Проверка статистических гипотез

<table>
<tr><td>Гипотеза H_0</td><td>Гипотеза H_1</td><td>Критерий</td><td>Гипотеза H_0 принимается с уровнем значимость α, если</td></tr>
<tr><td rowspan="3">$\sigma^2 = \sigma_0^2$
Мат. Ожидание неизвестно</td><td>$\sigma^2 \neq \sigma_0^2$</td><td rowspan="3">$Z = \frac{kS^2}{\sigma_0^2}$</td><td>$\chi^2_{\frac{\alpha}{2}}(k) < Z < \chi^2_{1-\frac{\alpha}{2}}(k)$</td></tr>
<tr><td>$\sigma^2 < \sigma_0^2$</td><td>$Z > \chi^2_{\alpha}(k)$</td></tr>
<tr><td>$\sigma^2 > \sigma_0^2$</td><td>$Z < x^2_{1-\alpha}(k)$</td></tr>
<tr><td rowspan="3">$\sigma^2 = \sigma_0^2$
Мат. Ожидание известно</td><td>$\sigma^2 \neq \sigma_0^2$</td><td rowspan="3">$Z = \frac{nS_0^2}{\sigma_0^2}$
$S_0^2 = \frac{1}{n}\sum_{i=1}^{n}(x_i - \alpha)^2$</td><td>$\chi^2_{\frac{\alpha}{2}}(n) < Z < \chi^2_{1-\frac{\alpha}{2}}(n)$</td></tr>
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<tr><td rowspan="3">$\sigma_1^2 = \sigma_2^2$
Мат. Ожидания неизвестны</td><td>$\sigma_1^2 \neq \sigma_2^2$</td><td>$F = \frac{S^2_{бол}}{S^2_{мал}}$</td><td>$F < F_{1-\frac{\alpha}{2}}\left(k_{s_{бол}}; k_{s_{мал}}\right)$</td></tr>
<tr><td>$\sigma_1^2 > \sigma_2^2$</td><td>$F = \frac{S_1^2}{S_2^2}$</td><td>$F < F_{1-\alpha}(k_1; k_2)$</td></tr>
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Мат. Ожидания известны</td><td>$\sigma_1^2 \neq \sigma_2^2$</td><td>$F = \frac{S^2_{0\,бол}}{S^2_{0\,мал}}$</td><td>$F < F_{1-\frac{\alpha}{2}}\left(n_{s_{0\,бол}}; n_{s_{0\,мал}}\right)$</td></tr>
<tr><td>$\sigma_1^2 > \sigma_2^2$</td><td>$F = \frac{S_{01}^2}{S_{02}^2}$</td><td>$F < F_{1-\alpha}(n_1; n_2)$</td></tr>
<tr><td>$\sigma_1^2 < \sigma_2^2$</td><td>$F = \frac{S_{02}^2}{S_{01}^2}$</td><td>$F < F_{1-\alpha}(n_2; n_1)$</td></tr>
<tr><td rowspan="3">$\alpha = \alpha_0$
Дисперсия неизвестна</td><td>$\alpha \neq \alpha_0$</td><td rowspan="3">$t = \frac{(\bar{x} - \alpha_0)\sqrt{n}}{S}$</td><td>$|t| < t_{1-\frac{\alpha}{2}}(k)$</td></tr>
<tr><td>$\alpha < \alpha_0$</td><td>$t > t_{\alpha}(k)$</td></tr>
<tr><td>$\alpha > \alpha_0$</td><td>$t < t_{1-\alpha}(k)$</td></tr>
<tr><td rowspan="3">$\alpha = \alpha_0$
Дисперсия известна</td><td>$\alpha \neq \alpha_0$</td><td rowspan="3">$U = \frac{(\bar{x} - \alpha_0)\sqrt{n}}{\sigma}$</td><td>$|U| < u_{1-\frac{\alpha}{2}}$</td></tr>
<tr><td>$\alpha < \alpha_0$</td><td>$U > u_{\alpha}$</td></tr>
<tr><td>$\alpha > \alpha_0$</td><td>$U < u_{1-\alpha}$</td></tr>
<tr><td rowspan="3">$\alpha_1 = \alpha_2$
Дисперсии неизвестны</td><td>$\alpha_1 \neq \alpha_2$</td><td rowspan="3">$t = \frac{\overline{x_1} - \overline{x_2}}{S_{CB}\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$
$S^2_{CB} = \frac{S_1^2 k_1 + S_2^2 k_2}{k_1 + k_2}$
$k_{CB} = k_1 + k_2$</td><td>$|t| < t_{1-\frac{\alpha}{2}}(k_{CB})$</td></tr>
<tr><td>$\alpha_1 < \alpha_2$</td><td>$t > t_{\alpha}(t_{CB})$</td></tr>
<tr><td>$\alpha_1 > \alpha_2$</td><td>$t < t_{1-\alpha}(k_{CB})$</td></tr>
<tr><td rowspan="3">$\alpha_1 = \alpha_2$
Дисперсии известны</td><td>$\alpha_1 \neq \alpha_2$</td><td rowspan="3">$U = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$</td><td>$|U| < u_{1-\frac{\alpha}{2}}$</td></tr>
<tr><td>$\alpha_1 < \alpha_2$</td><td>$U > u_{\alpha}$</td></tr>
<tr><td>$\alpha_1 > \alpha_2$</td><td>$U < u_{1-\alpha}$</td></tr>
<tr><td>СВ имеет заданное распределение</td><td>СВ не принадлежит к проверяемому закону распределения</td><td>$\chi^2 = \sum_i \frac{(n_i - np_i)^2}{np_i}$</td><td>$\chi^2 < \chi^2_{1-\alpha}(r - s - 1)$
r – число групп выборки,
s - число параметров проверяемого распределения</td></tr>
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