# Tablice i formule za uzorak $X_1, X_2, \ldots, X_n$

## Važne statistike

$$\bar{X}_n = \frac{1}{n}\sum_{k=1}^{n} X_k, \quad \bar{S}_n^2 = \frac{1}{n}\sum_{k=1}^{n}(X_k - \bar{X}_n)^2, \quad \bar{S}_n^{2\prime} = \frac{n}{n-1}\bar{S}_n^2, \quad \bar{S}_n = \sqrt{\bar{S}_n^2}, \quad \bar{S}_n' = \sqrt{\bar{S}_n^{2\prime}}$$

## Interval poverenja za srednju vrednost obeležja sa za $X : \mathcal{N}(\mu, \sigma)$

| $\sigma$ poznato: | $\sigma$ nepoznato: |
|---|---|
| $\left(\bar{X}_n - z_{1-\alpha}\frac{\sigma}{\sqrt{n}}, \bar{X}_n + z_{1-\alpha}\frac{\sigma}{\sqrt{n}}\right)$ | $\left(\bar{X}_n - t_{1-\alpha}\frac{\bar{S}_n'}{\sqrt{n}}, \bar{X}_n + t_{1-\alpha}\frac{\bar{S}_n'}{\sqrt{n}}\right)$ |

## Srednja vrednost: $H_0(\mu = \mu_0)$ protiv $H_1(\mu \neq \mu_0)$ za $X : \mathcal{N}(\mu, \sigma)$

$$T := \frac{|\bar{X}_n - \mu_0|}{\bar{S}_n'}\sqrt{n} > t_{1-\alpha} \;\Leftrightarrow\; \alpha^* := P_{H_0}\left(|T| > \frac{|\bar{X}_n - \mu_0|}{\bar{S}_n'}\sqrt{n}\right) < \alpha,\ T : t_{n-1}$$

## T-test: $H_0(\mu_1 = \mu_2)$ protiv $H_1(\mu_1 \neq \mu_2)$ za $X_1 : \mathcal{N}(\mu_1, \sigma_1)$, $X_2 : \mathcal{N}(\mu_2, \sigma_2)$

$$T := \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\bar{S}_1^{2\prime}}{n_1} + \frac{\bar{S}_2^{2\prime}}{n_2}}} : t_\nu,\ \nu = n_1 + n_2 - 2 \text{ ili } \nu = \left(\frac{\bar{s}_1^{2\prime}}{n_1} + \frac{\bar{s}_2^{2\prime}}{n_2}\right)^2 \Bigg/ \left(\frac{1}{n_1 - 1}\left(\frac{\bar{s}_1^{2\prime}}{n_1}\right)^2 + \frac{1}{n_2 - 1}\left(\frac{\bar{s}_2^{2\prime}}{n_2}\right)^2\right).$$

## T-test parova: $H_0(\mu_1 = \mu_2)$ protiv $H_1(\mu_1 \neq \mu_2)$

$z_i = x_i - y_i, i = 1, 2, \ldots, n$. Za uzorak $z$ testiramo $H_0(\mu = 0)$ protiv $H_1(\mu \neq 0)$

## Studentove i Gausove tablice $t$ i $z$ vrednosti

Za $X : t_n$ raspodelu $P = P(X \leq t)$, za $n \to \infty$, $t_n \to \mathcal{N}$, $t \to z$

| $n$ \ $P$ | .75 | .90 | .95 | .975 | .990 | .995 | .9995 |
|---|---|---|---|---|---|---|---|
| ... | | | | | | | |
| 23 | .685 | 1.319 | 1.714 | 2.069 | 2.500 | 2.807 | 3.768 |
| 24 | .685 | 1.318 | 1.711 | 2.064 | 2.492 | 2.797 | 3.745 |
| 25 | .684 | 1.316 | 1.708 | 2.060 | 2.485 | 2.787 | 3.725 |
| ... | | | | | | | |
| 29 | .683 | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 | 3.659 |
| 30 | .683 | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 | 3.646 |
| 31 | .682 | 1.309 | 1.696 | 2.040 | 2.453 | 2.744 | 3.633 |
| ... | | | | | | | |
| $z$ | .674 | 1.282 | 1.645 | 1.960 | 2.326 | 2.576 | 3.291 |