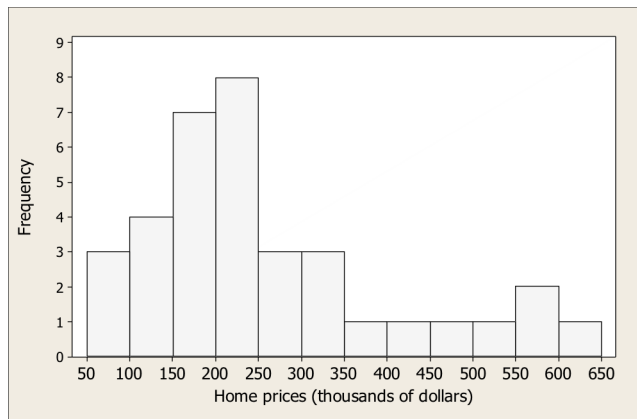


1. A real estate company compiled data on the prices at which 35 homes sold during a one month in a county in New Jersey. A histogram and some summary statistics from Minitab for the home prices are given below. (Note that home prices are in thousands of dollars.)

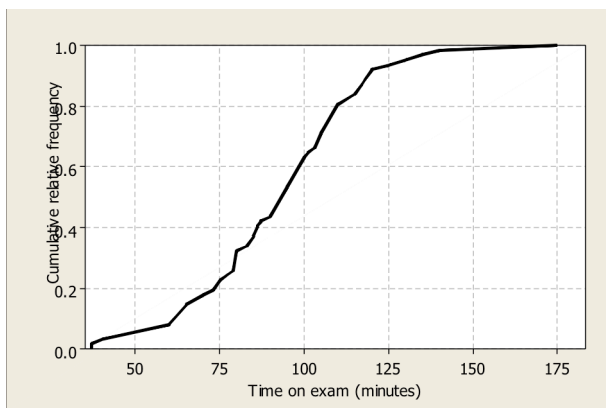


Descriptive Statistics: home prices

Variable	N	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
home prices	35	260.8	24.6	145.6	80.0	165.0	220.0	307.0	626.0

- (a) One of the houses in this data set sold for 350 thousand dollars. Six houses sold for more than that. Calculate and interpret the percentile and z -score for this house's price.
- (b) What was the "typical" price for a home in this county during the month in which these data were collected? Justify your answer.

2. Below is a cumulative relative frequency graph for the length of time a group of 62 students spent on a no-time-limit final exam in Algebra II.



- (a) What are the median and interquartile range for the amount of time these students spent on the exam? Draw lines on the graph to show how you arrived at your answers.
- (b) According to these data, the mean time students spent on the exam was 94.1 minutes, and the standard deviation was 24.23 minutes. Suppose the exam proctor realized after compiling these data that he had used the wrong start time in his calculation, so that each value for time spent on exam needs to be reduced by 15 minutes. He also wants to express the times in hours, rather than minutes. Find the mean and standard deviation of the transformed data.
- (c) What are the mean and standard deviation of the z -scores of time spent on the exam for all the students who took this exam? Justify your answer.

Quiz 2.1B

1. (a) The house that sold for \$350 thousand has 28 out of 35 house prices below it, so it is at the 80th percentile. The z-score for \$350 thousand is $(350 - 260.8)/145.6 = 0.61$, which is 0.61 standard deviations above the mean house price. (b) \$220 thousand—the median is the best measure of the center of a skewed distribution. 2. (a) Median is approximately 92 minutes. The interquartile range is approximately $110 - 80 = 30$ minutes. (b) Mean = $(94.1 - 15)/60 = 1.318$ hours, standard deviation = $24.23/60 = 0.404$ hours. (c) Calculating z-scores is a linear transformation--subtract the mean (1.318 hours, in this case) from each value and divide by the standard deviation (0.404 hours). That is, for each x , $z = \frac{x - 1.318}{0.404}$. Using the ideas about

transformations of variables, if the mean of x is 1.318, the mean of z is $\frac{1.318 - 1.318}{0.404} = 0$, and if

the standard deviation of x is 0.404, the standard deviation of z is $\frac{0.404}{0.404} = 1$