

Table of analysis variance

Regression model is explanatory → We can use this model in order to explain Y

		Standard	T	
Parameter	Estimate	Error	Statistic	P-Value
CONSTANT	2900,65	543,153	5,3404	0,0000
xcoord(east)	0,00222026	0,000285089	7,78795	0,0000
ycoord(north)	-0,000987919	0,000167087	-5,91261	0,0000
height	0,0638771	0,00849455	7,51978	0,0000
Coastdistance	0,000483279	0,000339538	1,42334	0,1557

Analysis of Variance

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Model	131955,	4	32988,6	51,07	0,0000
Residual	187330,	290	645,966		
Total (Corr.)	319285,	294			

Standard Error of Est. = 25,4159

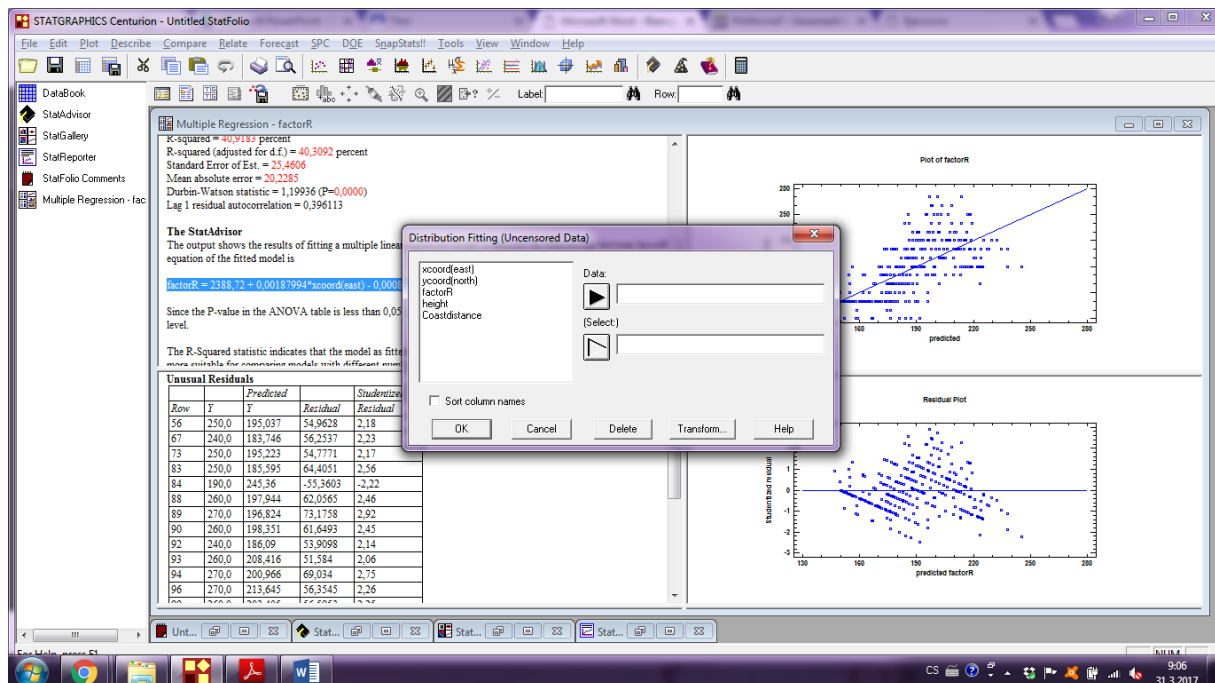
T-statistic table

p-value je větší než 0,5 -> tak můžu Xj z modelu eliminovat (protože tím pádem Xj není vysvětlující proměnná v modelu)

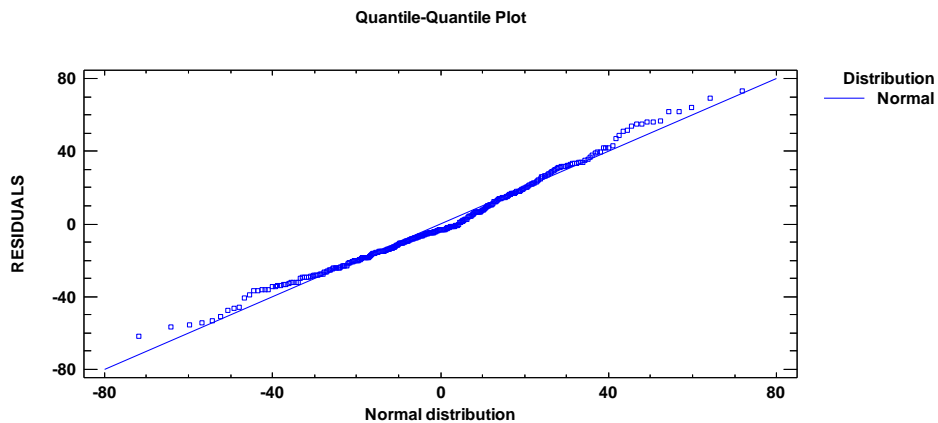
CoastDistance může být vyzastavena, protože je p-value větší než 0,05

Spustím to znovu, ale tentokrát bez coastDistance

factorR = 2388,72 + 0,00187994*xcoord(east) - 0,000814253*ycoord(north) + 0,0660843*height



Mam residuals -> pokud je p-value menší než 0,05, tak residuals nesledují normal distribution. Musím uložit residuals a pak udělat describe → fitting unfitted data



Data are separated (down and up) by the line.

Kolmogorov-Smirnov Test

	Normal
DPLUS	0,0775578
DMINUS	0,0351592
DN	0,0775578
P-Value	0,0575089

Modified Kolmogorov-Smirnov D

	Normal
D	0,0775578
Modified Form	1,3419
P-Value	<0.10

Kuiper V

	Normal
V	0,112717
Modified Form	1,95502
P-Value	<0.05

Cramer-Von Mises W^2

	Normal
W^2	0,22642
Modified Form	0,225834
P-Value	≥ 0.10

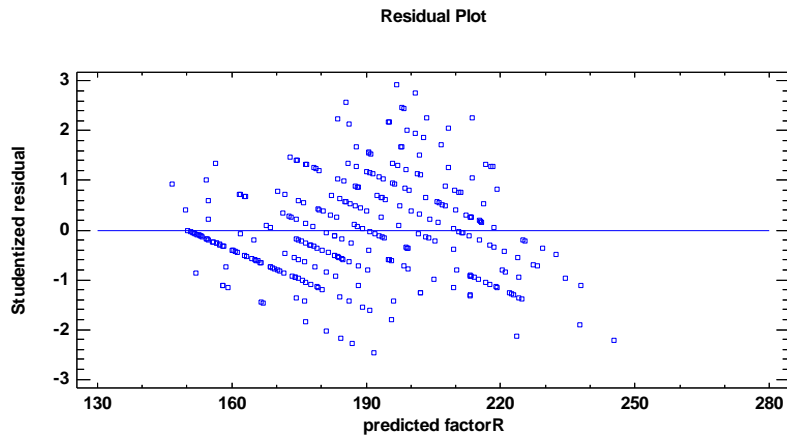
Watson U^2

	Normal
U^2	0,189968
Modified Form	0,190144
P-Value	<0.05

Anderson-Darling A^2

	Normal
A^2	1,25948
Modified Form	1,25948
P-Value	≥ 0.10

Jediný, kdo odmítá normalitu je Kupier a Watson. U zbytku se bude stačit kouknout na šikmost a špičatosti a můžu se rozhodnout....?



Variance není konstatní, protože factorR je vyšší podle předchozí analýzy. Nesleduje s homoscedasticity hypotézu, a linear hypotéza – můžeme říct, že tato hypotéza je naplněna.

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Analysis Summary Goodness-of-Fit Test Density Trace Frequency Histograms Quantile Plot Quantile-Quantile Plot

Multiple Regression - factorR

Multiple Regression - factorR
Dependent variable: factorR
Independent variables:
xcoord(east)
ycoord(north)
height

Parameter	Estimate
CONSTANT	2388.12
xcoord(east)	0.00187994
ycoord(north)	-0.000814253
height	0.0660843

Analysis of Variance
Source Sum of Squares

Row	Y	Predicted	Res
56	250.0	195.037	54.9
67	240.0	183.746	56.3
73	250.0	195.223	54.7771
83	250.0	185.595	64.4051
84	190.0	245.36	-55.3603
88	260.0	197.944	62.0565
89	270.0	196.824	73.1758
90	260.0	198.351	61.6493
92	240.0	186.09	53.9098
93	260.0	208.416	51.584
94	270.0	200.966	69.034
96	270.0	213.643	56.3545

Tables and Graphs

TABLES
 Analysis Summary
 Conditional Sums of Squares
 Confidence Intervals
 Correlation Matrix
 Reports
 Unusual Residuals
 Influential Points

GRAPHS
 Component Effects
 Observed versus Predicted
 Residuals versus X
 Residuals versus Predicted
 Residuals versus Row Number
 Interval Plots

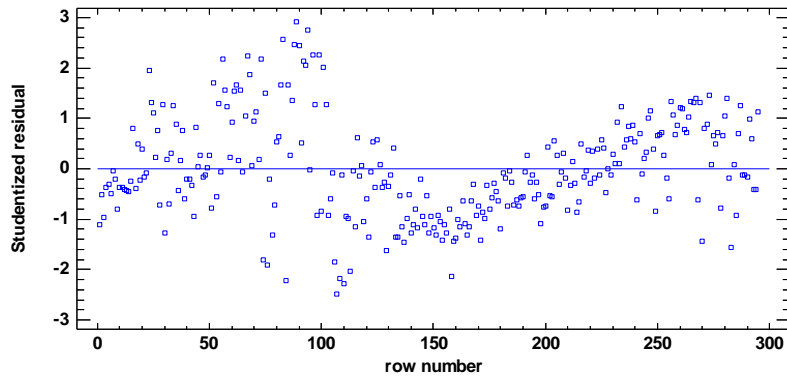
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Plot of factorR

Residual Plot

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Residual Plot



The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P-value is less than 0,05, there is an indication of possible serial correlation at the 95,0% confidence level. Plot the residuals versus row order to see if there is any pattern that can be seen.

Unusual Residuals

		<i>Predicted</i>		<i>Studentized</i>
<i>Row</i>	<i>Y</i>	<i>Y</i>	<i>Residual</i>	<i>Residual</i>
56	250,0	195,037	54,9628	2,18
67	240,0	183,746	56,2537	2,23
73	250,0	195,223	54,7771	2,17
83	250,0	185,595	64,4051	2,56
84	190,0	245,36	-55,3603	-2,22
88	260,0	197,944	62,0565	2,46
89	270,0	196,824	73,1758	2,92
90	260,0	198,351	61,6493	2,45
92	240,0	186,09	53,9098	2,14
93	260,0	208,416	51,584	2,06
94	270,0	200,966	69,034	2,75
96	270,0	213,645	56,3545	2,26
99	260,0	203,405	56,5953	2,25
101	250,0	199,104	50,8956	2,02
107	130,0	191,795	-61,7949	-2,48
108	130,0	184,44	-54,4404	-2,17
110	130,0	186,935	-56,935	-2,27
113	130,0	181,114	-51,1137	-2,03
158	170,0	223,578	-53,5784	-2,14

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The table of unusual residuals lists all observations which have Studentized residuals greater than 2 in absolute value. Studentized residuals measure how many standard deviations each observed value of factorR deviates from a model fitted using all of the data except that observation. In this case, there are 19 Studentized residuals greater than 2, but none greater than 3.

STATGRAPHICS Centurion - Untitled StatFolio - [Multiple Regression - factorR]

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Multiple Regression - factorR
 Dependent variable: factorR
 Independent variables:
 Coastdistance
 xcoord(east)
 height

Box-Cox transformation applied: power = -0,1375
 Cochrane-Orcutt transformation applied: autocorrelation = 0

Parameter	Estimate	Standard Error	Df
CONSTANT	1096,05	123,201	3
Coastdistance	-0,00152493	0,000246253	3
xcoord(east)	0,000450652	0,000161492	2
height	0,0544579	0,00675974	8

Analysis of Variance

Source	Sum of Squares	Df	Mean Square
Model	116494,	3	38831,3
Residual	147374,	290	508,186
Total (Corr.)	263868,	293	

R-squared = 44,1486 percent
 R-squared (adjusted for d.f.) = 43,5708 percent
 Standard Error of Est. = 22,543
 Mean absolute error = 17,558
 Durbin-Watson statistic = 2,4688
 Lag 1 residual autocorrelation = -0,23862

The StatAdvisor
 The output shows the results of fitting a multiple linear regression model to describe the relationship between factorR and 3 independent variables. The equation of the fitted model is

$$\text{BoxCox}(\text{factorR}) = 1096,05 - 0,00152493 * \text{Coastdistance} + 0,000450652 * \text{xcoord}(\text{east}) + 0,0544579 * \text{height}$$

where

Multiple Regression Options

Fitting Procedure:

Ordinary Least Squares
 Forward Stepwise Selection
 Backward Stepwise Selection
 Box-Cox Optimization
 Cochrane-Orcutt Optimization

Transformations:

Power: -0,1375
 Addend: 0
 Autocorrelation: 0,512968

Constant in Model

Stepwise Regression:

Selection Criterion:
 F-Ratio
 P-Value

F-to-Enter: 4,0
 F-to-Remove: 4,0
 P-to-Enter: 0,05
 P-to-Remove: 0,05

Max. Steps: 50 Display all steps

OK Cancel Help

Use the right mouse button to select options

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Residual Plot

