Pouzdani intervali

Pretpostavke	Pouzdani interval za	Pouzdani interval	Oznake
$X_1, \ldots, X_n$ slučajan uzorak iz $\mathcal{N}(\mu, \sigma^2)$, σ^2 poznato	μ	$\left[\overline{x}_n - z_\gamma \frac{\sigma}{\sqrt{n}},\ \overline{x}_n + z_\gamma \frac{\sigma}{\sqrt{n}}\right]$	z_γ - broj za koji vrijedi da je $P(\lvert Z\rvert \leq z_\gamma) = \gamma$, $Z \sim \mathcal{N}(0,1)$
$X_1, \ldots, X_n$ slučajan uzorak iz $\mathcal{N}(\mu, \sigma^2)$, σ^2 nepoznato ili $X_1, \ldots, X_n$ slučajan uzorak, n velik, $\mu = EX_1$, $\sigma^2 = \text{Var}(X_1) < \infty$	μ	$\left[\overline{x}_n - t_{\gamma,n-1} \frac{s_n}{\sqrt{n}},\ \overline{x}_n + t_{\gamma,n-1} \frac{s_n}{\sqrt{n}}\right]$	$t_{\gamma,n-1}$ - broj za koji vrijedi da je $P(\lvert T\rvert \leq t_{\gamma,n-1}) = \gamma$, $T \sim \mathcal{T}_{n-1}$
$X_1, \ldots, X_n$ slučajan uzorak iz Bernoullijeve distribucije s parametrom p, n velik	p	$\left[\hat{p} - z_\gamma \sqrt{\frac{\hat{p}\hat{q}}{n}},\ \hat{p} + z_\gamma \sqrt{\frac{\hat{p}\hat{q}}{n}}\right]$	z_γ - broj za koji vrijedi da je $P(\lvert Z\rvert \leq z_\gamma) = \gamma$, $Z \sim \mathcal{N}(0,1)$

Napomena: $\mathcal{N}(0,1)$ označava normalnu distribuciju s očekivanjem 0 i varijancom 1;
$\mathcal{T}_{n-1}$ označava Studentovu t-distribuciju s $n-1$ stupnjeva slobode;

Testiranje hipoteza – jedan uzorak

Pretpostavke	H_0	H_1	Test statistika	p-vrijednost
$X_1, \dots, X_n$ slučajan uzorak iz $\mathcal{N}(\mu, \sigma^2)$, σ^2 poznato	$\mu = \mu_0$	$\mu > \mu_0$	$\hat{z} = \frac{\overline{x}_n - \mu_0}{\sigma}\sqrt{n}$	$p = P(Z \geq \hat{z}),\ \ Z \sim \mathcal{N}(0,1)$
		$\mu < \mu_0$		$p = P(Z \leq \hat{z}),\ \ Z \sim \mathcal{N}(0,1)$
		$\mu \neq \mu_0$		$p = P(\lvert Z\rvert \geq \lvert\hat{z}\rvert),\ \ Z \sim \mathcal{N}(0,1)$
$X_1, \dots, X_n$ slučajan uzorak iz $\mathcal{N}(\mu, \sigma^2)$, σ^2 nepoznato ili $X_1, \dots, X_n$ slučajan uzorak, n velik, $\mu = EX_1$, $\sigma^2 = \mathrm{Var}(X_1) < \infty$	$\mu = \mu_0$	$\mu > \mu_0$	$\hat{t} = \frac{\overline{x}_n - \mu_0}{s_n}\sqrt{n}$	$p = P(T \geq \hat{t}),\ \ T \sim \mathcal{T}_{n-1}$
		$\mu < \mu_0$		$p = P(T \leq \hat{t}),\ \ T \sim \mathcal{T}_{n-1}$
		$\mu \neq \mu_0$		$p = P(\lvert T\rvert \geq \lvert\hat{t}\rvert),\ \ T \sim \mathcal{T}_{n-1}$
$X_1, \dots, X_n$ slučajan uzorak iz Bernoullijeve distribucije s parametrom p, n velik	$p = p_0$	$p > p_0$	$\hat{z} = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$	$p = P(Z \geq \hat{z}),\ \ Z \sim \mathcal{N}(0,1)$
		$p < p_0$		$p = P(Z \leq \hat{z}),\ \ Z \sim \mathcal{N}(0,1)$
		$p \neq p_0$		$p = P(\lvert Z\rvert \geq \lvert\hat{z}\rvert),\ \ Z \sim \mathcal{N}(0,1)$

Testiranje hipoteza – dva uzorka

Pretpostavke	H_0	H_1	Test statistika	p-vrijednost
$X_1^{(1)},\dots,X_{n_1}^{(1)}$ slučajan uzorak iz $\mathcal{N}(\mu_1,\sigma_1^2)$, $X_1^{(2)},\dots,X_{n_2}^{(2)}$ slučajan uzorak iz $\mathcal{N}(\mu_2,\sigma_2^2)$, σ_1^2 i σ_2^2 poznati	$\mu_1=\mu_2$	$\mu_1>\mu_2$	$\hat{z}=\dfrac{\overline{x}_{n_1}-\overline{x}_{n_2}}{\sqrt{\dfrac{\sigma_1^2}{n_1}+\dfrac{\sigma_2^2}{n_2}}}$	$p=P(Z\geq\hat{z}),\ \ Z\sim\mathcal{N}(0,1)$
		$\mu_1<\mu_2$		$p=P(Z\leq\hat{z}),\ \ Z\sim\mathcal{N}(0,1)$
		$\mu_1\neq\mu_2$		$p=P(\lvert Z\rvert\geq\lvert\hat{z}\rvert),\ \ Z\sim\mathcal{N}(0,1)$
$X_1^{(1)},\dots,X_{n_1}^{(1)}$ slučajan uzorak iz $\mathcal{N}(\mu_1,\sigma_1^2)$, $X_1^{(2)},\dots,X_{n_2}^{(2)}$ slučajan uzorak iz $\mathcal{N}(\mu_2,\sigma_2^2)$, σ_1^2 i σ_2^2 nepoznati, $\sigma_1^2=\sigma_2^2$	$\mu_1=\mu_2$	$\mu_1>\mu_2$	$\hat{t}=\dfrac{\overline{x}_{n_1}-\overline{x}_{n_2}}{\sqrt{\dfrac{(n_1-1)s_{n_1}^2+(n_2-1)s_{n_2}^2}{n_1+n_2-2}}\sqrt{\dfrac{1}{n_1}+\dfrac{1}{n_2}}}$	$p=P(T\geq\hat{t}),\ \ T\sim\mathcal{T}_{n_1+n_2-2}$
		$\mu_1<\mu_2$		$p=P(T\leq\hat{t}),\ \ T\sim\mathcal{T}_{n_1+n_2-2}$
		$\mu_1\neq\mu_2$		$p=P(\lvert T\rvert\geq\lvert\hat{t}\rvert),\ \ T\sim\mathcal{T}_{n_1+n_2-2}$
$X_1^{(1)},\dots,X_{n_1}^{(1)}$ slučajan uzorak iz Bernoullijeve distribucije s parametrom p_1, $X_1^{(2)},\dots,X_{n_2}^{(2)}$ slučajan uzorak iz Bernoullijeve distribucije s parametrom p_2	$p_1=p_2$	$p_1>p_2$	$\hat{z}=\dfrac{\hat{p}_1-\hat{p}_2}{\sqrt{\hat{p}(1-\hat{p})(\frac{1}{n_1}+\frac{1}{n_2})}}$ $\hat{p}=\dfrac{n_1\hat{p}_1+n_2\hat{p}_2}{n_1+n_2}$	$p=P(Z\geq\hat{z}),\ \ Z\sim\mathcal{N}(0,1)$
		$p_1<p_2$		$p=P(Z\leq\hat{z}),\ \ Z\sim\mathcal{N}(0,1)$
		$p_1\neq p_2$		$p=P(\lvert Z\rvert\geq\lvert\hat{z}\rvert),\ \ Z\sim\mathcal{N}(0,1)$