

ABSTRACT

Regression Robust Using Methods *Least Trimmed Square* (LTS) And Estimation S To Detect Stunting 0-59 Months

Robust regression is an analytical method to solve the problem of violation of classical regression assumptions with the least squares method such as residual abnormalities as a result of the presence of outlier data. There are several methods in robust regression that can be used to deal with outlier data, including *Least Median of Square* (LMS), *Least Trimmed Squares* (LTS), M-estimation, S-Estimation and MM-estimation. The selection of *robust* regression in this study is based on a preliminary study which was conducted using secondary data on the health profile of East Kalimantan, where in the least squares assumption test (MKT) there were several assumptions that were not fulfilled, one of which was the residuals that were not normally distributed apart from the outlier test with graphical method (Scatter plot), DFFITS and Z score between variables, there are outliers data on factors that affect stunting 0-59 months in East Kalimantan Province. For this reason, it is necessary to do research on the comparison of robust regression methods using the *Least Trimmed Squares* (LTS) method and S estimation.

This research is a non-reactive study using secondary data. The study population was all toddlers who were stunted aged 0-59 months in the province of East Kalimantan in 2018, the sample was children 0-59 months who were stunted in 77 sub-districts based on the calculation of the sample size and were selected based on simple random sampling technique.

The results showed that robust regression analysis for *LTS* estimation is the best robust regression method used in outlier data conditions. The equation model obtained is the model obtained in the convergent *LTS* method is $y = 14.925 + 0.905$ (Percentage of LBW) + 0.225 (Percentage of exclusive breastfeeding) - 0.029 (Percentage of diarrhea sufferers in children under five) - 0,194 (Percentage of proper sanitation (healthy latrines))

The conclusion is that robust regression analysis uses a robust regression method for estimating *LTS* if 5%, 10% and 20% outliers are found. . In addition, several factors that influence the incidence of 0-59 months of stunting are the percentage of LBW, the percentage of exclusive breastfeeding, the percentage of diarrhea sufferers among children under five who are handled and the percentage of the population with proper sanitation (healthy latrines). increasing the nutrition improvement program by making innovations related to reducing the prevalence of 0-59 months of stunting by the government.

Keywords: Robust Regression, Outlier, LTS and S Estimation, Stunting

ABSTRAK

Model Regresi Robust Metode Least Trimmed Square (LTS) Dan, Estimasi S Pada Faktor Yang Mempengaruhi Kejadian Stunting 0-59 Bulan

Regresi robust adalah metode analisis untuk mengatasi masalah pelanggaran asumsi klasik regresi dengan metode kuadrat terkecil seperti halnya ketidaknormalan residu sebagai akibat keberadaan data outlier. Ada beberapa metode dalam regresi robust yang dapat digunakan untuk mengatasi data *outlier*, diantaranya *Least Median of Square (LMS)*, *Least Trimmed Squares (LTS)*, *M-estimation*, *S-Estimation* dan *MM-estimation*. Pemilihan regresi robust pada penelitian ini berdasarkan studi awal yang dilakukan dengan menggunakan data sekunder profil kesehatan Kalimantan Timur, dimana pada uji asumsi metode kuadrat terkecil (MKT) ada beberapa uji asumsi yang tidak terpenuhi salah satunya residual yang tidak berdistribusi normal selain itu dilakukan uji outlier dengan metode grafiks (Scatter plot), DFFITS Dan Z score antar variabel terdapat data yang outlier pada faktor yang mempengaruhi *stunting* 0-59 bulan di Propinsi Kalimantan Timur . Untuk itu perlu dilakukan penelitian tentang perbandingan metode regresi robust menggunakan metode *Least Trimmed Squares (LTS)* dan estimasi S

Penelitian merupakan penelitian non reaktif dengan menggunakan data sekunder. Populasi penelitian adalah semua balita yang mengalami *stunting* usia 0-59 bulan di wilayah Provinsi Kalimantan Timur Tahun 2018 , Sampel adalah balita 0- 59 bulan yang *stunting* di 77 kecamatan berdasarkan perhitungan besar sampel dan terpilih berdasarkan teknik *simple random sampling*.

Hasil penelitian menunjukkan bahwa analisis regresi robust estimasi *LTS* merupakan metode regresi robust terbaik yang digunakan pada kondisi data outlier. Model persamaan yang didapatkan yaitu model yang didapatkan pada metode *LTS* yang konvergen adalah $\hat{y} = 14,925 + 0,905$ (Persentase BBLR) + 0,225 (Persentase Asi eksklusif) - 0,029 (Persentase penderita diare pada balita) – 0,194 (Persentase sanitasi layak (jamban sehat)

Kesimpulan bahwa analisis regresi robust menggunakan metode regresi robust estimasi *LTS* jika ditemukan outlier 5%, 10% dan 20%. . Selain itu, beberapa faktor yang mempengaruhi kejadian *Stunting* 0-59 bulan adalah persentase BBLR, persentase asi eksklusif, persentase penderita diare pada balita ditangani dan persentase penduduk sanitasi layak (jamban sehat). meningkatkan program perbaikan gizi dengan melakukan inovasi terkait menurunkan prevalensi kejadian *stunting* 0-59 bulan oleh pemerintah.

Kata Kunci : Regresi Robust, *LTS* dan Estimasi S , Balita Pendek