

8. LDL Cholesterol A female weighs 59.3 kg and she has a measured systolic blood pressure of 122 mm Hg. Use the multiple regression equation to determine the predicted LDL cholesterol amount. Is the result likely to be a good predicted value? Why or why not?

City Fuel Consumption: Finding the Best Multiple Regression Equation. In Exercises 9–12, refer to the accompanying table, which was obtained using the data from 21 cars listed in Data Set 14 in Appendix B. The response (y) variable is CITY (fuel consumption in mi/gal). The predictor (x) variables are WT (weight in pounds), DISP (engine displacement in liters), and HWY (highway fuel consumption in mi/gal).

Predictor (x) Variables	P-value	R^2	Adjusted R^2	Regression Equation
WT/DISP/HWY	0.000	0.943	0.933	$CITY = 6.86 - 0.00128 WT - 0.257 DISP + 0.652 HWY$
WT/DISP	0.000	0.748	0.720	$CITY = 38.0 - 0.00395 WT - 1.29 DISP$
WT/HWY	0.000	0.942	0.935	$CITY = 6.69 - 0.00159 WT + 0.670 HWY$
DISP/HWY	0.000	0.935	0.928	$CITY = 1.87 - 0.625 DISP + 0.706 HWY$
WT	0.000	0.712	0.697	$CITY = 41.8 - 0.00607 WT$
DISP	0.000	0.659	0.641	$CITY = 29.0 - 2.98 DISP$
HWY	0.000	0.924	0.920	$CITY = -3.15 + 0.819 HWY$

9. If only one predictor (x) variable is used to predict the city fuel consumption, which single variable is best? Why?

10. If exactly two predictor (x) variables are to be used to predict the city fuel consumption, which two variables should be chosen? Why?

11. Which regression equation is best for predicting city fuel consumption? Why?

12. A Honda Civic weighs 2740 lb, it has an engine displacement of 1.8 L, and its highway fuel consumption is 36 mi/gal. What is the best predicted value of the city fuel consumption? Is that predicted value likely to be a good estimate? Is that predicted value likely to be very accurate?

Appendix B Data Sets. In Exercises 13–16, refer to the indicated data set in Appendix B.

13. Predicting Nicotine in Cigarettes Refer to Data Set 10 in Appendix B and use the tar, nicotine, and CO amounts for the cigarettes that are 100 mm long, filtered, nonmenthol, and nonlight (the last set of measurements). Find the best regression equation for predicting the amount of nicotine in a cigarette. Why is it best? Is the best regression equation a good regression equation for predicting the nicotine content? Why or why not?

14. Predicting Nicotine in Cigarettes Repeat the preceding exercise using the sample data from the Menthol cigarettes listed in Data Set 10 from Appendix B.

15. Predicting IQ Score Refer to Data Set 6 in Appendix B and find the best regression equation with IQ score as the response (y) variable. Use predictor variables of brain volume and/or body weight. Why is this equation best? Based on these results, can we predict someone's IQ score if we know their brain volume and body weight? Based on these results, does it appear that people with larger brains have higher IQ scores?

16. Full IQ Score Refer to Data Set 5 in Appendix B and find the best regression equation with IQF (full IQ score) as the response (y) variable. Use predictor variables of IQV (verbal IQ score) and IQP (performance IQ score). Why is this equation best? Based on these results, can we predict someone's full IQ score if we know their verbal IQ score and their performance IQ score? Is such a prediction likely to be very accurate?