

Econ 300 Homework 1

Note: for book exercises, solutions are in appendix A. Exercises 2.25 and 2.26 are good holistic examples, but a bit difficult for this course. The “chapter exercises” for chapter 2 are similarly good but somewhat difficult questions.

General data literacy (1.2.2)

The following book questions are examples of categorization of variables

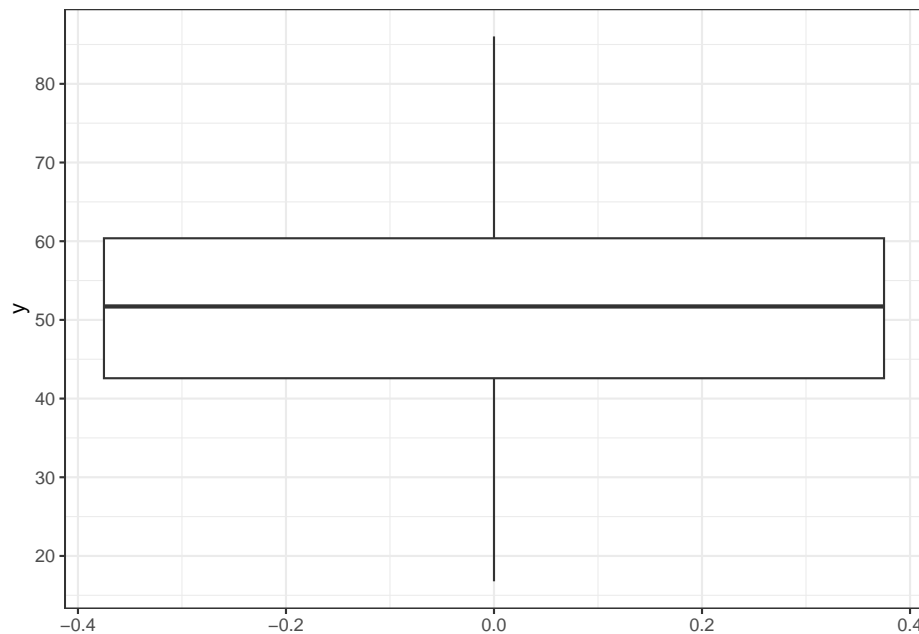
1.3c, 1.4c, 1.5c, 1.6c, 1.10c, 1.11b 1.12b

Quantiles and Boxplots (2.1.5)

Find the median, first quartile, third quartile, and interquartile range of the following list

12 3 7 1 6 5 3 8 8

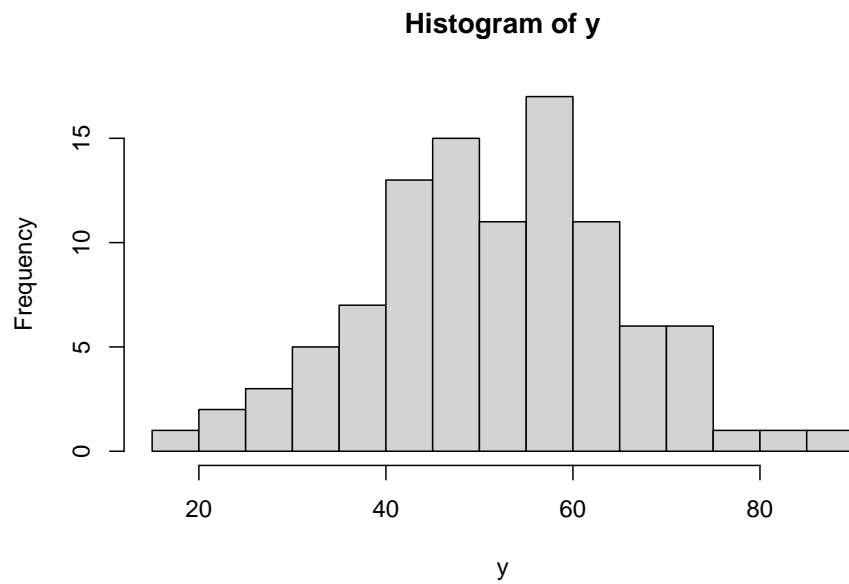
Find the median, first quartile, third quartile, and interquartile range of the following box plot



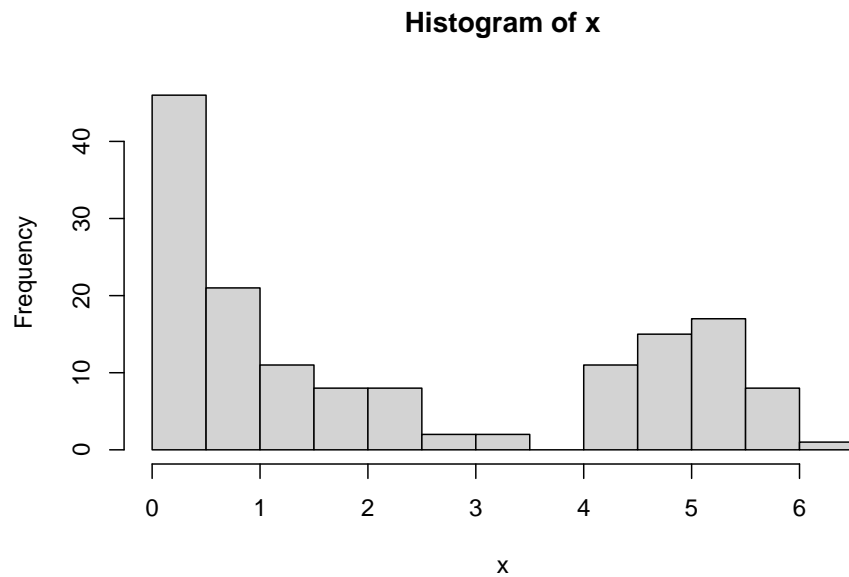
Book Problems: 2.8

Histograms (2.1.3)

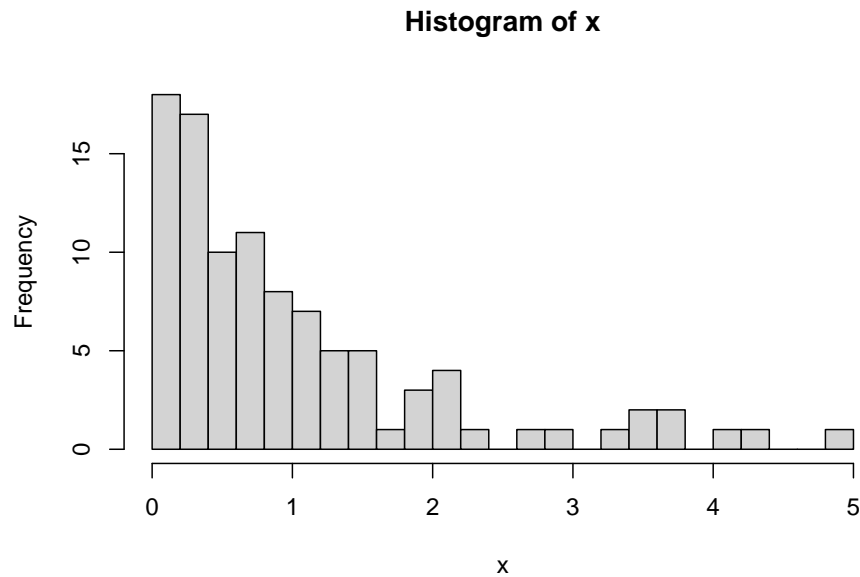
The following histogram has 100 total values. What percent of the data is between 30 and 40?



What features are present in the following histogram?



For the following distribution, which is larger, the mean or the median?



Book Problems: 2.15, 2.16 2.14 (this one pieces together information from multiple sections)

Mean (2.1.2)

Calculate the mean of the following data, where p is the proportion of data associated with each value

	x	p
1:	1	0.10
2:	2	0.20
3:	3	0.50
4:	4	0.15
5:	5	0.15

Suppose that an outlier is added to a dataset. Which is more affected, the mean or the median?

Book Problems: 2.9

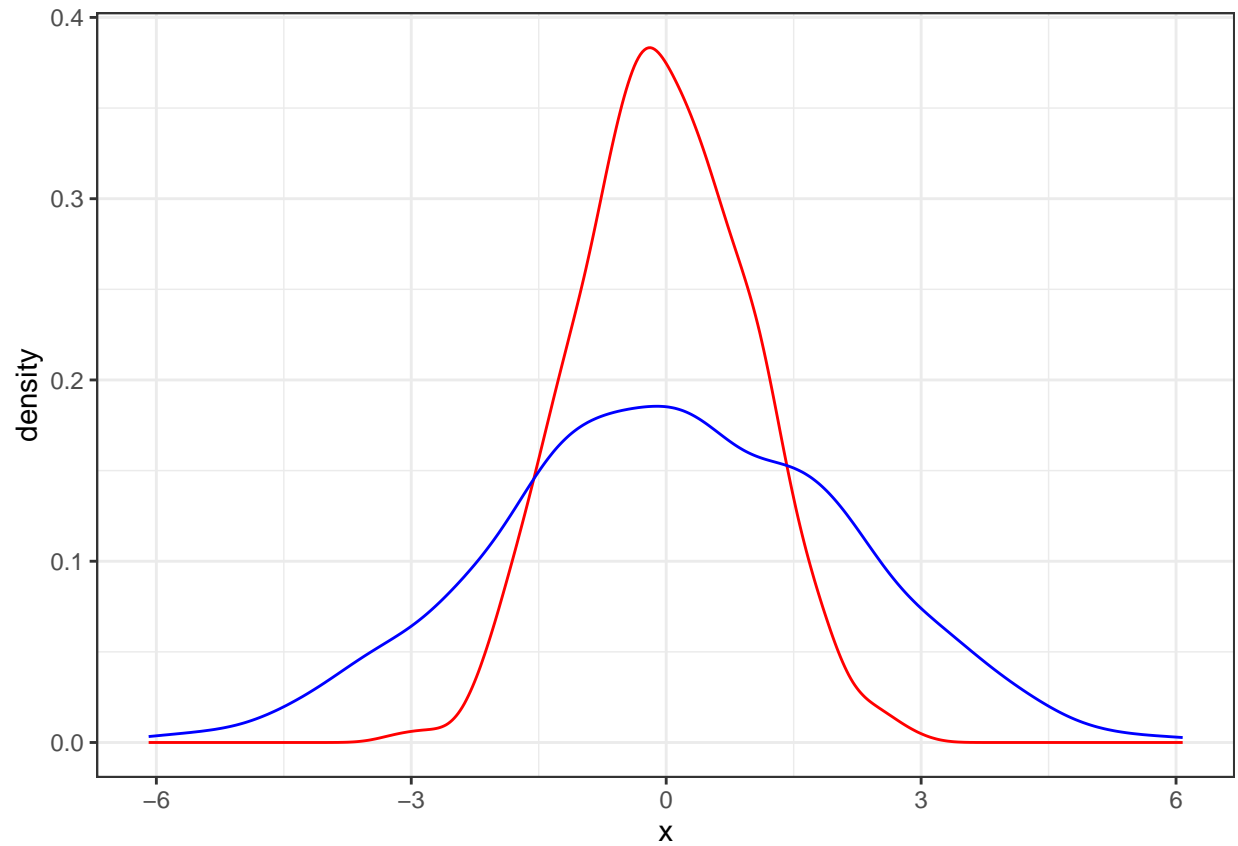
Variance (2.1.4)

Calculate the (population) standard deviation of the following data

5 10 12

The ACT is a standardized test with mean 18 and standard deviation 6. You score a 27 on the ACT. Calculate your z-score, i.e. your standardized test score

Which of the following distributions has a larger standard deviation?



Contingency Tables (2.2.1)

The following (made-up) table gives the joint distribution of econ majors (vs non-econ majors) and whether they are a dog or a cat person.

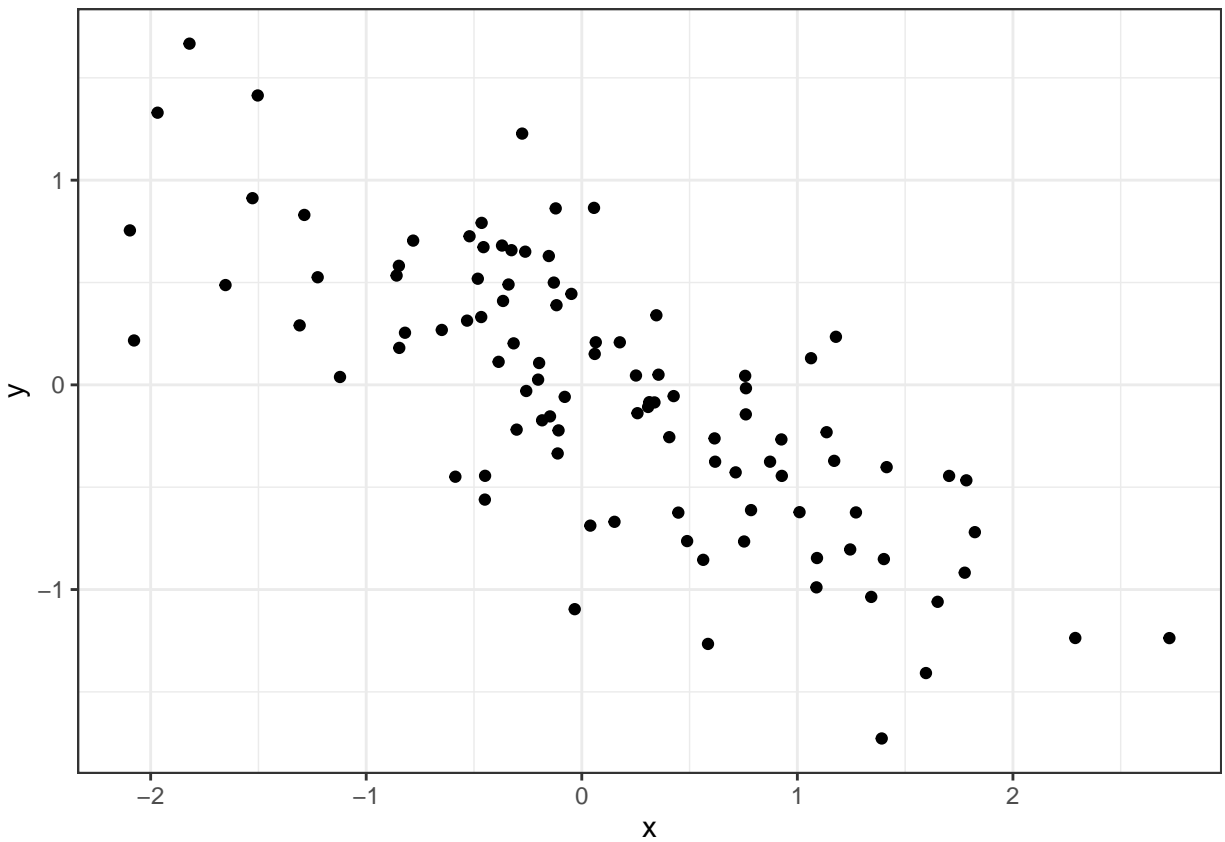
- What percent of people prefer dogs?
- What percent of people are non-econ majors who prefer cats?
- Of people who are econ majors, what percent prefer dogs?
- Of people who prefer dogs, what percent are econ majors?

	Dog	Cat	Total
Econ	25	20	65
Other	15	40	35
Total	40	60	100

Book Problems: 2.22 (e is difficult)

Scatterplots (2.1.1)

Is the correlation between the following variables positive, negative, or approximately 0?



Suppose $r = -0.9$. What percent of the variation in y is explained by x ?

Book problems: 2.1, 2.2, 2.4 (positive vs negative association)

Graphical Comparison (2.2.6)

Book problems: 2.10, 2.13