7. cvičení

$$ \xdef\mcal#1{\mathcal{#1}} \xdef\scal#1#2{\langle #1, #2 \rangle} \xdef\N{\mathbb N} \xdef\R{\mathbb R} \xdef\Q{\mathbb{Q}} \xdef\Z{\mathbb{Z}} \xdef\D{\mathbb{D}} \xdef\bm#1{\boldsymbol{#1}} \xdef\vv#1{\mathbf{#1}} \xdef\vvp#1{\pmb{#1}} \xdef\floor#1{\lfloor #1 \rfloor} \xdef\ceil#1{\lceil #1 \rceil} \xdef\grad#1{\mathrm{grad} , #1} \xdef\ve{\varepsilon} \xdef\im#1{\mathrm{im}(#1)} \xdef\tr#1{\mathrm{tr}(#1)} \xdef\norm#1{\left\vert \left\vert #1 \right\vert\right\vert} \xdef\scal#1#2{\langle #1, #2 \rangle} \xdef\ex#1{\mathrm{E} ,\left(#1\right)} \xdef\exv#1{\mathrm{E}, \vv{#1}} $$

Nechť $$ \vv Y $$ jsou data, $$ \hat {\vv Y} = \vv X \hat {\vvp \beta}, \qquad E \hat{\vv Y} = E \vv Y $$ je odhad $\vv Y$ a $$ \vv e $$ je odhad $\vvp \ve$.

A máme **celkovou sumu čtverců** $$ TSS = \sum_{i = 1}^n (Y_i - \overline Y_i)^2 $$ také **vysvětlovanou sumu čtverců** $$ ESS = \sum_{i = 1}^n(\hat Y_i - \overline Y_i)^2 $$ a neposlední řadě **reziduální sumu čtverců** $$ RSS = \sum_{i = 1}^n (Y_i- \hat Y_i)^2 $$

A platí $$ TSS = RSS + ESS $$

a nechť R^2 je **koeficient determinace** $$ R^2 = \frac {ESS} {TSS} \in (0, 1] $$ a **adjustovaný koeficient determinace** $$ R^2_{adj} = 1 - \frac {\cfrac {RSS} {n-p}} {\cfrac {TSS} {n-1}} $$

Dále $$ \hat \sigma^2 = \frac {RSS} {n - p} $$ a $$ var(\hat{\vvp \beta}) = \hat \sigma^2 (\vv X^T \vv X)^{-1} $$ Přičemž $var(\hat{\vvp \beta})$ dostaneme pomocí `vcov(<model>)`

Revision #2
Created 12 January 2023 12:07:36 by Sceptri
Updated 12 January 2023 12:56:36 by Sceptri