

Regression – No Precipitation, No Avg Temperature, No Beef Production

Model Summary: The model summary indicates that the adjusted R-squared is 0.730, which means that approximately 73% of the variability in the Beef_Value_SlaughterMarket can be explained by the model with the given predictor variables (BeefConsumption_US, SoyaBeans, Sorghum, Barley, and Maize). The model's standard error of the estimate is 6.36361, which reflects the average distance that the observed values fall from the regression line.

ANOVA: The ANOVA table shows that the model is statistically significant at a <0.001 level. This means that there is a significant relationship between the dependent variable (Beef_Value_SlaughterMarket) and the predictor variables. The F-value of 11.297 indicates that the model is a good fit to the data, as it is significantly different from a model with no predictors.

Coefficients: The coefficients table provides information about the relationship between each predictor variable and the dependent variable (Beef_Value_SlaughterMarket).

BeefConsumption_US: The coefficient is -6.650, with a p-value of <0.001 , indicating a significant negative relationship between BeefConsumption_US and Beef_Value_SlaughterMarket. As BeefConsumption_US increases by 1 unit, the Beef_Value_SlaughterMarket decreases by 6.650 units, holding other variables constant.

Barley: The coefficient is -0.001, with a p-value of 0.180, indicating no significant relationship between Barley and Beef_Value_SlaughterMarket.

Maize: The coefficient is 0.000, with a p-value of 0.719, indicating no significant relationship between Maize and Beef_Value_SlaughterMarket.

Sorghum: The coefficient is 0.000, with a p-value of 0.522, indicating no significant relationship between Sorghum and Beef_Value_SlaughterMarket.

SoyaBeans: The coefficient is 0.004, with a p-value of 0.002, indicating a significant positive relationship between SoyaBeans and Beef_Value_SlaughterMarket. As SoyaBeans increases by 1 unit, the Beef_Value_SlaughterMarket increases by 0.004 units, holding other variables constant.

For further analysis, we will continue to remove the highest p-values (Barley, Maize, and Sorghum) and rerunning the regression analysis until we achieve only the significant variables (BeefConsumption_US and SoyaBeans)

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	SoyaBeans, BeefConsumption_US, Sorghum, Barley, Maize ^b	.	Enter

a. Dependent Variable:
Beef_Value_SlaughterMarket

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.895 ^a	.801	.730	6.36361	.801	11.297	5	14	<.001

a. Predictors: (Constant), SoyaBeans, BeefConsumption_US, Sorghum, Barley, Maize

b. Dependent Variable: Beef_Value_SlaughterMarket

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2287.361	5	457.472	11.297	<.001 ^b
	Residual	566.937	14	40.496		
	Total	2854.298	19			

a. Dependent Variable: Beef_Value_SlaughterMarket

b. Predictors: (Constant), SoyaBeans, BeefConsumption_US, Sorghum, Barley, Maize

Correlations

		Beef_Value_SlaughterMarket	BeefConsumption_US	Barley	Maize	Sorghum	SoyaBeans
Pearson Correlation	Beef_Value_SlaughterMarket	1.000	-.637	.492	.536	.323	.686
	BeefConsumption_US	-.637	1.000	-.451	-.165	-.018	-.185
	Barley	.492	-.451	1.000	.646	.589	.673
	Maize	.536	-.165	.646	1.000	.816	.874
	Sorghum	.323	-.018	.589	.816	1.000	.735
	SoyaBeans	.686	-.185	.673	.874	.735	1.000
Sig. (1-tailed)	Beef_Value_SlaughterMarket		.001	.014	.007	.083	<.001
	BeefConsumption_US	.001		.023	.243	.470	.218
	Barley	.014	.023		.001	.003	.001
	Maize	.007	.243	.001		.000	.000
	Sorghum	.083	.470	.003	.000		.000
	SoyaBeans	.000	.218	.001	.000	.000	
N	Beef_Value_SlaughterMarket	20	20	20	20	20	20
	BeefConsumption_US	20	20	20	20	20	20
	Barley	20	20	20	20	20	20
	Maize	20	20	20	20	20	20
	Sorghum	20	20	20	20	20	20
	SoyaBeans	20	20	20	20	20	20

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions				
					BeefConsumption_US	Barley	Maize	Sorghum	SoyaBeans
1	1	5.974	1.000	.00	.00	.00	.00	.00	.00
	2	.015	19.953	.01	.03	.00	.01	.07	.01
	3	.006	32.702	.00	.02	.39	.00	.30	.01
	4	.003	41.885	.00	.00	.25	.07	.36	.29
	5	.001	70.335	.00	.01	.00	.87	.11	.67
	6	.000	117.186	.98	.94	.36	.05	.15	.01

a. Dependent Variable: Beef_Value_SlaughterMarket

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	40.1867	77.0751	58.8900	10.97212	20
Residual	-10.66255	10.74776	.00000	5.46249	20
Std. Predicted Value	-1.705	1.657	.000	1.000	20
Std. Residual	-1.676	1.689	.000	.858	20

a. Dependent Variable: Beef_Value_SlaughterMarket

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Beef_Value_SlaughterMarket



