

Normal Distribution

Directions: In this portfolio project, you will be collecting a set of data and analyzing the characteristics of the distribution. Provide yourself with plenty of time to complete step 1.

Part 1

Collect a set of data with at least 30 data points. The data should be quantitative, which means that it should be measured using numbers. You can be as creative as you'd like, but here are some suggestions for things that you can survey.

- the heights of a large number of people
- the number of pages in a set of books on a bookshelf
- the number of hits earned by different professional baseball players in a season

Part 2

Create a visual representation of your data. If the data is continuous, use a histogram. If the data is discrete, use a bar graph. Make sure to label the axes with appropriate titles and incorporate the appropriate scale on each axis.

Part 3

Respond to the following questions.

1. What are the mean and standard deviation of the set of data?
2. Does the data follow a normal distribution? Be sure to mathematically justify your answer.
3. Answer one of the following questions.
 - a. If your sample follows a normal distribution, does this makes sense to you? Explain why.
 - b. If your sample does not follow a normal distribution (e.g., it could be skewed left or right, have a uniform distribution, or have some other shape), then why might this be the reason?
4. Describe your survey process. What are some sources of possible bias in your sample? Alternatively, what did you do to ensure a random sample?
5. What is a set of data that you would like to study in the future? How could you go about ensuring an unbiased random sample?

Submission

Make sure to submit your data set from Part 1, your histogram or bar graph from Part 2, and your responses to the questions in Part 3.