

Recitation 1

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Exercise 1

Identify each of the following variables as categorical or quantitative.

1. Number of children in family
2. Nationality
3. Final Grade on Statistics exam (Scale: A, B, C, D, F)
4. Distance in kilometers of commute to work
5. Choice of diet (vegetarian, nonvegetarian)
6. Ownership of a personal computer (yes, no)

Identify each of the following variables as continuous or discrete.

1. The length of time to run a marathon
2. The number of people in line at a box office to purchase theater tickets
3. The weight of a baby
4. The number of people you have dated in the past five years
5. The distance between where you live and your statistics classroom

Exercise 2

A professor examined the results of the first exam given in her statistics class. The scores were

70, 84, 59, 73, 86, 35, 81, 75.

1. Find the mean and the median.
2. Would you guess that the distribution is skewed or roughly symmetric? Why?
3. Find the standard deviation.
4. The instructor added the grade of a further student, that is 100. Describe the effect of this new observation.
5. Suppose that 73 was incorrectly recorded and is supposed to be 3. Describe the effect of this on the mean and median.

Exercise 3

Consider the following two sets of observations:

Set 1: 2,3,3,3,4,4,4

Set 2: 2,3,3,3,3,3,4

1. Find the variance for each data set.
2. Which data set shows more variability?

Exercise 4

For the question “How many children have you ever had?”, the results were

No.Children	0	1	2	3	4
Count	25	15	20	5	0

1. Provide a graphical representation of the distribution.
2. Find the mode.
3. Find the variance and the standard deviation.

Exercise 5

The 2007 unemployment rates of countries in the European Union are shown in the table below.

Country	Unempl. rate	Country	Unempl. rate	Country	Unempl. rate
Belgium	7.8	France	8.4	Italy	6.7
Denmark	3.2	Portugal	7.2	Finland	7.0
Germany	7.7	Netherlands	3.6	Austria	4.5
Greece	8.7	Luxembourg	5.0	Sweden	6.0
Spain	8.6	Ireland	4.4	U.K.	5.4

1. Provide a graphical representation of the distribution.
2. Find the mean and standard deviation.
3. What unemployment value for a country would have a z-score equal to 0?

Exercise 6

The mean and standard deviation of a sample may change if data are rescaled.

1. Scores on a difficult exam have a mean of 57 and a standard deviation of 20. The teacher boosts all the scores by 20 points before awarding grades. Report the mean and the variance of the boosted scores.
2. Referring to point 1, what happens to the mean if the students get a grade rise of 3%?
3. Suppose that the annual income for some group has a mean of \$ 39,000 and a standard deviation of \$ 15,000. Values are converted to euros. If one euro equals \$2.00, report the mean and standard deviation in European currency.

Exercise 7

Consider the data

x	y
3	8
4	13
5	12
6	14
7	16

1. Sketch a scatterplot.
2. Would you expect a positive association, a negative association or no association between x and y ?
3. Compute the correlation coefficient, r .