

This homework is for extra credit - a total of 7 extra points.

1. A random sample of 90 used cars for sale on an internet site was taken, and the price (in \$) and mileage (previous miles driven) were recorded.



Dep. Variable:	Price	R-squared:	0.247
Model:	0LS	Adj. R-squared:	0.239
Method:	Least Squares	F-statistic:	32.15
Date:	Sun, 28 Jul 2024	Prob (F-statistic): 1.44e-07
Time:	01:10:32	Log-Likelihood:	-959.08
No. Observations:	100	AIC:	1922.
Df Residuals:	98	BIC:	1927.
Df Model:	1		
Covariance Type:	nonrobust		
coe	f std err	t P> t	[0.025 0.975]
const 2.525e+04	4 773.925 3	2.624 0.000	2.37e+04 2.68e+04
Mileage -0.0504	4 0.009 -	5.670 0.000	-0.068 -0.033
Omnibus:	16.952	Durbin-Watson:	1.952
Prob(Omnibus):	0.000	Jarque-Bera (JB):	5.719
Skew:	0.284	Prob(JB):	0.0573
Kurtosis:	1.976	Cond. No.	1.89e+05

0LS	Regression	Results
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a. What is the correlation coefficient?

b. Use what you see in the scatterplot to describe the relationship between price and mileage. (Make sure to address all four aspects of the relationship and to include context.)

c. Write the equation of the regression line. Be sure to define your variables in the context of the question.

d. Calculate the estimated price for a car that has 55,000 miles on it. Be sure to include units for your final answer and to show your work.

e. The car with 55,000 miles on it is priced at \$26,700. Calculate the residual for this car. Be sure to include units for your final answer and to show your work.

f. Is it reasonable to use this linear model to estimate the price for a car that has 200,000 miles on it? Clearly state "yes" or "no" and briefly (in 1-2 sentences) explain your reasoning.

g. Provide an interpretation for the 0.247 value from the output.