

Chapter 23

35. Fuel economy A consumer organization has reported test data for 50 car models. We will examine the association between the weight of the car (in thousands of pounds) and the fuel efficiency (in miles per gallon). Use Minitab to find the scatterplot, summary statistics, and regression analysis.

- b) Are the assumptions for regression satisfied? (I think this should be done first!)
- a) Is there strong evidence of an association between the weight of a car and its gas mileage? Write an appropriate hypothesis.
- c) Test your hypothesis and state your conclusion.

37. Fuel economy, part II Consider again the data in Exercise 35.

- a) Create a 95% confidence interval for the slope of the regression line.
- b) Explain in this context what your confidence interval means.

53. Body fat Do the data shown in Minitab indicate an association between *Waist* size and *%Body Fat*?

- a) Test an appropriate hypothesis and state your conclusion.
- b) Give a 95% confidence interval for the mean *%Body Fat* found in people with a 40-inch *Waist*.

39. Fuel economy, part III Consider again the data in Exercise 35.

- a) Create a 95% confidence interval for the average fuel efficiency among cars weighing 2500 pounds, and explain what your interval means.
- b) Create a 95% prediction interval for the gas mileage you might get driving your new 3450-pound SUV, and explain what that interval means.

59. Education and mortality Use Minitab to get the regression output based on the mortality rate (deaths per 100,000 people) and the education level (average number of years in school) for 58 U.S. cities.

- a) Comment on the assumptions for inference.
- b) Is there evidence of a strong association between the level of *Education* in a city and the *Mortality* rate? Test an appropriate hypothesis and state your conclusion.
- c) Can we conclude that getting more education is likely (on average) to prolong your life? Why or why not?
- d) Find a 95% confidence interval for the slope of the true relationship.
- e) Explain what your interval means.
- f) Find a 95% confidence interval for the average *Mortality* rate in cities where the adult population completed an average of 12 years of school.