = P(i \text{ eller fleire } Y_i \leq y) = P(Z_{B(n, F_Y(y))} \geq i)$$

$$= \sum_{k=i}^n \binom{n}{k} F_Y(y)^k (1 - F_Y(y))^{n-k}$$

Betinga fordeling

$$p_{x|y}(x) = \frac{p_{X,Y}(x,y)}{p_Y(y)}, \quad X, Y \text{ diskret}$$

$$f_{x|y}(x) = \frac{f_{X,Y}(x,y)}{f_Y(y)}, \quad X, Y \text{ kontinuerleg}$$

$$E[X|Y = y] = \sum_x x p_{x|y}(x), \quad X, Y \text{ diskret}$$

$$E[X|Y = y] = \int_x x f_{x|y}(x) dx, \quad X, Y \text{ kontinuerleg}$$

$$\text{Var}[X|Y = y] = \sum_x (x - E[X|Y = y])^2 p_{x|y}(x), \text{ diskret}$$

$$\text{Var}[X|Y = y] = \int_x (x - E[X|Y = y])^2 f_{x|y}(x) dx, \text{ kontinuerleg}$$