

Appendix D Sample Student Projects

This appendix provides summaries of some projects previously conducted by other students. These are included to help you understand the kinds of research questions you could address in your own project.

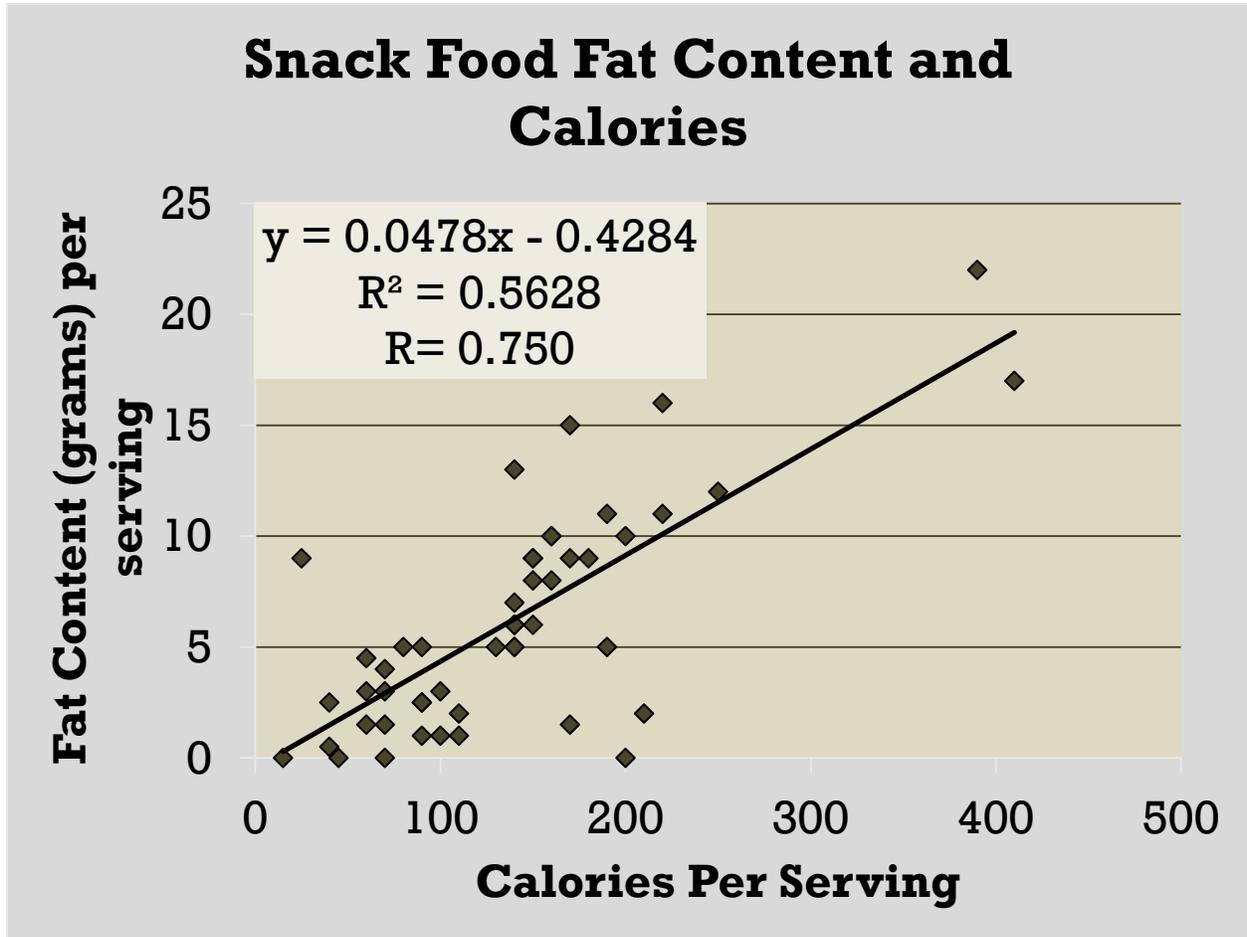
Each summary contains the “big picture” and the key findings of the project. Note that many project details (that would be required for a full project) are not included, such as descriptive statistics and information about sampling and data collection methods that were used.

It should also be noted that these examples represent actual students’ work. As such, some of the examples may not show the most suitable way to organize, analyze, or report the data shown.

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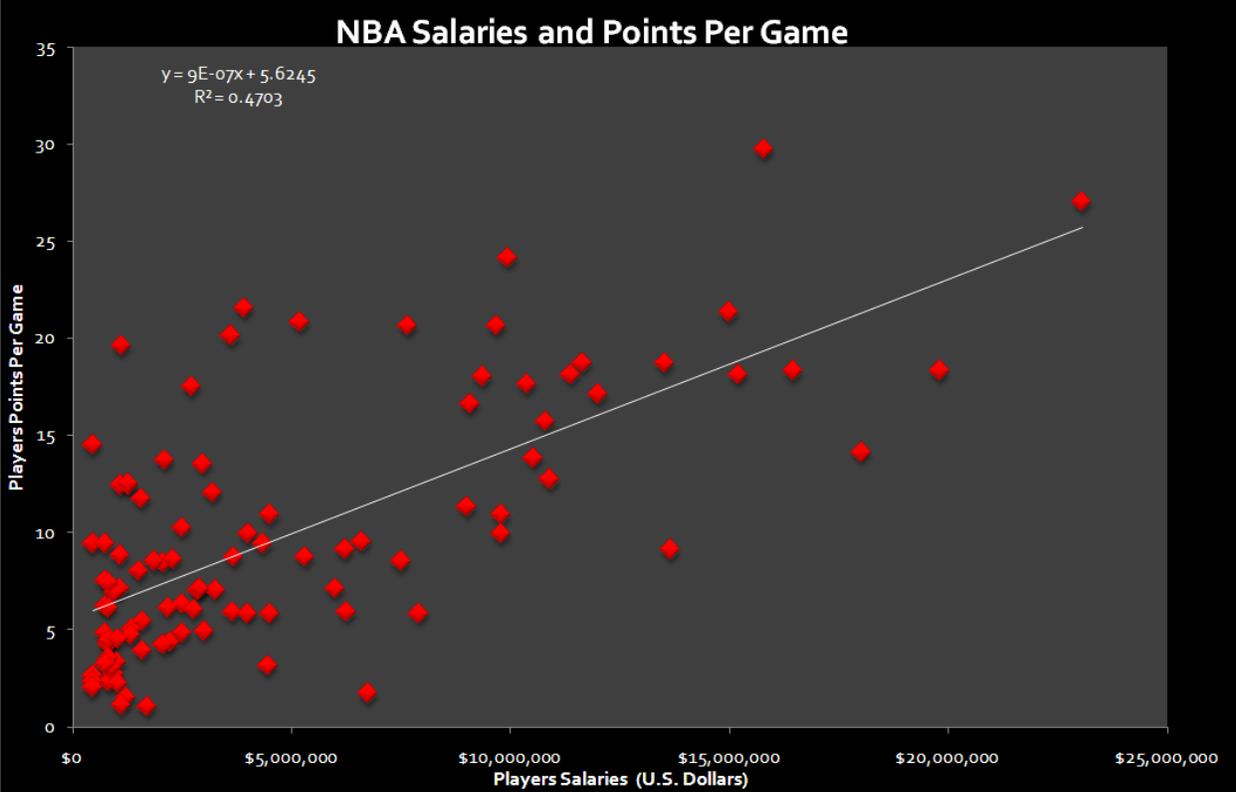
Sample Linear Regression Projects

Fat Content and Calories in Snack Foods



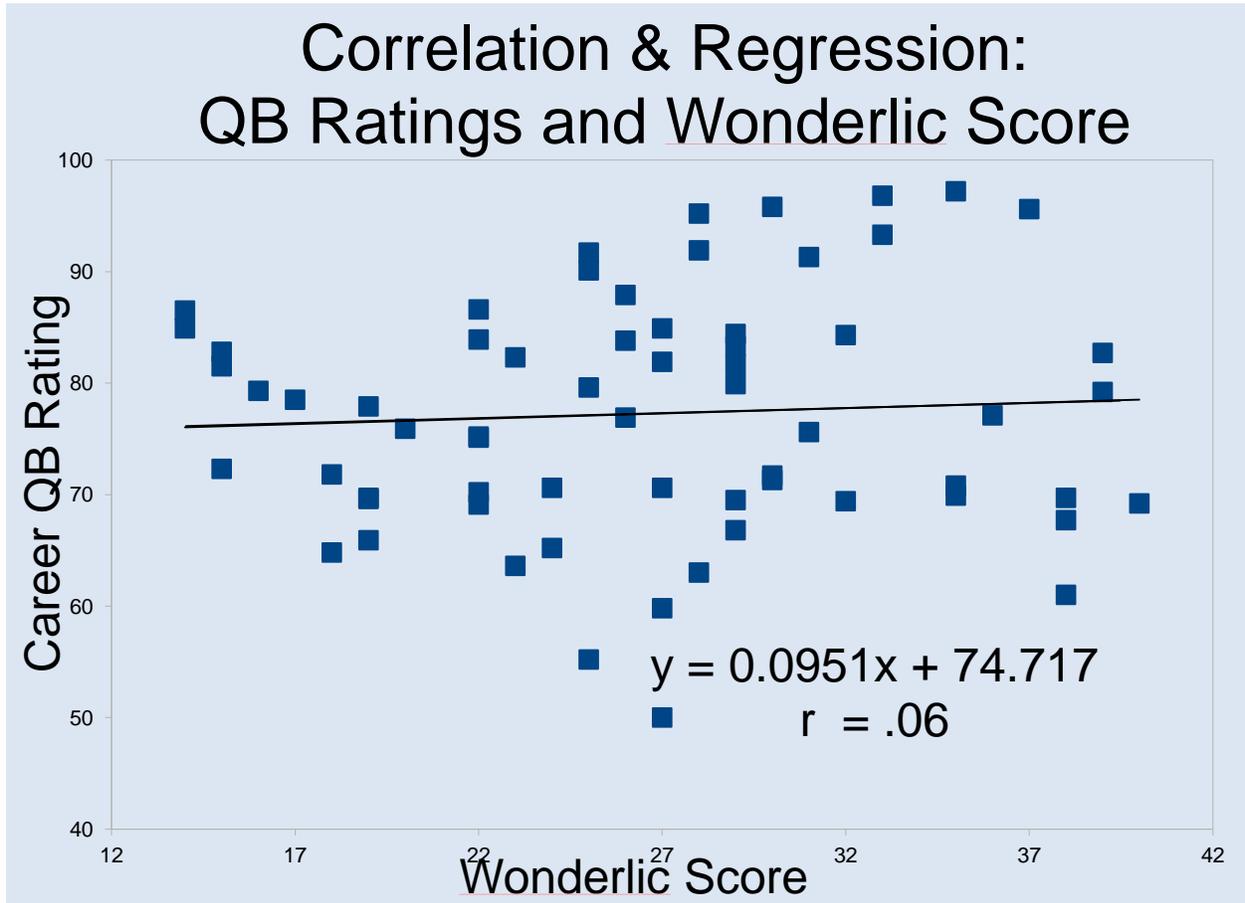
One team of students collected data directly by recording information from nutrition labels of a variety of snack foods. The summary slide shows the results of their linear regression analysis on calories and fat content.

NBA Player Salaries and Average Points per Game



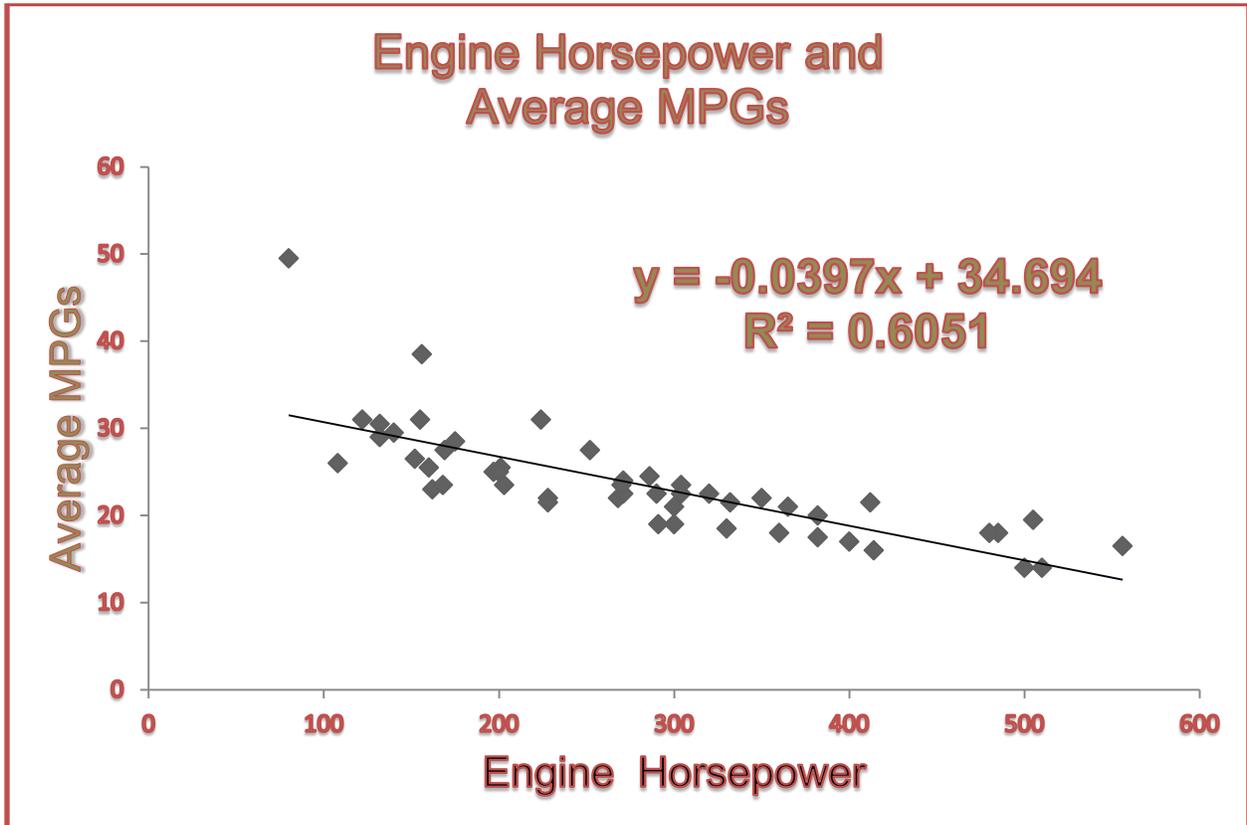
One student collected data on NBA Basketball players from an Internet sports data website. The summary slide shows the results of the linear regression analysis on the players’ annual salaries and their average points scored per game.

NFL Quarterback Ratings and Wonderlic Scores



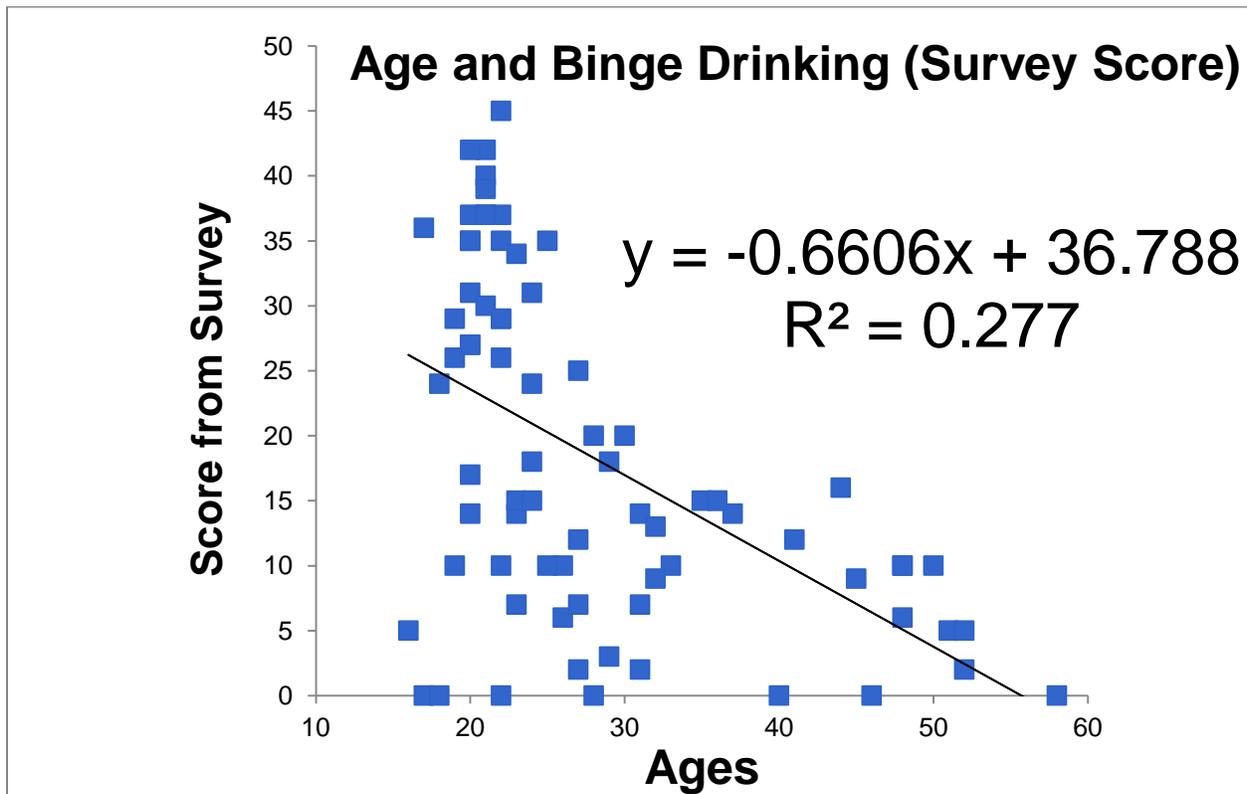
Another student collected data on NFL Quarterbacks from an Internet sports data website. The Wonderlic is a test of cognitive ability, where higher scores are associated with greater levels of cognitive skill. The quarterback rating is a measure of a quarterback's effectiveness in passing the ball. The summary slide shows the results of the linear regression analysis on the players' Wonderlic scores and quarterback ratings.

Automobile Engine Horsepower and Average Miles per Gallon



One team of students collected data from a consumer Internet website with automobile specifications. The summary slide shows the results of their linear regression analysis on car engine horsepower and average miles per gallon (MPG) ratings.

Age and Binge Drinking



Another team collected data using an anonymous survey with multiple questions to measure a construct of tendency to engage in binge drinking. The summary slide shows the results of their linear regression analysis on people's ages and their tendency to binge drink.

Sample Comparison Projects

Comparing Pepsi and Coke in a Taste Test

One student team conducted a taste test comparing each participant's rating of Coke and Pepsi on a scale of 1 to 10. The primary components of their project were as follows.

- Format of data collected:

| <u>Participant</u> | <u>Coke</u> | <u>Pepsi</u> |
|--------------------|-------------|--------------|
| #1 | 8 | 9 |
| #2 | 7 | 5 |
| (etc.) | | |

- Matched Pairs t-Test:
 - 2-tailed test:
H_a predicting that on average, students' rating of Coke and Pepsi would be different.
 - t statistic = 2.62
 - P value = 0.0116 (2-tailed)
 - Conclusion: Evidence that on average, students rated the two drinks differently (Coke was rated higher)

Amount of Sugar in Fruit Juices and Fruit Drinks

Another team collected data directly from nutrition labels of various fruit juices and fruit drinks to compare the average sugar content (per ounce) in each type of beverage. The primary results of their project were as follows.

- t-Test for 2 independent samples:
 - 1-tailed test:
H_a predicting that on average, fruit drinks have higher sugar content than fruit juices
 - t statistic = -0.14
 - P value = 0.5555
 - Conclusion: Sample data did not support H_a.
No evidence that on average, fruit drinks have more sugar than fruit juices.

Size of Oak Trees and Pine Trees

Another team collected data directly by using a measuring tape to measure the circumference of oak and pine trees in local parks. The primary results of their project were as follows.

- t-Test for 2 independent samples:
 - 1-tailed test:
H_a predicting that in local parks, oak trees have greater circumference than pine trees on average
 - t statistic = 4.78
 - P value= 7.91×10^{-6}
 - Conclusion:
Strong evidence that in local state parks oak trees are bigger than pine trees on average.

Horses' Front and Rear Hooves

One student team collected data directly by using a tape measure to measure the length (front to back) of the front and rear hooves of several horses at local horse farms. The primary results of their project were as follows.

- Matched Pairs t-Test:
 - 1-tailed test:
H_a predicting that on average, front hooves are larger than hind hooves
 - t statistic = 12.9127
 - P value= 1.086×10^{-17}
 - Conclusion:
Strong evidence that horses' front hooves are larger than their hind hooves on average.

Importance Placed on Romance by Men and Women

One student team collected data by administering a survey to students on campus. The questions on the survey formed a construct measuring the respondent's perception of the importance of having a romantic relationship while in college. Higher scores indicated a greater degree of perceived importance. The primary components of their project were as follows.

- t-Test for 2 independent samples:
 - 1-tailed test:
H_a predicting that on average, women would place more importance than men on romantic relationships
 - t statistic = 1.0411
 - P value= 0.1507
 - Conclusion:
No significant difference between average men's and women's ratings of the importance of romantic relationships.