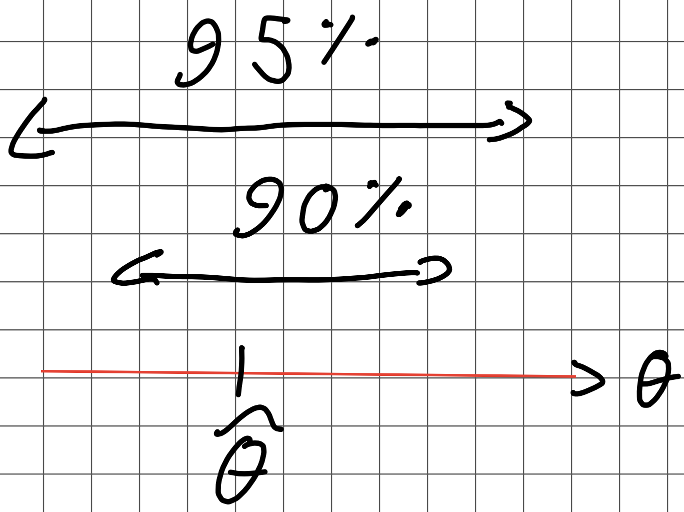
data → interval $[A,B]$
omkring $\hat{\theta}$ som med
konfidens (sandsynlighed)
$(1-\alpha)\,100\%$ indeholder θ

<u>normalt</u> $\alpha = 0{,}0 \quad (1-\alpha)\% = 99\%$

$\alpha = 0{,}05 \quad (1-\alpha)\% = 95\%$

$\alpha = 0{,}1 \quad (1-\alpha)\% = 90\%$



for 100% → skal vi gå fra $-\infty$ til ∞

ønskes smalt CI:

- lavere konfidens, $1-\alpha$
- større stikprøve

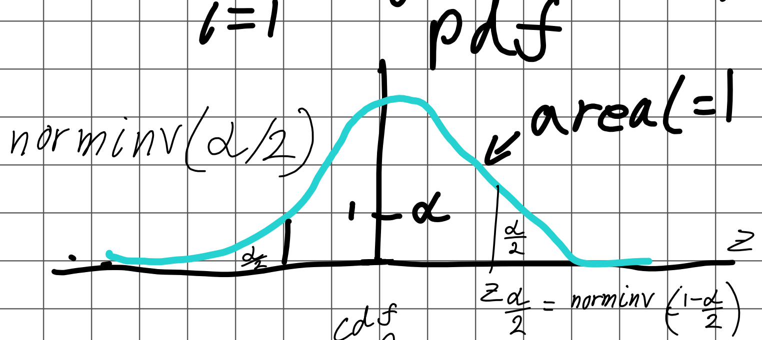
Case

$X_1 \dots X_n$ uafhængige $X_i \sim N(\mu, \sigma$

CI for μ^2

Estimat $\hat{\mu} = \overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i \sim N(\mu, \frac{\sigma^2}{n})$

$$Z = \frac{\hat{\mu} - \mu}{\frac{\sigma}{\sqrt{n}}} \sim N(0,1)$$



$$P\left(-z_{\frac{\alpha}{2}} < \frac{\hat{\mu}-\mu}{\frac{\sigma}{\sqrt{n}}} < z_{\frac{\alpha}{2}}\right) =$$

$= 1 - \alpha$

CI for μ: $[\bar{x} \pm z_{\frac{\alpha}{2}} \cdot \frac{\sigma}{\sqrt{n}}]$

$\alpha = 0{,}05 = 5\%$ -> er standard