Linear Regression – Red Wines

R-Squared of Red Wines: 0.987

Coeff:

fixed acidity:	0.0042
volatile acidity:	-1.0997
citric acid:	-0.1841
residual sugar:	0.0071
chlorides:	-1.9114
free sulfur dioxide:	0.0045
total sulfur dioxide:	-0.0033
density:	4.5291
pH:	-0.5229
sulphates:	0.8871
alcohol:	0.2970

Linear Regression – White Wines

R-Squared of White Wines: 0.987

Coeff:

fixed acidity:	0.0042
volatile acidity:	-1.0997
citric acid:	-0.1841
residual sugar:	0.0071
chlorides:	-1.9114
free sulfur dioxide:	0.0045
total sulfur dioxide:	-0.0033
density:	4.5291
pH:	-0.5229
sulphates:	0.8871
alcohol:	0.2970

White Wine OLS Regression Results

Dep. Variable:	quality	R-squared:	0.987
Model:	OLS	Adj. R-squared:	0.987
Method:	Least Squares	F-statistic:	2694.
Date:	Thu, 12 Apr 2018	Prob (F-statistic):	0.00
Time:	00:16:00	Log-Likelihood:	-394.81
No. Observations:	400	AIC:	811.6
Df Residuals:	389	BIC:	855.5
Df Model:	11		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
fixed acidity	0.0136	0.033	0.412	0.681	-0.051	0.079
volatile acidity	-0.8466	0.236	-3.593	0.000	-1.310	-0.383
citric acid	-0.3849	0.285	-1.351	0.178	-0.945	0.175
residual sugar	-0.0073	0.022	-0.327	0.744	-0.051	0.037
chlorides	-2.9426	0.832	-3.536	0.000	-4.579	-1.307
free sulfur dioxide	0.0126	0.004	2.822	0.005	0.004	0.021
total sulfur dioxide	-0.0046	0.001	-3.352	0.001	-0.007	-0.002
density	5.0347	1.254	4.015	0.000	2.569	7.500
pH	-0.7784	0.326	-2.385	0.018	-1.420	-0.137
sulphates	0.9430	0.222	4.256	0.000	0.507	1.379
alcohol	0.3188	0.034	9.286	0.000	0.251	0.386

Omnibus:	14.736	Durbin-Watson:	2.019
Prob(Omnibus):	0.001	Jarque-Bera (JB):	23.757
Skew:	-0.252	Prob(JB):	6.94e-06
Kurtosis:	4.082	Cond. No.	2.51e+03

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 2.51e+03. This might indicate that there are
strong multicollinearity or other numerical problems.

Red Wine OLS Regression Results

Dep. Variable:	quality	R-squared:	0.988
Model:	OLS	Adj. R-squared:	0.988
Method:	Least Squares	F-statistic:	3026.
Date:	Thu, 12 Apr 2018	Prob (F-statistic):	0.00
Time:	00:09:42	Log-Likelihood:	-377.61
No. Observations:	400	AIC:	777.2
Df Residuals:	389	BIC:	821.1
Df Model:	11		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
fixed acidity	0.0353	0.032	1.121	0.263	-0.027	0.097
volatile acidity	-0.9646	0.251	-3.840	0.000	-1.458	-0.471
citric acid	-0.3964	0.291	-1.360	0.175	-0.969	0.177
residual sugar	0.0324	0.023	1.416	0.158	-0.013	0.077
chlorides	-1.9267	0.820	-2.350	0.019	-3.539	-0.315
free sulfur dioxide	0.0034	0.005	0.737	0.462	-0.006	0.012
total sulfur dioxide	-0.0051	0.002	-3.154	0.002	-0.008	-0.002
density	4.2511	1.228	3.461	0.001	1.836	6.666
pH	-0.4790	0.312	-1.533	0.126	-1.093	0.135
sulphates	0.8365	0.215	3.893	0.000	0.414	1.259
alcohol	0.2991	0.034	8.789	0.000	0.232	0.366

Omnibus:	5.476	Durbin-Watson:	1.811
Prob(Omnibus):	0.065	Jarque-Bera (JB):	6.074
Skew:	-0.169	Prob(JB):	0.0480
Kurtosis:	3.500	Cond. No.	2.42e+03

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The condition number is large, 2.42e+03. This might indicate that there are
strong multicollinearity or other numerical problems.

WHITE WINE DESCRIPTIONS

	fixed acidity	volatile acidity	citric acid	residual sugar	chlorides	free sulfur dioxide	total sulfur dioxide	density	pH	sulphates	alcohol	quality
Number	4898											
Mean	6.854788	0.278241	0.334192	6.391415	0.045772	35.308085	138.360657	0.994027	3.188267	0.489847	10.514267	5.877909
Standard Deviation	0.843868	0.100795	0.121020	5.072058	0.021848	17.007137	42.498065	0.002991	0.151001	0.114126	1.230621	0.885639
Minimum	3.800000	0.080000	0	0.600000	0.009000	2	9	0.987110	2.72	0.220000	8	3
25% interval	6.300000	0.210000	0.270000	1.700000	0.036000	23	108	0.991723	3.090000	0.410000	9.500000	5
50% interval	6.800000	0.260000	0.320000	5.200000	0.043000	34	134	0.993740	3.180000	0.470000	10.400000	6
75% interval	7.300000	0.320000	0.390000	9.900000	0.050000	46	167	0.996100	3.280000	0.550000	11.400000	6
Maximum interval	14.200000	1.100000	1.660000	65.800000	0.346000	289	440	1.038980	3.820000	1.080000	14.200000	9

RED WINE DESCRIPTIONS

	fixed acidity	volatile acidity	citric acid	residual sugar	chlorides	free sulfur dioxide	total sulfur dioxide	density	pH	sulphates	alcohol	quality
Number	1599											
Mean	8.319637	0.527821	0.270976	2.538806	0.087467	15.874922	46.467792	0.996747	3.311113	0.658149	10.422983	5.636023
Standard Deviation	1.741096	0.179060	0.194801	1.409928	0.047065	10.460157	32.895324	0.001887	0.154386	0.169507	1.065668	0.807569
Minimum	4.6	0.120000	0	0.9	0.012	1	6	0.990070	2.72	0.33	8.4	3
25% interval	7.1	0.390000	0.09	1.9	0.07	7	22	0.995600	3.21	0.55	9.5	5
50% interval	7.9	0.520000	0.26	2.2	0.079	14	38	0.996750	3.31	0.62	10.2	6
75% interval	9.2	0.640000	0.45	2.6	0.09	21	62	0.997835	3.40	0.73	11.1	6
Maximum interval	15.9	1.58	1	15.5	0.611000	72	289	1.003690	4.01	2	14.9	8