Repetition week 45

Interval Estimator

$$\left[L(\boldsymbol{X}),U(\boldsymbol{X})\right]$$

Interval Estimate

$$\left[L(\boldsymbol{x}),U(\boldsymbol{x})\right]$$

Coverage Probability

$$P\left(\theta\in\left[L(\boldsymbol{X}),U(\boldsymbol{X})\right]\right)$$

Confidence coefficient

$$\inf_{\theta} P\left(\theta\in\left[L(\boldsymbol{X}),U(\boldsymbol{X})\right]\right)$$

Methods of Construction

Inverting a test $H_0: \theta = \theta_0 \quad H_1: \theta \neq \theta_0$

$$A(\theta_0) = \{ \boldsymbol{x} : \boldsymbol{x} \in R^C \}$$

$$C(\boldsymbol{x}) = \{ \theta_0 : \boldsymbol{x} \in A(\theta_0) \}$$

Inverting LRT

$$C(\boldsymbol{x}) = \{ \theta_0 : \lambda(\boldsymbol{x}) \geq \mathrm{k} \}$$

Pivotal Quantity

The distribution of $Q(\boldsymbol{X}, \theta)$ is independent of θ.

$$C(\boldsymbol{x}) = \{ \theta : \alpha_1 \leq F_T(t|\theta) \leq 1 - \alpha_2 \}$$