



Statistics Review Appendix

This section includes information on the descriptive statistics used in *Planning for Business Success*.

DESCRIPTIVE STATISTICS REVIEW

When you conduct a survey for your own business, you might be interested in finding out the average price that customers are willing to spend on your product. Or, you might want to examine how your product appeals to 14–16 year olds compared to 17–18 year olds. Descriptive statistics will help you analyze and present your data, and provide simple summaries about the sample and the measures. The following is a review of descriptive statistics terminology.

“Averages”—Mean, Median, and Mode

Mean: The sum of a list of numbers, divided by the total number of numbers in the list.

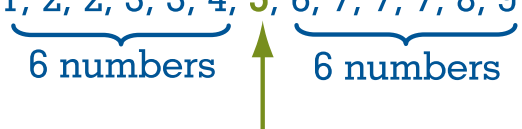
Example:

7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3, 2

The mean for this data set is $64 \div 13 = 4.9$.

Median: The center data item once the data are sorted from smallest to largest. Example:

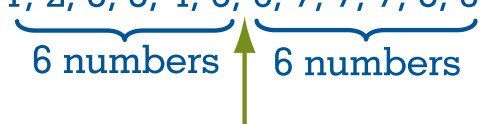
Unsorted: 7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3, 2
Sorted: 1, 2, 2, 3, 3, 4, 5, 6, 7, 7, 7, 8, 9



The median for this data set is 5.

If the number of items in the data set is even, then the median lies halfway between the middle two data items. Example:

Unsorted: 7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3
Sorted: 1, 2, 3, 3, 4, 5, 6, 7, 7, 7, 8, 9



The median for this data set is 5.5, halfway between 5 and 6.

Mode: The most common (frequent) value in a set of data. Example:

7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3, 2

The mode for this data set is 7 (the number that occurs most often).

A data set can also have more than one mode. Example:

7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3, 2, 3

The most frequently recurring numbers are 7 and 3—both occur three times in this set of data. Therefore, the data are bimodal (they have two modes).

Range

The range of a set of numbers is the largest value in the set minus the smallest value in the set. Note that the range is identified as a single number. Example:

7, 3, 5, 1, 9, 7, 4, 6, 7, 2, 8, 3, 2

The range for this set of data is 8 ($9 - 1$).

Which Statistic Would You Use?

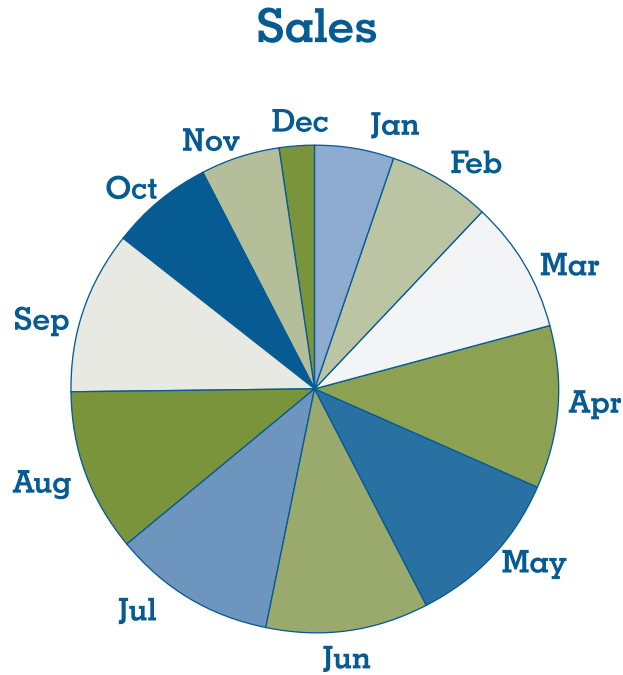
A manager and four employees run a restaurant. The employees each make \$21,000 a year; the manager makes \$75,000.

- Which statistic(s) (mean, median, mode, and/or range) would you use if you wanted to describe the typical salary earned at this restaurant? How would you phrase your statement(s)?
- Which statistic(s) (mean, median, mode, or range) would you use if you were the manager and wanted to portray the salaries at this restaurant in the most favorable way? How would you phrase your statement(s)?

You can analyze data in several different ways—mathematically, they're all correct. However, you should first think about what you want to convey with the information you present. Then, look at the context of the data to decide whether it's appropriate to use the mean, the median, the mode, or the range. You should also consider the ethical implications of your analysis, as you don't want to mislead people with your statements.

Creating Meaningful Graphs

My Ice Shavings! Business Plan lists the monthly sales for one year. Look at the following graph, which represents sales for **My Ice Shavings!** for the year, and answer the following questions:



1. Does this pie chart display the important information effectively? What would you change or add to make the graph more informative?
2. Would you choose a pie graph to present sales for **My Ice Shavings!** for the year? Why or why not?
3. What might be a better graph? Create a new, informative graph of sales for **My Ice Shavings!**, using the following data about the company's sales for the year:



My Ice Shavings!

One-Year Company Sales Summary

Month	Sales (in \$)
January	2,200
February	3,400
March	4,400
April	5,500
May	5,500
June	5,500
July	5,500
August	5,500
September	5,500
October	3,400
November	2,600
December	1,000