

# Chapter 5: Exploring Data: Distributions

For All Practical  
Purposes



Mathematical Literacy in  
Today's World, 9th ed.

## Section 5.1 Displaying Distributions: Histograms

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- Statistics is the science of collecting, organizing, and interpreting data.
- Data
  - Numerical facts that are essential for making decisions in almost every area of life and work.
  - Spreadsheet programs are used to organize data by rows and columns.
- Exploratory data analysis
  1. Examine each variable by itself and then the relationship among them.
  2. Begin with a graph or graphs, then add numerical summaries of specific aspects of the data.



**Individual – The objects described by a set of data. May be people or may also be animals or things.**

**Variable – Any characteristic of an individual. A variable can take different values for different individuals.**

## Chapter 5 Exploring Data

individual

variables

### A Corporate Data Set

	A	B	C	D	E	F
1	Name	Age	Gender	Race	Salary	Job Type
2	Fleetwood, Dolores	39	Female	White	62,100	Management
3	Perez, Juan	27	Male	White	47,300	Technical
4	Wang, Lin	22	Female	Asian	18,250	Clerical
5	Johnson, LaVerne	48	Male	Black	77,600	Management
6						
Enter					NUM	

**Individuals** are the objects described by a set of data

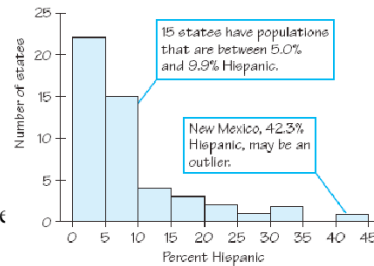
A **variable** is any characteristic of an individual.

A variable can take different values for different individuals.

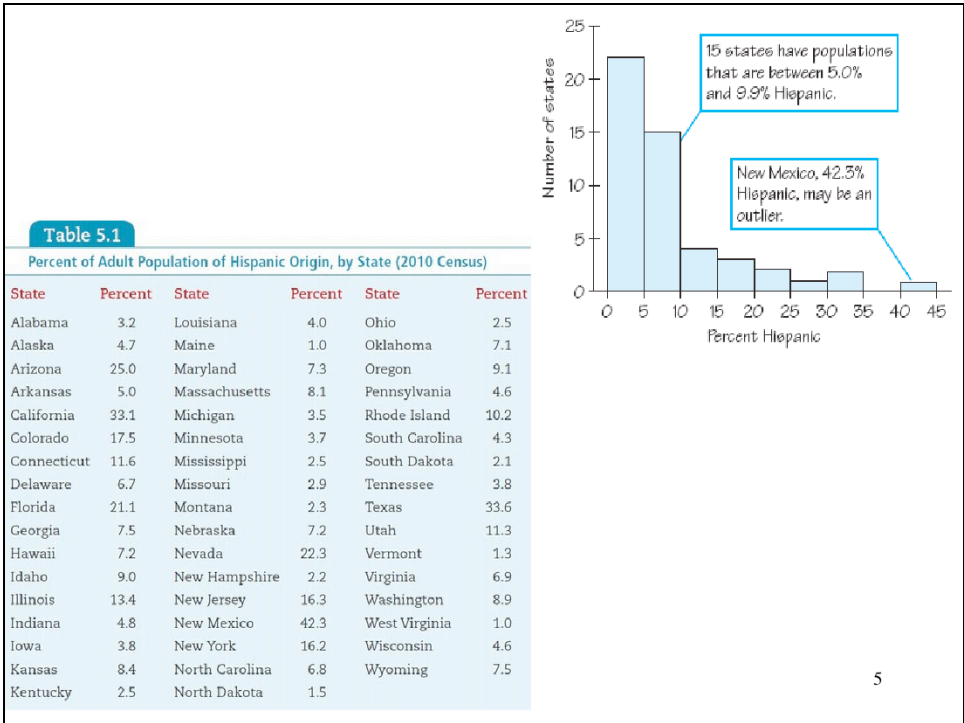
- Histogram
  - The graph of the distribution of outcomes (often divided into classes) for a single variable.

**Distribution – The pattern of outcomes of a variable; it tells us what values the variable takes and how often it takes these values.**

- Steps in Making a Histogram
  1. Choose the classes by dividing the range of data into classes of equal width (*individuals fit into one class*).
  2. Count the individuals in each class (*this is the height of the bar*).
  3. Draw the histogram:
    - The horizontal axis is marked off into equal class widths.
    - The vertical axis contains the scale of counts (*frequency of occurrences*) for each class.



Histogram of the percent of Hispanics among the adult residents of the states



## Making a Histogram

**Step 1.** Divide the range of the data into classes of equal width



5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

**Step 2.** Count the number of individuals in each class.

Class	Count	Class	Count	Class	Count
5.1 to 6.0	1	10.1 to 11.0	4	15.1 to 16.0	4
6.1 to 7.0	0	11.1 to 12.0	8	16.1 to 17.0	0
7.1 to 8.0	0	12.1 to 13.0	13	17.1 to 18.0	0
8.1 to 9.0	1	13.1 to 14.0	12	18.1 to 19.0	1
9.1 to 10.0	1	14.1 to 15.0	5		

Practice making a histogram. You are to do step 3, Draw the histogram pages 182-183.

**Histogram of the percent of state residents age 65 and over.**

Class	Count	Class	Count	Class	Count
5.1 to 6.0	1	10.1 to 11.0	4	15.1 to 16.0	4
6.1 to 7.0	0	11.1 to 12.0	8	16.1 to 17.0	0
7.1 to 8.0	0	12.1 to 13.0	13	17.1 to 18.0	0
8.1 to 9.0	1	13.1 to 14.0	12	18.1 to 19.0	1
9.1 to 10.0	1	14.1 to 15.0	5		

