

MATH 1150 Quiz 2 (completed as a group)

Name: Solutions

Term: Spring 2018

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The following is a list of 37 player salaries (in millions of dollars) from the 2015 Major League Baseball season that I selected randomly:

2, 5.167, 3.5, 1.088, .518, .530, .575, 1, .528, .514,
.515, 15.75, .520, 5.685, 5.250, 13.5,
1.088, 1.45, 2.5, 15, 7.5, .510, 1.1, 8, 8.8, .516, 1.075, .510, 7.925, 4.75, .975, 2.5, .988, 9.5, 2.6, .509, 22

- (1) For this sample of 37 salaries, compute the mean, the median, and the five number summary, using appropriate notation.

$$\bar{x} = 4.228$$

$$s = 5.2336$$

5 number summary

$$\text{min: } .509$$

$$Q_1: .529$$

$$\text{med: } 1.45$$

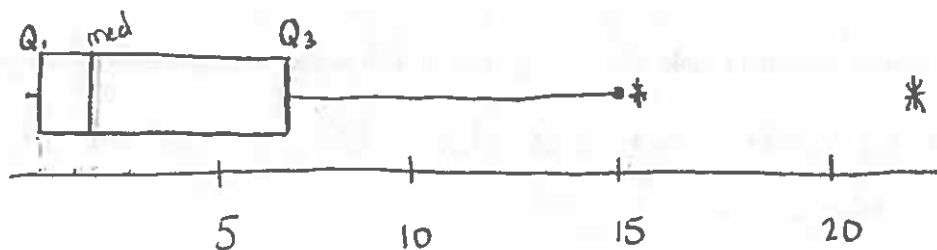
$$Q_3: 6.5925$$

$$\text{max: } 22$$

- (2) Based on this sample, what is the z-score of the \$31 million salary of Clayton Kershaw, the highest paid major leaguer in 2015?

$$z = \frac{x - \bar{x}}{s} = \frac{31 - 4.228}{5.2336} \approx 5.115$$

- (3) Draw a boxplot for the data.



- (4) The 95% rule says that, under certain conditions on a quantitative variable, roughly 95% of total cases should lie within a certain range. In this case, based on this sample, what would that range be? Do you think the aforementioned conditions are satisfied?

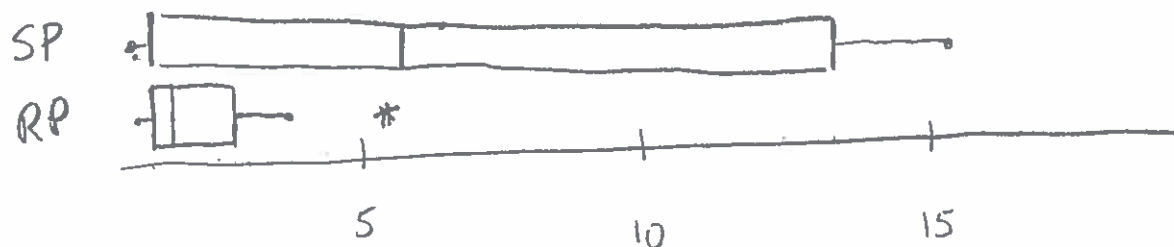
$$\bar{x} + 2s \approx 14.6952$$

$$\bar{x} - 2s \approx -6.2392$$

The range would be between -6.2392 and 14.6952 , but the 95% rule doesn't apply because the data is not bell-shaped.

I arranged the randomly selected salaries on the first page such that the first line contains the salaries belonging to relief pitchers, the second line contains the salaries belonging to starting pitchers, and the third line contains salaries belonging to non-pitchers.

- (5) Draw a side-by-side graph with ~~three~~ ^{two} boxplots corresponding to relief pitchers, starting pitchers, and ~~non-pitchers~~, respectively.



- (6) What is a conclusion one might make about major league salaries based on this side-by-side graph?

Relief pitches make way less than starting pitchers, especially on the higher end.