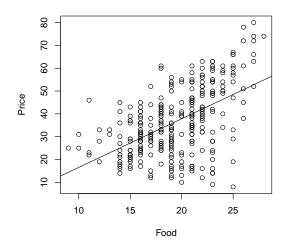
Regression Model Assumptions

STAT-UB.0003: Regression and Forecasting Models

Linear regression model

1. Here is the least squares regression fit to the Zagat restaurant data:



Here is the Minitab output from the fit:

Model Summary

Coefficients

Regression Equation

Price =
$$-4.74 + 2.129$$
 Food

- (a) What are the estimated intercept and slope?
- (b) Use the estimated regression model to estimate the average dinner price of all restaurants with a quality rating of 20.
- (c) In the estimated regression model, what is the interpretation of the slope?
- (d) In the estimated regression model, why doesn't the intercept have a direct interpretation?

| 2. | Refer to the Minitab output from the previous problem, the regression analysis of the Zagat data. | | |
|----|---|---|--|
| | (a) | What is the estimated standard deviation of the error (the "standard error of the regression")? What is the interpretation of this value? | |
| | (b) | What proportion of the variability in the response is explained by the regression model (this is the "coefficient of determination", commonly referred to as the R ² value)? What is the meaning of this number? | |
| | (c) | According to the estimated regression model, what is the range of typical prices for restaurants with quality ratings of 20? | |
| | (d) | According to the estimated regression model, what is the range of typical prices for restaurants with quality ratings of 10? | |