Assignment Mean / Conf. Interval / Lin. Regression

(12.3.) Poisson-Verteilung $f(x) = \lambda^x \frac{e^{-\lambda}}{x!}$ $x = 0, 1, ..$

→ No von I/O-Requests auf eine Disk! (falsch im Buch)

mean: $\mu = E(x) = \sum_{i=0}^{\infty} p_i x_i = \sum_{x=0}^{\infty} \lambda^x \frac{e^{-\lambda}}{x!} \cdot x = \sum_{x=1}^{\infty} \lambda^x \frac{e^{-\lambda}}{(x-1)!}$

$$= \lambda e^{-\lambda} \left[\sum_{x=1}^{\infty} \frac{\lambda^{(x-1)}}{(x-1)!} \right] = \lambda e^{-\lambda} \cdot e^{\lambda} = \underline{\underline{\lambda}}$$

variance: $Var(x) = \sigma^2 = E[(x-\mu)^2] = \sum_{i=0}^{n} p_i (x_i - \mu)^2$ $(\mu = \lambda)$

$$= \sum_{0}^{n} \lambda^x \frac{e^{-\lambda}}{x!} (x^2 - 2\lambda x + \lambda^2) \quad \dots\dots$$

aber es gilt auch $\sigma^2 = E(X^2) - (E(X))^2$

$$E(X^2) = \sum_{x=0}^{\infty} x^2 \frac{\lambda^x e^{-\lambda}}{x!} = \underset{\text{wie oben}}{\dots} = \lambda^2 + \lambda$$

also $\sigma^2 = \lambda^2 + \lambda - (\lambda)^2 = \underline{\underline{\lambda}}$

C.O.V. : $\frac{\sigma}{\mu} = \frac{\sqrt{\lambda}}{\lambda} = \underline{\underline{\frac{1}{\sqrt{\lambda}}}}$

coeff. of variation

(12.9) Durchschnitts-Computer-Konfiguration

a	CPU type	Mode
b	Mem size	Median
c	Disk type	Mode
d	No of peripherals	Median
e	Cost	Median

Data categorial — y → Mode

↓ n

Total of interest — y → Mean

↓ n

Distribution skewed — y → Median

↓ n

Mean

(12.11). No Disk I/Os durch versch. Programme geg.

$\{23, 33, 14, 15, 42, 28 \dots\}$

→ Arithmetic Mean weil die Daten in kleinem Rahmen

x_{max}/x_{min} ist klein

12.15. %

(12.15.) Quantile-Quantile Plot:

→ Sortieren der Sample Data y_i

$i \qquad q_i = \frac{i-0.5}{n} \qquad x_i = 4.91[q_i^{0.14} - (1-q_i)^{0.14}] \qquad y_i$

(f. Normalverteilung)

1

2

3

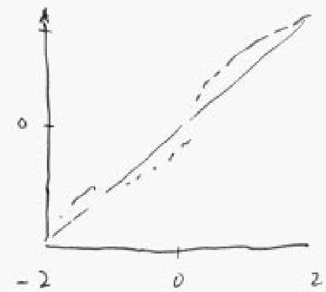
4

⋮

. . . .

Plot Fig 20.2.

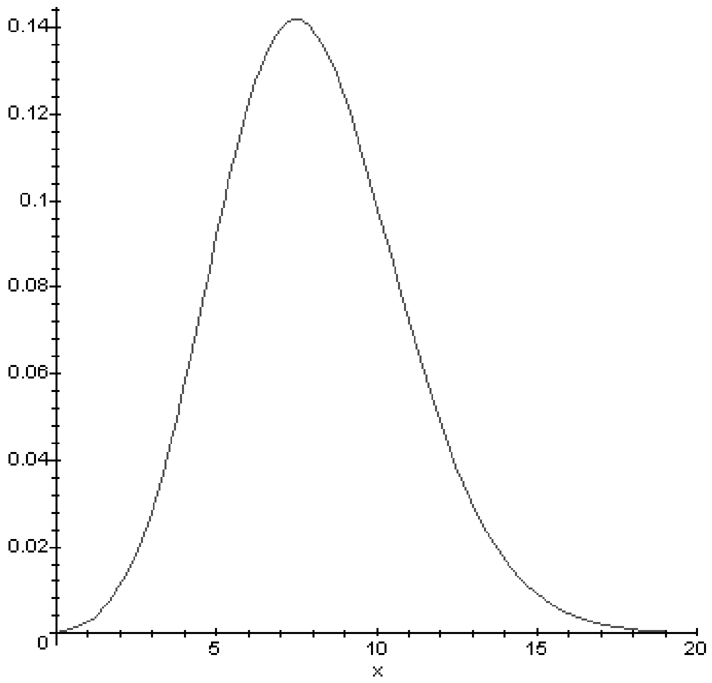
$n = 60$



→ Fehler scheinen normalverteilt zu sein.

12.3:

p := lambda^x*exp(-lambda)/x!



12.9:

Arith	26.90909
Geometric Mean	25.02413
Median	28