

Soluzione esercizi su medie, quantili e variabilità

Statistica Sociale
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Quantili di una successione $M=[Np]$

(1) Np frazionario e M tale che $M < Np < M+1$: $x_p = x_{(M+1)}$

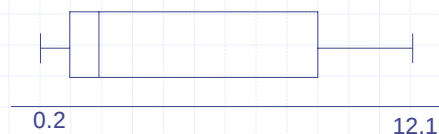
(2) Np numero intero $x_p \in [x_{(Np)}; x_{(Np+1)}]$

successione		succ. ordinata			Calcolo quantili			
u_i	voto	$u_{(n)}$	n	voto	P	Np	$M+1$	x_p
1	A	8	1	D	0.05	0.7	1	D
2	A	9	2	D	0.10	1.3	2	D
3	C	10	3	D	0.25	3.3	4	C
4	A	3	4	C	0.50	6.5	7	B
5	B	7	5	C	0.75	9.8	10	A
6	B	12	6	C	0.90	11.7	12	A
7	C	5	7	B	0.95	12.4	13	A
8	D	6	8	B				
9	D	13	9	B				
10	D	1	10	A				
11	A	2	11	A				
12	C	4	12	A				
13	B	11	13	A				

Contenuto proteico di 20 alimenti

- Media = $(0.2 + \dots + 12.3)/20 = 4.21$
- $M_e = [x_{(10)} + x_{(11)}]/2 = (1.8 + 2.1)/2 = 1.95$
- $20 \cdot 0.25 = 5 \rightarrow Q_1 = [x_{(5)} + x_{(6)}]/2 = (0.8 + 1)/2 = 0.9$
- $20 \cdot 0.75 = 15 \rightarrow Q_3 = [x_{(15)} + x_{(16)}]/2 = (8.1 + 9.4)/2 = 8.75$
- R (Range) = $x_{\max} - x_{\min} = 12.3 - 0.2 = 12.1$
- DI = $Q_3 - Q_1 = 8.75 - 0.9 = 7.85$

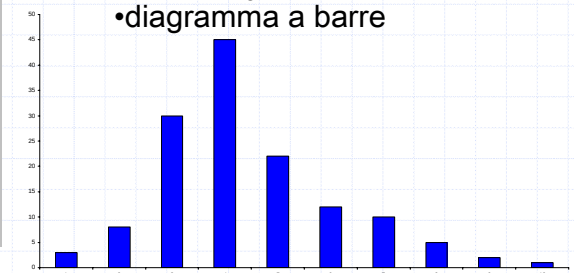
box-plot



Giorni di vacanza di 138 turisti

x_j	n_j	f_j	F_j
1	3	0.02	0.02
2	8	0.06	0.08
3	30	0.22	0.3
4	45	0.33	0.62
5	22	0.16	0.78
6	12	0.09	0.87
7	10	0.07	0.94
8	5	0.04	0.98
9	2	0.01	0.99
10	1	0.01	1

- Media = $\sum x_j f_j = 4.41$
- $M_e = 4$
- $Q_1 = 3, Q_3 = 5$
- diagramma a barre



Box-plot

